Government of Western Australia
Department of Water and Environmental Regulation

# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

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|---|---|
| **Permit number:** | CPS 10494/1 |
| **Permit type:** | Purpose permit |
| **Applicant name:** | Yindjibarndi Energy Corporation Pty Ltd |
| **Application received:** | 24 January 2024 |
| **Application area:** | 527.21 hectares of native vegetation within a 527.21 hectare footprint (revised) |
| **Purpose of clearing:** | Construction of Solar power facility |
| **Method of clearing:** | Mechanical |
| **Property:** | Unallocated Crown Land (PINs 1017635 and 1017648) |
| **Location (LGA area/s):** | Shire of Ashburton |
| **Localities (suburb/s):** | Fortescue |

### 1.2. Description of clearing activities

The application is to mechanically clear no more than 527.21 hectares of native vegetation for construction and operation of the Jinbi Solar Facility. The project footprint is distributed across 527.21 hectares with five discrete areas that are separated by existing roads, power transmission infrastructure and watercourses (see Figure 1, Section 1.5).

Clearing for the Jinbi Solar Facility will be for:

- up to 150 Megawatts (MW) of solar arrays;
- a 375 MW hour (5 hour) Battery Energy Storage System (BESS);
- internal access roads;
- transmission lines and substations; and
- other associated hardware and infrastructure.

The application was revised twice during the assessment process, following consultation with the applicant on the assessment of impacts to flora and fauna habitat. The changes are outlined in Appendix A.

### 1.3. Decision on application

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|---|---|
| **Decision:** | Granted |
| **Decision date:** | 3 May 2024 |
| **Decision area:** | 516.85 hectares of native vegetation within a 527.21 hectare permit area, as depicted in Section 1.5, below. |

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for:

- the site characteristics and environmental values known in the local area (50-kilometre radius measured from the application area) (see 0)
- relevant datasets (see Appendix F.1)
- the findings of:
  - a flora and vegetation assessment (see Appendix E);
  - a fauna assessment (see Appendix E); and
  - a short range endemic desktop assessment
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix C)
- relevant planning instruments and any other matters considered relevant to the assessment (see Section 3.3).

The Delegated Officer also took into consideration that:

- the proposal is for the development of a solar farm to feed renewable energy into Rio Tinto's private energy grid which is currently powered through fossil fuels. The proposal will reduce greenhouse gas emissions in the region, representing actions towards the State and Federal Government's targets of achieving net zero emissions by 2050.
- the applicant is the Native Title Holder and that environmental values associated with this landscape are integral values to the culture of the local Yindjibarndi group. As custodians of the landscape made by Minkala (the first man) and the waterways shaped by Barrimindi (the Rainbow Serpent), the Yindjibarndi Energy Corporation Pty Ltd (YEC) will seek to operate in a manner that conserves the spirit and environmental value of the Ngurra (land; country).

Considering the above information, DWER's assessment identified that the proposed clearing may result in the following impacts on the environment:

- The loss of up to 527.21 hectares of native vegetation that is suitable habitat for priority flora and significant fauna including Yirriwardu (Northern Quoll) and Bargunyji (Pilbara Olive Python), predominantly for foraging and dispersal. Noting that the majority of critical habitat within the original footprint was excluded from the proposed clearing area;
- 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 impacts to the 'Riparian flora and plant communities of springs and river pools with high water permanence of the Pilbara Region' (riparian flora and plant communities) Priority 2 Priority Ecological Community (PEC) and priority flora;
- Potential land degradation in the form of wind erosion;
- Potential sedimentation of local water resources including the Jinbi (freshwater spring) and ephemeral creeklines; and
- Limiting the dispersion of fauna from water resource areas into the broader landscape.

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 is unlikely to lead to appreciable land degradation, unlikely to have long-term adverse impacts on significant fauna habitat, unlikely to significantly impact the riparian flora and plant communities PEC and priority flora and can be minimised and managed in a manner 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 and reduce the impacts and extent of clearing;
- Take hygiene steps to minimise the risk of the introduction and spread of weeds;
- Reduce the impacts of wind erosion by requiring the clearing to be done no more than three months prior to construction;
- Undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- Where practicable, avoid clearing of riparian vegetation associated with minor drainage channels and maintain surface flow;
- Limit the purpose and extent of clearing within creekline vegetation that is considered critical fauna habitat, as well as ensuring fauna dispersal is maintained;
- Manage excavations to mitigate the impacts of trapped fauna;
- Undertake pre-clearance fauna surveys for Yirriwardu (Northern Quoll), Pilbara Olive Python, Gurdi (Western Pebble-mound Mouse) and Northern Short-tailed Mouse, and relocate any identified individuals prior to clearing;
- Undertake clearing during day-time hours to reduce the potential for vehicular fauna strike;

- Undertake targeted pre-clearance surveys for threatened and priority flora, including demarcating and limiting clearing within a buffer around the species; and
- Revegetate and rehabilitate any cleared areas that are no longer required following construction of the project.

## 1.5. Site map

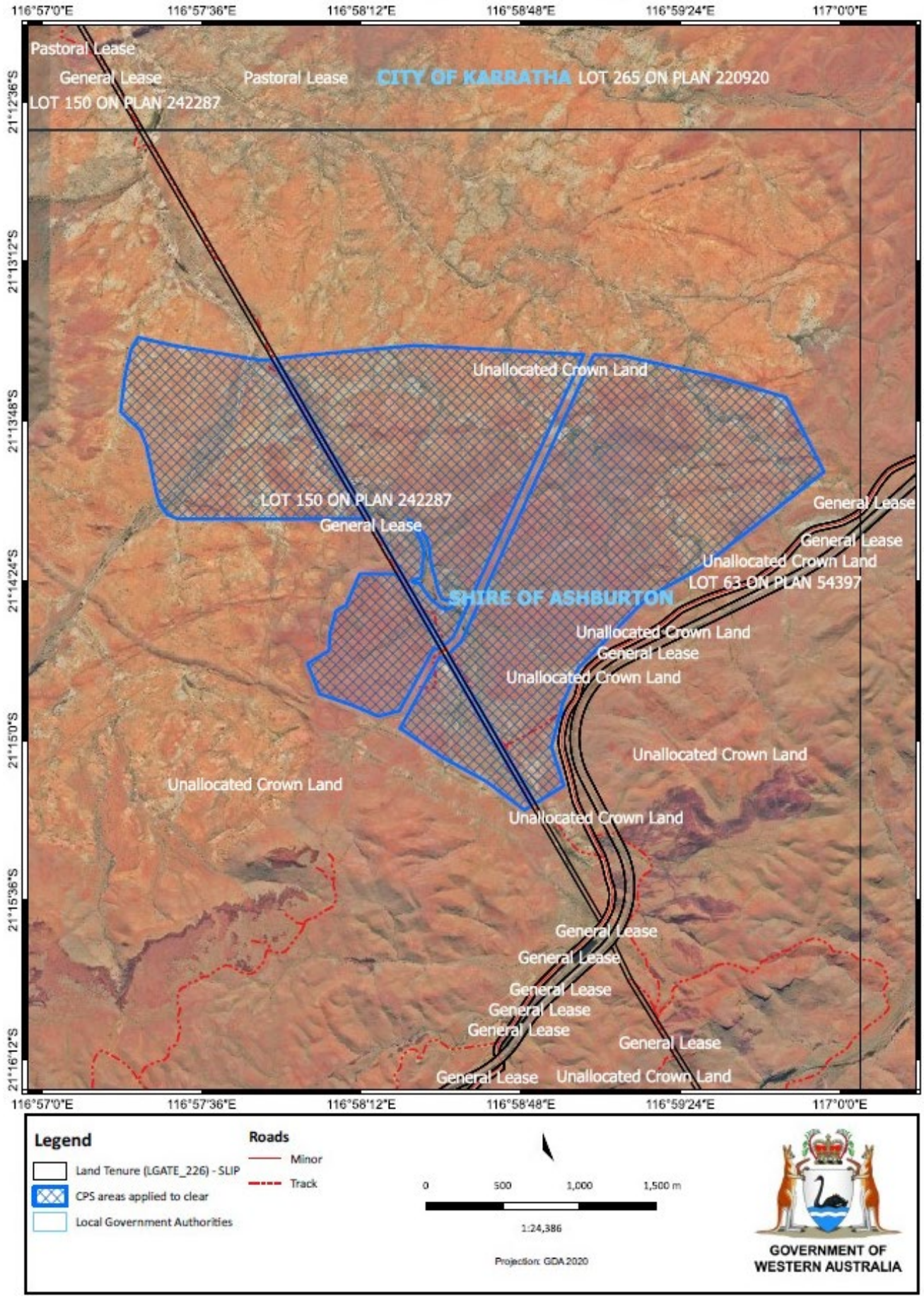


**Figure 1: Map of the original application area**

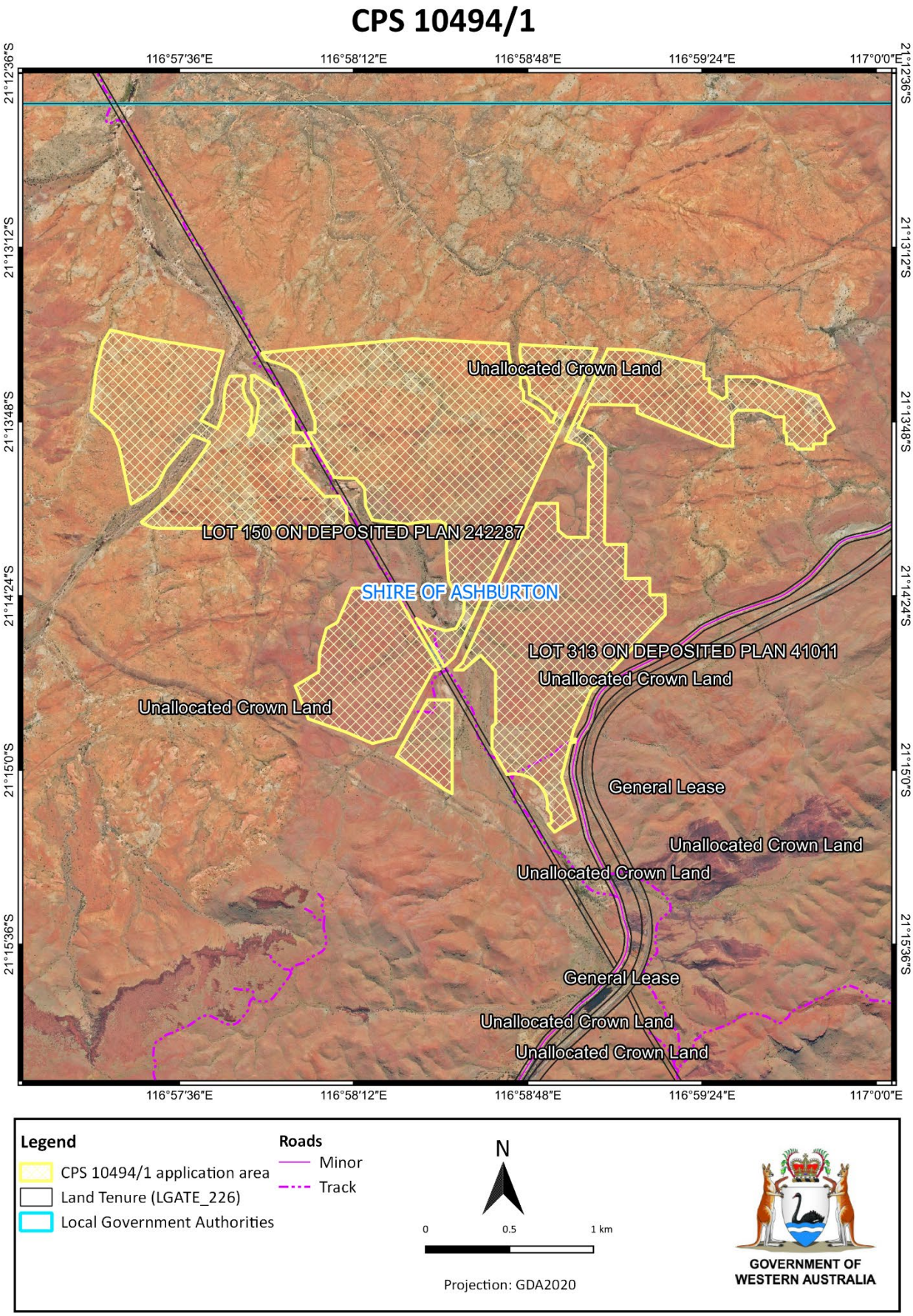


**Figure 2: Map of the revised application area**

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit, subject to permit conditions.

## 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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Rights in Water and Irrigation Act 1914*
- *Aboriginal Heritage Act 1972*

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

A Fauna Assessment (Bamford Consulting Ecologists (Bamford), 2024), Reconnaissance Flora and Vegetation Assessment (Mattiske Consulting Pty Ltd (Mattiske), 2024), Short Range Endemics Assessment (Bennelongia Pty Ltd (Bennelongia), 2024) and Summary Report (Coterra Environment (Coterra), 2024a) were submitted along with the application. The biological assessments considered that presence of significant fauna habitat in the area was predominantly associated with the Jinbi (freshwater spring), which is also a Priority 2 PEC, as well as the associated ephemeral creek lines for potential foraging and dispersion.

In consideration of the biological survey results, the applicant did not include the Jinbi and mapped PEC vegetation in the application area. In addition, the application also proposed the following avoidance and mitigation measures:

- Avoidance of denning habitat for the Yirriwardu (Northern Quoll);
- The location of the Priority 2 *Pentalepis trichodesmoides* subsp. *hispida* individual recorded in the proposed clearing area will be demarcated and avoided;
- All vehicles, equipment and personnel will be inspected and cleaned as required to prevent the incidental spread of weeds;
- Clearing for construction within the clearing footprint will occur on an ‘as needs’ basis to limit exposure of bare soils;
- Subject to bushfire mitigation measures, vegetation between solar panel rows will be retained or allowed to regenerate to provide for ongoing foraging and dispersal opportunities for fauna;
- Perimeter fencing will be installed in a manner that allows the Yirriwardu (Northern Quoll) and Bargunyji (Pilbara Olive Python) access and egress between the facility and the central Jinbi area; and
- The applicant will seek to avoid disturbance of localised perched or shallow groundwater and drainage lines owing to flood risks posed to solar facility infrastructure.

After consultation with DWER regarding the preliminary assessment and advice received from the Department of Biodiversity, Conservation and Attractions (DBCA), the applicant reduced the application area by 31.18 hectares by incorporating a vegetation buffer around the PEC and excluding some areas mapped as creek line vegetation communities. The PEC will have a variably sized vegetation buffer that is retained to minimise potential indirect impacts from clearing activities. The vegetation buffer has a minimum distance of approximately 23 metres where the proposed clearing is also vertically separated from the PEC by a gorge wall and is larger where the vertical separation from the application area is not so pronounced. Areas of creek line vegetation were removed to reduce potential impacts on critical fauna habitat and habitat more likely to contain the Priority 1 flora species *Tephrosia lithosperma* and Priority 2 flora species *Trianthema* sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023), which may

occur in the area. Due to the requirement for access tracks and creek crossings servicing the facility, the applicant was unable to fully avoid clearing in these areas but will not be clearing creek line vegetation to install the solar panel arrays.

Following additional discussion between DWER and the applicant regarding residual impacts of the clearing, the applicant further revised the application area to remove more of the creek line vegetation. The application area was revised to 527.21 hectares of native vegetation clearing, with 10.36 hectares comprising the creek line vegetation type. The applicant advised that the amount of creek line vegetation clearing required for the access tracks and crossings will be substantially lower than 10.36 hectares, as the larger areas have only been included to give flexibility in the design process. The final location and as a result the exact extent of the clearing required at these locations is not yet determined, due to the detailed design elements of the solar facility still being in progress. The applicant indicated that preliminary design requirements of the access roads will be 6 metres wide for bushfire hazard mitigation, with the creek crossings being approximately 15.5 metres wide by 20 metres long and containing large box culverts (YEC, 2024b).

In consideration of the above and the revisions made to the proposed clearing area during the assessment (see Appendix A), 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

In assessing the application, the Delegated Officer had regard for the site characteristics (see 0) 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 (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna, priority flora, priority ecological communities, adjacent flora and riparian vegetation), and impact to land degradation in the form of increased wind erosion. 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 (flora) - Clearing Principle (a)*

**Assessment**

The application area is located within the Pilbara bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). A reconnaissance flora and vegetation assessment was undertaken between 30 October and 3 November 2023. The assessment covered the proposed clearing area and the broader investigation area (Jinbi project area). The survey identified a total of 121 vascular plant taxa, which represented 81 genera and 34 families recorded across the Jinbi project Area (Mattiske, 2024). The plant taxa recorded during the survey were consistent with the desktop assessment undertaken by Mattiske (2024).

Based on statistical analysis of quadrat and releve' data, the vegetation assessment identified four vegetation communities:

| Vegetation community | Description | Extent in original clearing footprint | Extent in revised clearing footprint |
|---|---|---|---|
| Creekline (C1) | *Eucalyptus victrix* low open woodland over *Melaleuca linophylla*, *Melaleuca glomerata, Acacia bivenosa* mid sparse shrubland over *Stemodia grossa, Cyperus vaginatus* low sparse shrubland in ephemeral drainage channels. | 68.57 ha | 10.36 ha |
| Creekline (C2) | *Melaleuca argentea, Eucalyptus ?camaldulensis* mid woodland over *Acacia ampliceps, Acacia coriacea subsp. pendens, Acacia pyrifolia var. pyrifolia* mid open shrubland over *Typha domingensis, Cyperus vaginatus, Schoenoplectus subulatus* open sedgeland surrounding permanent pools. | 0 ha | 0 ha |
| Grassland (G1) | *Acacia ancistrocarpa, Acacia pyrifolia var. pyrifolia, Acacia bivenosa* mid sparse shrubland over *Triodia wiseana, Triodia epactia* low hummock grassland on rugged sandstone hilltops. | 318.96 ha | 217.69 ha |
| Shrubland (S1) | *Corymbia hamersleyana, Terminalia circumalata* low isolated trees over *Acacia ancistrocarpa, Acacia pyrifolia var. pyrifolia, Acacia inaequilatera* | 362.82 ha | 299.17 ha |

| Vegetation community | Description | Extent in original clearing footprint | Extent in revised clearing footprint |
|---|---|---|---|
| | mid sparse shrubland over *Triodia epactia, Aristida* contorta low hummock grassland on stony plains and granite tor fields. | | |
| **Total** | | 750.35 ha | 527.21 ha |

In December 2023, a month after the reconnaissance surveys, a wildfire burnt through the proposed clearing area. It is understood that vegetation structure within the first year post fire is quite different and therefore further targeted surveys are not appropriate until adequate cyclonic rainfall.

**Conservation significant Flora**

According to available databases, 28 priority flora listed by DBCA and no threatened flora listed under the EPBC Act or BC Act were identified within the local area. Based on the similarities shared between the soil and vegetation types where the priority flora have been previously recorded and within the application area, DWER determined that 13 flora species have the potential to occur within the application area. These species are considered below:

- *Neptunia longipila (P2)*
- *Tephrosia lithosperma (P1)*
- *Euphorbia inappendiculata var. inappendiculata (P2)*
- *Eragrostis crateriformis (P3)*
- *Paspalidium retiglume (P2)*
- *Pentalepis trichodesmoides* subsp. *hispida (P2)*
- *Trianthema* sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023) (P2)
- *Triodia pisoliticola (P3)*
- *Fimbristylis sieberiana (P3)*
- *Solanum albostellatum (P3)*
- *Triodia basitricha (P3)*
- *Ipomoea racemigera* (P2)
- *Livistona alfredii* (P4)

Of the flora species identified in the survey, only one individual priority 2 (P2) species was recorded, *Pentalepis trichodesmoides* subsp. *hispida*. The individual was found within the proposed clearing area on the windrow of an access track. *Pentalepis trichodesmoides* subsp. *hispida* (P2) is a perennial species (WA Herbarium, 1998-), and given the species was recorded at just one location during the survey, suggests that the germination of this taxon is promoted by ground disturbance (Mattiske, 2024).

DBCA (2024a) advised that there are four records of *Pentalepis trichodesmoides* subsp. *hispida* within 50 kilometres from the proposed clearing area, and there are five populations within conservation reserves. Therefore, it is considered that the removal of one individual of *Pentalepis trichodesmoides* subsp. *hispida* is unlikely to significantly impact the conservation of this species (DBCA, 2024a). However, it is noted that the one plant recorded during the survey represents a slight range extension to the north-west of this taxon's previously known range. There is limited information on the fire response of this species and post fire survey in the area the one plant was recorded may provide valuable information on the biology of this poorly known species (DBCA, 2024a). The applicant recognises the importance of this individual and proposed complete avoidance of this individual, inclusive of a 10 metre buffer, during clearing, construction and operational activities (Coterra, 2024a). DWER will reflect this commitment as a management condition on the clearing permit.

Of the remaining potential priority flora species to occur within the proposed clearing area, DBCA (2024a) advised that *Neptunia longipila, Paspalidium retiglume, Euphorbia inappendiculata* var. *inappendiculata, Ipomoea racemigera, Eragrostis crateriformis, Eragrostis crateriformis, Triodia pisoliticola, Triodia basitricha* and *Livistona alfredii* are all known from greater than five locations and occur over a large range. Noting the proposed clearing area is within their known range, the impacts from the proposed clearing are not likely to be significant at the species level (DBCA, 2024a).

*Solanum albostellatum, Trianthema* sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023), *Tephrosia lithosperma,* and *Cladium procerum* are known from five or fewer locations within Western Australia. Should *C. procerum* and *S. albostellatum* occur within the application area, the impacts of the proposed clearing activities on these species are not likely to be significant at the species level but may be locally significant (DBCA, 2024a). However impacts to *T.* sp. Python Pool have the potential to be significant if a large subpopulation occurs and may also be significant if *T.*

*lithosperma* is present. If subsequent survey identifies these species, impacts should be avoided where possible (DBCA, 2024a).

DWER communicated the preliminary findings of the assessment for the original application area, including advice from DBCA, to the applicant. The applicant acknowledged the impacts and subsequently included further mitigations for indirect impacts on the Jinbi (C2 vegetation community) by including a minimum 23 metre buffer around the mapped location. The applicant also included further avoidance of better quality habitat for *Trianthema* sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023) and *Tephrosia lithosperma*, by removing the majority of the C1 vegetation community from the clearing area. The increased buffer around the C2 vegetation community and reduction of the C1 vegetation community from the application area, will reduce the likelihood of direct and indirect impacts to *Trianthema* sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023) and *T. lithosperma*.due to the species being more likely to occur in these habitats. Some of the C1 vegetation community was not able to be removed due to the requirement for transmission lines and access roads to cross over the creek lines. The known location of the *P. trichodesmoides* subsp. *hispida* individual recorded during the field survey has also been removed from the clearing area. It is also understood that since the survey, the site has been impacted by wildfire and as such representative communities and priority flora species may have been disturbed as a result.

Noting the survey only recorded *Pentalepis trichodesmoides* subsp. *hispida*, and no other conservation significant flora species, the proposed clearing is not likely to impact on the conservation status of priority flora species listed above. To eliminate any potential adverse impacts on conservation significant flora that may have arisen as a result of the fire, DWER will require the applicant to conduct pre-clearance flora survey to identify and avoid threatened and priority flora within the C1 vegetation community, where suitable habitat for priority flora is likely to occur..

**Priority Ecological Community**

The vegetation community C2 identified in the survey, was recorded in the centre of the Jinbi project area surrounding a permanent freshwater spring (Jinbi). The community lacks the conservation significant species *Cladium procerum* (P2) and *Fimbristylis sieberiana* (P3), stipulated by DBCA (2024a) as being associated within the Riparian Flora and Plant Communities PEC. However, the combination of water permanence and the presence of six other indicator species meant that the C2 vegetation community is highly likely to represent the Riparian Flora and Plant Communities PEC.

The applicant recognised the significance of the C2 vegetation community for its environmental values (comprise habitat for locally significant flora), cultural heritage significant values and critical habitat value for significant fauna accessing the permanent pool and spring. Given the significance of the vegetation, the applicant excluded this area from the original proposed clearing area.

The greatest threat to the riparian springs and rivers pools relates to potential hydrological change from cumulative impact due to a combination of groundwater drawdown owing to mine dewatering and surface water diversion activities (DBCA, 2024a). The preliminary assessment identified that hydrological changes from clearing adjacent vegetation may result in hydrological changes and increases risks of secondary impacts to the PEC from changes to hydrology.

DWER communicated the preliminary findings of the assessment for the original application area, including advice from DBCA, to the applicant. The applicant subsequently included further mitigations for indirect impacts on the PEC and Jinbi by excluding surrounding native vegetation from the clearing area. This places a variably sized vegetation buffer around the PEC and Jinbi, ranging between approximately 23 metres in the north and south to 100 metres in the east and west.

Noting the exclusion of the PEC with an appropriate buffer, alongside the exclusion of vegetation within creek lines, some of the vegetation remaining may be necessary for the maintenance of the PEC. Implementation of management practices to minimise impacts to hydrology of the area and limitation of degradation from frequent fires and spread of weeds should also be considered (DBCA, 2024a).

**Conclusion**

The native vegetation proposed to be cleared is comprised of vegetation types and flora typical to the region. Based on the above assessment, the proposed clearing is unlikely to significantly impact on priority flora or priority ecological communities. However, the proposed clearing may have indirect impacts on habitat quality through changed hydrology and the introduction and spread of weeds into surrounding vegetation. Management practices seeking to limit hydrological changes and the spread of weeds will help reduce this risk. To eliminate any potential adverse

impacts on conservation significant flora not identified during the flora survey, DWER requires the applicant to conduct pre-clearance flora surveys to identify and avoid threatened and priority flora.

**Conditions**

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

- weed management measures to be implemented to mitigate impacts to adjacent vegetation;
- vegetation management requirements to maintain the riparian vegetation of watercourses connecting to the Jinbi;
- flora management measures to carry out a pre-clearance flora survey to demarcate and avoid the clearing of threatened and priority flora within the clearing footprint; and
- a requirement to revegetate and rehabilitate temporarily cleared areas.

### *3.2.2. Biological values (fauna) - Clearing Principles (a) and (b)*

**Assessment**

A basic fauna assessment was undertaken between 6 and 7 December 2023. The assessment covered the application area and a broader investigation area. The desktop component of the assessment identified a total of 224 vertebrate fauna species, comprising two fish, six frogs, 62 reptiles, 119 birds, 32 native mammals and three introduced mammals (Bamford, 2024). The survey confirmed a minimum of 26 of the expected fauna species were present (one fish, at least two frogs, five reptiles, 16 birds and three native mammals) either by direct observation or from evidence such as tracks, shed skin and scats (Bamford, 2024). The assessment considered the fauna assemblage to be typical of the region and likely to be represented in similar landscapes nearby (Bamford, 2024). The absence of sandplains and lack of complex rocky landscapes meant the assemblage is only moderately rich in a regional context, particularly with regards to reptiles (Bamford, 2024).

Based on the vegetation types present in the area, the fauna assessment identified the four broad fauna habitat types listed in Appendix B.1, of which vegetation and substrate association (VSA) 3 and VSA 4 were considered to provide higher value habitat due to their association with permanent or ephemeral water (Bamford, 2024). The Jinbi (VSA 4) was considered a particularly distinctive feature likely to support many species that would not otherwise be present and therefore would provide locally significant fauna habitat (Bamford, 2024).

Several weeks prior to the field component of the fauna assessment, a wildfire had burnt through the proposed clearing area. It is understood that mammal populations will be low and many birds will have moved out of the area after the fire. Reptile populations may also be low or display low levels of activity until some regeneration occurs. Due to the severely burnt nature of the landscape meaning that fauna assemblages would not be representative of typical conditions, further detailed or targeted surveys are not considered appropriate until after regeneration has occurred.

The primary impact of the proposed clearing is the direct loss of available fauna habitat, however, secondary impacts may potentially occur through changed hydrological conditions, dust emissions during clearing activities, altered fire regimes and potential vehicle fauna strikes.

**Conservation significant fauna**

According to available database information, the conservation significant fauna species listed in Appendix B.4 were recorded within the local area. Noting the findings of biological surveys for the application area (Bamford, 2024; Mattiske, 2024), habitat requirements and the distribution of potentially occurring species, the application area may comprise suitable habitat for the following conservation significant fauna species:

**Birds**

- Grey Falcon, *Falco hypoleucos* (VU)
- Peregrine Falcon, *Falco peregrinus* (OS)
- Wood Sandpiper, *Tringa glareola* (MI)

**Mammals**

- Yirriwardu (Northern Quoll), *Dasyurus hallucatus* (EN)
- Ghost Bat, *Macroderma gigas* (VU)
- Pilbara Leaf-nosed Bat, *Rhinonicteris aurantia* (Pilbara form) (VU)
- Gurdi (Western Pebble-mound Mouse), *Pseudomys chapmani* (P4)
- Northern Short-tailed Mouse, *Leggadina lakedownensis* (P4)

**Reptiles**

- Bargunyji (Pilbara Olive Python), *Liasis olivaceus barroni* (VU)
- Gane's Blind Snake (Pilbara), *Anilios ganei* (P1)
- Lined Soil-crevice Skink (Dampier), *Notoscincus butleri* (P4)

**Invertebrates**

- Pilbara Threadtail, *Nososticta pilbara* (P2)
- Pilbara Dragonfly, *Antipodogomphus hodgkini* (P3)

Of the fauna species identified above, only the Yirriwardu (Northern Quoll) was confirmed through the field survey as present in the application area, due to their scats being found at the Jinbi (VSA 4) and along the ephemeral creek lines (VSA 3).

**Yirriwardu (Northern Quoll) (*Dasyurus hallucatus*)**

There are 265 records of the Yirriwardu (Northern Quoll) and approximately 99% of native vegetation cover remaining in the local area.

Yirriwardu (Northern Quoll) do not have highly specific habitat requirements and are known to occur in a variety of habitats across their range (Department of Natural Resources, Environment, The Arts and Sport (DNREAS), 2010). Daytime den sites provide important shelter and protection from predators and weather, occurring in rocky outcrops, tree hollows, hollow logs, termite mounds and goanna burrows (DNREAS, 2010). The National Recovery Plan for the Northern Quoll (DNREAS, 2010) states that habitat critical to survival is where the species is least exposed to threats, with this broadly being defined as rocky areas and offshore islands. Rocky areas are considered particularly important, as these habitats support denser populations of the Yirriwardu (Northern Quoll) both through greater resource availability and protection from external threats such as feral cats, livestock and fire (DNREAS, 2010).

The fauna assessment (Bamford, 2024) determined that the Jinbi (VSA 4) would provide suitable Yirriwardu (Northern Quoll) denning and breeding habitat owing to the presence of rocky overhangs and boulders combined with access to water. The ephemeral creek lines (VSA 3) associated with the Jinbi would provide preferred dispersal and foraging habitat. The lack of denning resources, shelter and exposure to predators in the VSA 1 and VSA 2 habitats surrounding the Jinbi indicated these areas would provide lower value foraging habitat for the species. No clearing of the VSA 4 habitat is proposed, as the application has been designed to exclude the Jinbi.

Given that Yirriwardu (Northern Quoll) scats were observed at several locations along the creek lines, DBCA advised that it would be reasonable to assume that the species is likely utilising rocky habitat in the area as denning habitat (key denning period November to December) (DBCA, 2024a). Accordingly, it was advised that avoidance of critical habitat such as rocky landscape features, dens, burrows, water holes and riparian vegetation was important to mitigate impacts to the Yirriwardu (Northern Quoll) (DBCA, 2024a).

DWER communicated the preliminary findings of the assessment for the original application area, including advice from DBCA, to the applicant. The applicant subsequently included further mitigations for indirect impacts on the VSA 4 habitat by including a minimum 23 metre buffer around the location of the Jinbi. Further avoidance of critical habitat for the Yirriwardu (Northern Quoll) was also included, with the majority of the VSA 3 habitat removed from the clearing area. Some areas of the VSA 3 habitat were not able to be removed due to the requirement for transmission lines and access roads to cross over the creek lines.

In consideration of the applicant's revised application, which places a buffer area around the Jinbi (VSA 4) and excludes the majority of the VSA 3 habitat, the proposed clearing is not considered to significantly impact habitat critical to the survival of the Yirriwardu (Northern Quoll). While there is some proposed clearing of the VSA 3 habitat, the amount of clearing required for the access tracks and crossings will be minor. The 6 metre width of the access tracks is considered unlikely to be a significant barrier to movement of the species and the creek crossings will contain box culverts that would allow dispersal to continue. Therefore, it is considered that the proposed clearing is unlikely to significantly impact the species. To eliminate any potential adverse impacts on Yirriwardu (Northern Quoll) individuals, DWER will require the applicant to conduct pre-clearance fauna surveys to identify any Yirriwardu (Northern Quoll) dens or burrows and relocate individuals if required, manage excavations to prevent fauna becoming trapped, and conduct the clearing in a directional manner during day-time hours only to provide an escape route for fauna into adjacent vegetation. Conditions will also be placed on the permit that limit the amount of clearing to one hectare within the VSA 3 habitat and require the clearing to be managed so that fauna movement is maintained. Given that there is approximately 98 hectares of VSA 3 mapped habitat remaining in the project area and 9.36 hectares within the revised application area, clearing of up to one hectare is not likely to significantly impact the species.

**Other mammal species**

The Ghost Bat is a carnivorous species with a patchy distribution of isolated populations within the semi-desert Pilbara region and the mesic Kimberley, as well as other locations in the Northern Territory and Queensland (Bat Call WA, 2021a). There is one record of the species located within the local area. The species moves seasonally or

as dictated by weather conditions between a number of roost sites in caves, rock crevices and disused mine adits (Bat Call WA, 2021a). Excluding colonies in large, abandoned mines, Ghost Bats in the Pilbara region are often present either singularly or in small groups of less than 15 (Bat Call WA, 2021a). The species' depends on day roosts found deep underground in temperature-stable caves with chambers and/or cavities that trap humidity (Bat Call WA, 2021a). The Pilbara populations forage on productive plains areas with thin mature woodland over patchy or clumped tussock or hummock grass on sand or stony ground (Bat Call WA, 2021a). The application area does not contain potential roosting habitat due to the exclusion of the Jinbi (VSA 4) from the proposed clearing area. The fauna assessment (Bamford, 2024) noted the wider landscape around the project area consisted of abrupt rocky hills with a high likelihood of caves, therefore it was considered that the species could visit the application area for foraging. As the application area does not include roosting habitat and approximately 99% of the extent of native vegetation remains as a foraging resource within the local area, the proposed clearing is not considered to have a significant impact on habitat critical to the survival of the species.

The Pilbara Leaf-nosed Bat is a slightly divergent form of the Orange Leaf-nosed Bat that occurs only in the Pilbara region. This form is widely distributed throughout the Pilbara, with the exception of the area between Karratha and the Fortescue River, where there are no known permanent diurnal roost sites (Bat Call WA, 2021b). The Pilbara Leaf-nosed Bat forages in a variety of habitats and roosts during the day in the dark areas of caves and underground mines with stable, warm and humid microclimates (Bat Call WA, 2021b). While there are some potential habitat features for the Pilbara Leaf-nosed Bat, the application area is located between Karratha and the Fortescue River, where the bat is not known to occur and there are no known roosting sites. Accordingly, the proposed clearing is not considered to have a significant impact on habitat critical to the survival of the species.

The Gurdi (Western Pebble-mound Mouse) is a Priority 4 species with a distribution through the non-coastal, central and eastern parts of the Pilbara, with large populations recorded in the major national parks of the region (Karijini, Rudall River, Millstream-Chichester and Collier Range) (Burbidge, 2016). There are 14 records of the species located within the local area. The species is found in areas of rocky, hummock grassland with little or no soil and an overstorey of *Acacia* (Burbidge, 2016). Individuals live in groups in burrows below mounds of pebbles, typically on low gravelly and stony rises (Burbidge, 2016). The fauna assessment (Bamford, 2024) considered that some of the application area appeared to be suitable habitat (low, gravelly rises) but no mounds were found, noting that the survey effort did not include targeted searches for the mounds. Given the species is widespread throughout the region and suitable habitat is present, the Gurdi (Western Pebble-mound Mouse) has been assumed to be present in the area, although likely in lower numbers due to the recent wildfires. In consideration of the above, the proposed clearing is unlikely to impact the conservation status of the species due to its wide regional distribution and coverage through the conservation estate.

The Northern Short-tailed Mouse is a Priority 4 species with a discontinuous distribution across northern Australia from the Pilbara in the west to Cape York Peninsula in the east (Aplin *et al.,* 2016). There are 49 records of the species located within the local area. Populations appear to fluctuate dramatically, probably in response to environmental conditions and food availability (Aplin *et al*., 2016). The Northern Short-tailed Mouse is found in areas of open tussock and hummock grassland, acacia shrubland and savanna woodland, on alluvial clay or sandy soils (Aplin *et al*., 2016). The species is nocturnal, sheltering in different burrows during the day and having an average home range of 5.3 hectares (DBCA, 2024b). The fauna assessment (Bamford, 2024) considered that suitable habitat for the species may be present in the application area, associated with heavy soils along the creek lines (VSA 3) and that the species' extreme population fluctuations mean it can be undetectable for long periods when present. Given the species is widespread throughout the region and suitable habitat is present, it has been assumed to be present in the application area, although likely in lower numbers due to the recent wildfires. In consideration of the above and the revised application removing the majority of clearing within VSA 3 habitat, the proposed clearing is unlikely to impact the conservation status of the species.

**Bird species**

The Grey Falcon is an elusive species distributed through central, northern and north-western Australia, with one record of the species located within the local area. The species is associated with arid to semi-arid lowland plains, particularly acacia shrublands crossed by tree-lined watercourses (Department of Agriculture, Water and the Environment (DAWE), 2020). The species also hunts in treeless areas and frequents tussock grassland and open woodland, especially in winter (DAWE, 2020). It preys on a range of fauna, but primarily on other bird species including doves, pigeons, parrots and cockatoos. The Grey Falcon breeds from June to November, typically nesting in the tallest trees along watercourses (DAWE, 2020). The Grey Falcon is expected to be a regular visitor to the area, particularly in the VSA 3 habitat associated with ephemeral creek lines. However, the fauna assessment (Bamford, 2024) notes that the creek lines within the application area lack the type of very large trees which the species is associated with for breeding. Given that the species is highly mobile and the revised application excludes the majority of the VSA 3 habitat, the proposed clearing is considered unlikely to significantly impact the species.

The Peregrine Falcon typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines, and can hunt in a range of habitat types including timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings (Australian Museum, 2021). One record of the species is located within the local area. The Peregrine Falcon is expected to be a regular visitor to the area when hunting for prey. However, the fauna assessment (Bamford, 2024) notes that the application area is generally lacking suitable nesting sites such as tall trees or cliff faces, with only the rocky overhangs associated with the Jinbi (VSA 4) likely to provide suitable nesting habitat. No clearing of the VSA 4 habitat is proposed, as the application has been designed to exclude the Jinbi. Given that the species is highly mobile with a large home range and the application area excludes the Jinbi (VSA 4), the proposed clearing is considered unlikely to significantly impact the species.

The Wood Sandpiper is a migratory species that does not breed in Australia, but during the non-breeding season will occupy well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes. The Jinbi (VSA 4) is considered the only suitable habitat for the species in the project area. Given that no clearing of the VSA 4 habitat is proposed and the revised application has incorporated a buffer around the Jinbi to mitigate indirect impacts to this habitat, the proposed clearing is unlikely to significantly impact the species.

**Bargunyji (Pilbara Olive Python) (*Liasis olivaceus barroni*)**

The Bargunyji (Pilbara Olive Python) is identified as potentially occurring in the area due to the presence of suitable habitat types, water resources and four records of the subspecies being within 50 kilometres. The subspecies prefers deep gorges and water holes in the ranges of the Pilbara region (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2008). While it is usually found in proximity to water, recent findings show the species is present in other habitat types, such as rocky breakaways and raised hill areas during the winter months and with individual home ranges extending over two kilometres (DBCA, 2024a). The Bargunyji (Pilbara Olive Python) utilises water holes to hunt and prey is captured by ambush on animal trails or by striking from a submerged position (DEWHA, 2008).

The fauna assessment determined that the Jinbi (VSA 4) would provide key habitat for the Bargunyji (Pilbara Olive Python) due to the presence of rocky overhangs, permanent water and prey resources also utilising the Jinbi. The ephemeral creek lines (VSA 3) associated with the Jinbi would also provide suitable habitat. No clearing of the VSA 4 habitat is proposed, as the application has been designed to exclude the Jinbi.

DWER communicated the preliminary findings of the assessment for the original application area, including advice from DBCA, to the applicant. The applicant subsequently included further mitigations for indirect impacts on the VSA 4 habitat by including a minimum 23 metre buffer around the location of the Jinbi. Further avoidance of critical habitat for the Bargunyji (Pilbara Olive Python) was also included, with the majority of the VSA 3 habitat removed from the clearing area. Some areas of the VSA 3 habitat were not able to be removed due to the requirement for transmission lines and access roads to cross over the creek lines.

In consideration of the applicant's revised application, which places a buffer area around the Jinbi (VSA 4) and excludes the majority of the VSA 3 habitat, the proposed clearing is not considered to significantly impact habitat critical to the survival of the Bargunyji (Pilbara Olive Python). While there is some proposed clearing of the VSA 3 habitat, the amount of clearing required for the access tracks and crossings will be minor (0.01 percent of total mapped habitat in project area). The 6 metre width of the access tracks is considered unlikely to be a significant barrier to movement of the species and the creek crossings will contain box culverts large enough for the species to pass through. Therefore, it is considered that the proposed clearing is unlikely to significantly impact the subspecies. Conditions will be placed that limit the amount of clearing within the VSA 3 habitat and require the clearing to be managed so that fauna movement is maintained.

**Other reptile species**

Gane's Blind Snake is a poorly known burrowing species with a patchy and poorly documented distribution between Newman, Millstream and Pannawonica (Wilson and Swan, 2020). The species is rarely recorded, but based on its limited records is believed to be widespread within the region. The species typically inhabits topographically rugged areas with steep rock containing numerous crevices interspersed by patches of skeletal soils with spinifex grassland, with a preference for moist soils of gorges and gullies (Doughty *et al.*, 2011). The Jinbi (VSA 4) and ephemeral creek lines (VSA 3) are considered to provide suitable habitat for the species due to the presence of rocky terrain and moist soils. Given that the species is believed to be widespread in the region, there is no proposed clearing of the VSA 4 habitat and the revised application excludes the majority of the VSA 3 habitat, the proposed clearing is considered unlikely to significantly impact the species.

The Lined Soil-crevice Skink is a Priority 4 species with a distribution encompassing most of the western Pilbara from Dampier Peninsula, Pannawonica and Karijini National Park. There are 32 records of the species within the local area and multiple records within the wider regional extent. The species is associated with spinifex-dominated areas

near creek and river margins where it forages in leaf litter and feeds on invertebrates (Wilson and Swan, 2020). The Lined Soil-crevice Skink is considered likely to be present in the application area within VSA 3 habitat and parts of the VSA 2 habitat located closer to drainage lines. Given that the species appears widespread, the revised application excludes the majority of the VSA 3 habitat and approximately 99% of native vegetation remains in the local area, the proposed clearing is considered unlikely to significantly impact the species.

**Invertebrate species**

The Pilbara Threadtail is a poorly-known species of damselfly known only from the groundwater fed permanent streams and pools of the Fortescue River (Dow, 2017). There are six records of the species within the local area, all located on the Fortescue River within either the Millstream Chichester National Park or its immediate surrounds. Based on the recorded locations of the species, it has an estimated extent of occurrence of 3,316 km², however, the estimated extent of suitable habitat for the species is only 199 km² (Dow, 2017). The fauna assessment (Bamford, 2024) considered that the Jinbi (VSA 4) would provide suitable habitat for the species but noted that the only recorded locations of the species are nearly 40 kilometres south of the application area. Given the above and noting that the application area is part of the Maitland River System rather than the Fortescue River, the species is considered unlikely to be impacted by the proposed clearing.

The Pilbara Dragonfly is a poorly-known species known with certainty only from the streams, rivers and riverine pools (Department of Environment, Climate Change and Water (DECCW), 2009) of the Fortescue River system between Millstream and the coast, with almost all records from the Millstream Creek and its vicinity (Dow, 2019). Based on the recorded locations of the species, it has an estimated extent of occurrence of 13,576 km², however, the estimated extent of suitable habitat for the species is only 1,711 km², and likely considerably less due to its reliance on streams for breeding (Dow, 2019). The fauna assessment (Bamford, 2024) considered that the Jinbi (VSA 4) and ephemeral creek lines (VSA 3) would provide suitable habitat for the species but noted that the recorded locations of the species are nearly 40 kilometres south of the application area. Given the above and noting that the application area is part of the Maitland River System rather than the Fortescue River, the species is considered unlikely to be impacted by the proposed clearing.

**Short Range Endemic species**

The applicant commissioned a desktop assessment (Bennelongia, 2024) to understand the potential for Short Range Endemic (SRE) fauna to be present within the application area. A total of 134 invertebrate species were recorded within the assessment area, with three considered to be confirmed SRE species and 65 considered to be potential SRE species (Bennelongia, 2024). None of the records were identified to be conservation significant species at the state or federal level (Coterra, 2024a).

Habitats suitable for SREs tend to be isolated areas that are protected from extreme weather and that retain moisture throughout drier months of the year, particularly where landforms provide a combination of conducive elements such as soft sandy soils, tree coverage and litter, rocky scree and plains, drainage lines, and gullies and ridges (Bennelongia, 2024). Based on the habitats described from previous site visits (Bamford, 2024; Mattiske, 2024) the desktop assessment considered suitable SRE habitats were likely to be present (Bennelongia, 2024). This was further interpreted as the Jinbi (VSA 4) and ephemeral creek lines (VSA 3) providing the most suitable habitat for SRE species due to suitable availability of cover and moisture (Coterra, 2024a).

In consideration of the above and the revised application placing a buffer around the Jinbi (VSA 4), as well as removing the majority of the VSA 3 habitat from the clearing area, the proposed clearing is unlikely to significantly impact any SRE species known from the area.

**Conclusion**

For the reasons set out above, significant fauna habitat in the Jinbi Project Area is associated with water availability and rocky landscape features. As such the key fauna habitat in the area is centred around the Jinbi and ephemeral creek lines. The Jinbi has not been included in the application area and it is understood that the associated ephemeral creeklines are potentially unsuitable for solar facility infrastructure and will be avoided where possible, resulting in a limited impact to significant fauna habitat in the area.

Recent wildfires have potentially impacted the suitability of the local area for foraging and dispersal by fauna due to a large reduction in vegetation. Recovery of the broader landscape around the Jinbi and creeklines will coincide with cyclonic rainfall and in the interim period the vegetation structure will be drastically altered which may result in a reduction in fauna presence in the project area.

Based on the above assessment, the proposed clearing will not result in significant impacts to conservation significant fauna. However, the proposed clearing may impact individuals of the fauna species utilising the area at the time of clearing. Pre-clearance surveys, relocations and management of how the clearing is undertaken will help minimise these risks.

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

- Clearing of creek line habitat (VSA 3) will be limited to a total of one hectare and require fauna movement to be maintained;
- Avoidance of rocky landscape features, dens and burrows for significant fauna;
- Slow, directional clearing to allow fauna to move into adjacent vegetation;
- Active relocation actions to be carried out prior to and during clearing/ground disturbance activities, such as trapping and burrow/den excavation;
- Relocation activities to be undertaken by suitably skilled and experienced persons; and
- Weed management measures to be implemented to mitigate impacts to adjacent vegetation.

### *3.2.3. Biological values (riparian vegetation) – Clearing Principle (f)*

**Assessment**

The *Reconnaissance Flora & Vegetation Assessment* (Mattiske, 2024) identified vegetation communities C1 and C2 that comprise of riparian vegetation. The two communities are described as:

- C1: *Eucalyptus victrix* low open woodland over *Melaleuca linophylla, Melaleuca glomerata, Acacia bivenosa* mid sparse shrubland over *Stemodia grossa, Cyperus vaginatus,* low sparse shrubland in ephemeral drainage channels; and
- C2: *Melaleuca argentea*, *Eucalyptus* ?*camaldulensis* mid woodland over *Acacia ampliceps*, *Acacia coriacea* subsp. *pendens*, *Acacia pyrifolia* var. *pyrifolia* mid open shrubland over *Typha domingensis*, *Cyperus vaginatus*, *Schoenoplectus subulatus* open sedgeland surrounding permanent pools.

These vegetation communities are characteristic of permanent and ephemeral water sources and are strongly associated with local fauna dispersal and utilisation along with vegetated channels in upland areas. A majority of priority species if present at the site are believed to be associated with areas of drainage and permanent water and as such will likely be found within these vegetation communities.

The applicant recognised the significance of the C2 vegetation community for its environmental values (comprise habitat for locally significant flora), cultural heritage significant values and critical habitat value for significant fauna accessing the permanent pool and spring. Given the significance of the vegetation, the applicant excluded this area from the original proposed clearing area.

DWER communicated the preliminary findings of the assessment for the original application area, including advice from DBCA, to the applicant. The applicant subsequently included further mitigations for indirect impacts on the C2 vegetation community by including a minimum 23 metre buffer around the location of the Jinbi, to ensure that there are no hydrological changes from surface water diversion activities. Further avoidance of riparian vegetation was also included, with the majority of the C1 vegetation community removed from the clearing area. Some of the C1 vegetation community was not able to be removed due to the requirement for transmission lines and access roads to cross over the creek lines.

In consideration of potential indirect impacts arising from erosion, the design of the facility will seek to utilise level, upland areas for the placement of solar panels. As such it is deemed unlikely that vegetated incised channels will be cleared or infilled and lead to sedimentation in drainage areas. Where necessary, alteration of these areas will consider options to reduce the risk of erosion and sedimentation.

For upland areas immediately adjacent to riparian vegetation, such as those in proximity to the Jinbi, a buffer area with a minimum 23 metre distance will be implemented to limit erosion and sedimentation flowing into the system.

Other potential indirect impacts include the introduction of weeds, pathogens and altered fire regimes which will require management by the applicant.

**Conclusion**
Based on the above assessment, the proposed clearing will impact vegetation associated with a watercourse.

For the reasons set out above, it is considered that the impacts of the proposed clearing on riparian vegetation can be managed by the proposed exclusion of creek line vegetation, the increased buffer area around the permanent water source and management practices to control erosion and sedimentation due to clearing.

**Conditions**

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

- No clearing will be authorised within the Jinbi and within a minimum 23 metre buffer around the spring; and
- Clearing of riparian vegetation in creek lines will be limited to one hectare.

## 3.3. Relevant planning instruments and other matters

The application was advertised on DWER's website on 3 February 2024 for a 21-day submission period. No public submissions were received.

**Background**

YEC is a partnership between Yindjibarndi Aboriginal Corporation (YAC) and ACEN Corporation, a renewable energy company. YEC was formed to develop, own, and operate large scale renewable energy projects on Yindjibarndi Ngurra in Western Australia's Pilbara Region. The Yindjibarndi people will receive long term revenue from the Jinbi Solar Facility (Coterra, 2024a).

The renewable energy generated by the Jinbi Solar Facility is for the exclusive use of Rio Tinto, with whom YEC has signed a memorandum of understanding. The Jinbi Solar Facility will negate carbon dioxide emissions which would otherwise have been generated through the burning of fossil fuels, and therefore represents action towards meeting the State and Federal Government's targets of achieving net zero emissions by 2050 (Coterra, 2024a).

**Planning and development**

Under the Shire of Ashburton's Local Planning Scheme No. 7, the proposed clearing area is zoned *'Public Purposes – Water and Drainage'* and *'Other Purposes Infrastructure'*. A renewable energy facility is an accepted land use under these two categories. The Shire of Ashburton advised DWER that they did not raise any objections to the proposed clearing and would have a statutory timeframe of 60 to 90 days to determine the related development application once submitted (Shire of Ashburton, 2024).

The applicant has advised that a development approval is required for the use and development of the land. However, prior to submitting a development approval application, an option to lease under section 88 of the *Land Administration Act 1997* (LA Act) needs to be in place. It is understood that a draft access arrangement document has been exchanged between the applicant and Rio Tinto, which pending agreement, would allow the option to lease to be determined. It is understood that the Jinbi Solar Facility has been developed and integrated with concurrent activities that will be completed by Rio Tinto.

The applicant has advised that the timeframe and steps to obtain the development approval is as follows:

1. Reference designs for the project are completed and presented to Rio Tinto.
2. A clearing boundary has been established, including cultural avoidance areas.
3. Development Approval drawings are completed which have optimised the reference design, consolidated the development within the endorsed boundaries and include provision for bushfire management.
4. The applicant have presented the project to the Shire of Ashburton and will meet with the Department of Planning, Lands and Heritage in late April to request landowner consent for the development application.
5. The applicant intends to submit a development application to the Shire of Ashburton in May 2024.
6. The development approval will be determined by the Regional Development Approval Panel (RDAP) following a Responsible Authority Report (RAR) from the Shire.
7. The applicant considers they will have a well-developed application and have also completed a rigorous pre-submission engagement process. Accordingly, they anticipate being granted development approval around mid-August 2024.

The applicant has requested that clearing permit CPS 10494/1 be granted prior to obtaining development approval for the following reasons:

1. A clearly established and agreed clearing boundary will enable the development team to finalise the workable solar panel array arrangement, whilst managing environmental impacts. The workable arrangement of the arrays is required for the drawing sets submitted with the development application.
2. YEC intend to tender and be construction ready upon reaching financial investment decision in Q4 2024. The tender package will need to include all compliance requirements, such as the requirements of the clearing permit.

3. YEC have a range of requirements to achieve internal financial investment decision and thereafter financial close. These include environmental approval, development approval, indigenous land use agreement, preferred contractor and access agreements with mining tenement holders. The grant of clearing permit is a critical item to satisfy the conditions precedent to financial investment decision.

It is considered that there is a very low risk of the project not proceeding, given the significant State and Commonwealth initiative to decarbonisation of Western Australian industries. There are not expected to be any issues associated with the granting of a development approval, given that the Shire has indicated that it has no objection to the issue of a clearing permit (Shire of Ashburton, 2024). The applicant and Rio Tinto have also signed a memorandum of understanding (MOU) to explore opportunities to collaborate on renewable energy projects on Yindjibarndi country (Rio Tinto, 2023). Accordingly, it is not expected that there will be substantial issues that would prevent the option to lease under s.88 of the LA Act being determined.

In addition to the above, a wind erosion management condition will be placed on the clearing permit that will also effectively limit the applicant's ability to clear native vegetation prior to obtaining development approval. The condition would restrict the clearing of native vegetation to occur within three months prior to construction commencing.

**Water licensing**

The following authorisations under the *Rights in Water and Irrigation Act 1914* (RIWI Act) may also be required for the proposed land use (DWER, 2024a):

- Licence to abstract water under the RIWI Act
- Permit to interfere with the bed and banks of a watercourse under the RIWI Act.

It is understood that the applicant is continuing to finalise the design and location of watercourse crossings through the detailed design of the solar facility. Accordingly, applications for bed and banks permits have not been made and will occur at a later date. It is the permit holder's responsibility to comply with the RIWI Act and ensure that permits to interfere with the bed and banks of a watercourse are obtained prior to clearing and constructing access tracks in the watercourses.

The department's factsheet *Supplementary information for permit applications to interfere with bed or banks of watercourses* (Department of Water, 2012), lists eight key principles to be demonstrated by an application for a bed and banks permit. Where applications can demonstrate adherence to the key principles and manage potential impacts on watercourses, permits are more likely to be granted (DWER, 2024b).

Based on the revised application area, avoidance and mitigation measures proposed by the applicant and the drainage, watercourse and wind erosion management conditions placed on the clearing permit, it is considered low risk that the applicant would be unable to obtain the bed and banks permits necessary to proceed with the project. The clearing permit conditions will also have the effect of limiting the applicant's ability to clear native vegetation prior to obtaining the bed and banks permit, as the clearing must be undertaken no more than three months prior to construction.

**Other approvals**

Several Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process. The applicant is continuing to undertake further cultural and heritage surveys and will continue to work with the Yindjibarndi community to recognise and respect areas of cultural and heritage significance.

## End

# Appendix A. Additional information provided by applicant

| Information | Description |
|---|---|
| Post survey likelihood assessment (Coterra, 2024b) | The applicant provided further information on post survey likelihood of conservation significant flora within the application area. This further information assisted the assessment and the advice from DBCA (2024a). |
| Revised application area | After discussions between DWER and the applicant regarding preliminary impacts from the clearing, the applicant proposed to revise the clearing footprint to increase the buffer around the Jinbi spring area (vegetation type C2) and remove areas of riparian vegetation associated with creek lines (vegetation type C1).<br><br>Vegetation types C1 and C2 were likely to contain suitable habitat for conservation significant fauna and flora. The applicant's intention was to avoid, reduce and mitigate impacts by removing these areas from the clearing footprint. However, due to the requirement for access tracks and creek crossings, the applicant was unable to fully avoid clearing in these areas.<br><br>The application area was revised from 600 hectares of clearing within a 750.35 hectare footprint, to 600 hectares within a 719.17 hectare footprint (YEC, 2024b). |
| Further revised application area and clearing area | After more discussions between DWER and the applicant regarding the revised application area, the applicant proposed to further revise the footprint to remove more areas of riparian vegetation associated with creek lines (vegetation type C1).<br><br>The application area was revised to 527.21 hectares of native vegetation clearing, with 10.36 hectares comprising vegetation type C1. The applicant was unable to further refine the final location and size of the clearing required in these areas, due to the detailed design elements of the solar facility still being in progress (YEC, 2024d and 2024e).<br><br>The actual size of the clearing required for the crossings is expected to be much lower than 10.36 hectares. The applicant has indicated that preliminary design requirements of the access roads will be 6 metres wide for bushfire hazard mitigation, with the area required for creek crossings being approximately 15.5 metres wide and 20 metres long. |
| Comments on draft permit conditions | The applicant provided comments on the draft permit conditions. These comments were considered in the finalisation of the permit (YEC, 2024c). |

# Appendix B. Site characteristics

## B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to the department at the time of the assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

| 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. It is within the Yindjibarndi Native Title Determination Area, located within the northern Pilbara region of Western Australia. The local area is highly vegetated and includes the Millstream Chichester National Park. |

| Characteristic | Details |
|---|---|
| | Aerial imagery indicates the local area (50 kilometre radius from the boundary of the area proposed to be cleared) retains approximately more than 95 percent of the original native vegetation cover. |
| Ecological linkage | The proposed clearing area is not within any mapped ecological linkages, rather a large continuous remnant of native vegetation. |
| Conservation areas | The proposed clearing area is located adjacent to the Millstream Chichester National Park. |
| Vegetation description | A reconnaissance flora and vegetation assessment (Mattiske, 2024) indicates the vegetation within the proposed clearing area mainly consists of *Triodia* grasslands with emergent *Corymbia* and *Acacia* shrublands on either granitic or sandstone derived substrates. The full survey descriptions and maps are available in Appendix E.<br><br>This is consistent with the mapped vegetation type(s):<br>• Beard 93: Hummock grasslands, shrub steppe; kanji over soft spinifex (Shepherd *et al*., 2001); and<br>• Beard 587: Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana*/Hummock grasslands, shrub-steppe; kanji over *Triodia pungens* (Shepherd *et al*., 2001)<br><br>The mapped vegetation types retain approximately 99 per cent of the original extent (Government of Western Australia, 2019). |
| Vegetation condition | A reconnaissance flora and vegetation assessment indicate the vegetation within the proposed clearing area is in Excellent to Very Good (Trudgen, 1991 or 1988) condition.<br><br>The full Trudgen (1991) condition rating scale is provided in Appendix D. The full survey descriptions and mapping are available in Appendix E. |
| Climate and landform | The local area climate is described as arid-tropical with summer rain, receiving 250-300 mm annually (Beard, 1990). The occurrence of cyclones between November and April drives rainfall variability and results in the Pilbara receiving more rainfall then surrounding regions (Beard, 1990; Mattiske, 2024).<br><br>The application area encompasses rocky basaltic hills to undulating granitic plains with a major watercourse in the centre starting at a spring, and a second major watercourse in the west, with both running north and uniting just outside the northern boundary of the application area. |
| Soil description | The soil is mapped as:<br>• 289Mc: Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands;<br>• 289Cp: Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low acacia shrublands or hard spinifex grasslands with scattered shrubs; and<br>• 289Bo: Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs.<br><br>The reconnaissance flora and vegetation assessment (Mattiske, 2024) observed the soil within the Jinbi Project Area to be mostly granite and sandstone-derived. |
| Land degradation risk | The mapped soil type has a low risk of the various forms of land degradation risk.<br><br>However, given the size of the clearing and the types soils (loam and sand) present within the application area the clearing may result in increased wind erosion and impact surface water flow. |
| Waterbodies | The desktop assessment and aerial imagery indicated that there are five non-perennial watercourses and multiple minor drainage lines that transect the area proposed to be cleared. |

| Characteristic | Details |
|---|---|
| | The proposed clearing area is within the Maitland River Hydrographic catchment. |
| Hydrogeography | The proposed clearing area is within the Pilbara Groundwater Area and Pilbara Surface Water Area, proclaimed under the RIWI Act.<br><br>The mapped groundwater salinity is 500-1000 milligrams per litre total dissolved solids which is described as fresh water. |
| Flora | According to available databases, there are 28 conservation significant flora species recorded within the local area. The closest recorded species is *Neptunia longipila* which is a Priority 2 species that was recorded 17.8 km from the proposed clearing area.<br><br>The reconnaissance flora and vegetation assessment (Mattiske, 2024) recorded one Priority 2 flora, *Pentalepis trichodesmoides* subsp. *hispida*, within the proposed clearing area. |
| Ecological communities | There are four priority ecological communities (PEC) recorded in the local area, with the nearest record being 13.34 kilometres from the proposed clearing area.<br><br>Additionally, the reconnaissance flora and vegetation assessment (Mattiske, 2024) recorded a mid-woodland over mid open shrubland and sedgeland vegetation community surrounding permanent pools (C2), that is considered to represent the Riparian flora and plant communities of springs and river pools with high water permanence of the Pilbara Region Priority 2 PEC. |
| Fauna | There are records of 28 fauna of conservation significance within the local area, with the closest record being 7.36 km from the proposed clearing area.<br><br>The fauna assessment (Bamford, 2024) identified the following key species of conservation significance as being likely residents to the area due to the types of habitats observed during the survey:<br>• Bargunyji (Pilbara Olive Python) (*Liaisis olivaceaus* barroni)<br>• Yirriwardu (Northern Quoll) (*Dasyurus hallucatus*)<br><br>However, only physical evidence (scats) for the Yirriwardu (Northern Quoll) was found during the survey. |
| Fauna habitat | A level 1 fauna assessment (Bamford, 2024) describes four fauna habitat types within the proposed clearing area:<br>• VSA 1: Acacia Open Shrubland over Spinifex Hummock Grassland on undulating rocky hills. Shallow loam soil and very rocky.<br>• VSA 2: Very Open Low Woodland to scattered trees over Acacia Open Shrubland and Spinifex Hummock Grassland with occasional acacia thickets and mixed grasses close to drainage lines. Loam soil, occasionally rocky, becoming sandy close to drainage lines.<br>• VSA 3: Ephemeral drainage lines crossing VSA 2 with patches of E*ucalyptus victrix* Open Woodland, Melaleuca and Acacia Thickets to Open Shrubland, and areas of Sedgeland. Granite sheets often exposed and soils sandy in watercourse but sandy-loam to loam adjacent.<br>• VSA 4: Permanent and near-permanent pools with associated riparian vegetation of Cadjeput (*Melaleuca argentea*) and Wirrangga (River Gum) (*Eucalyptus ?camaldulensis*) Woodland over dense rushes and sedges, including beds of Bulrush (*Typha domingensis*). Acacia Shrublands and Thickets adjacent. Pools lie within a distinctive rocky gorge.<br>The full survey descriptions and maps are available in Appendix E. |

## B.2. Vegetation extent

| | Pre-European extent (ha) | Current extent (ha) | Extent remaining (%) | Current extent in all DBCA managed land (ha) | Current proportion (%) of pre-European extent in all DBCA managed land |
|---|---|---|---|---|---|
| IBRA bioregion* | | | | | |
| Pilbara | 17,808,657 | 17,731,764.9 | 99.57 | 10.16 | 10.12 |
| Vegetation association | | | | | |
| Beard vegetation association 93* | 3,042,114.3 | 3,038,471.7 | 99.88 | 1.96 | 1.96 |
| Beard vegetation association 587* | 580,728.6 | 580,697 | 99.99 | 21.24 | 21.24 |
| Local area | | | | | |
| 50 km radius | 848,628.85 | 848,148.03 | 99.94 | - | - |

*Government of Western Australia (2019a)

## B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

| Species name | Conservation status | Suitable habitat features ? [Y/N] | Suitable vegetation type? [Y/N] | Suitable soil type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) |
|---|---|---|---|---|---|---|
| *Cladium procerum* | P2 | Y | Y | N | 35.2 | 3 |
| *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479) | P3 | N | N | N | 22 | 5 |
| *Eragrostis crateriformis* | P3 | Y | Y | N | 21.5 | 3 |
| *Eriochloa fatmensis* | P3 | Y | Y | N | 33.2 | 1 |
| *Euphorbia australis* var. *glabra* | P3 | N | Y | N | 43.7 | 2 |
| *Euphorbia inappendiculata* var. *inappendiculata* | P2 | Y | Y | N | 46.3 | 8 |
| *Euphorbia stevenii* | P3 | N | N | N | 20.7 | 5 |
| *Fimbristylis sieberiana* | P3 | Y | Y | N | 38.4 | 10 |
| *Glycine falcata* | P3 | N | Y | N | 28.2 | 5 |
| *Gomphrena cucullata* | P3 | N | Y | N | 41.8 | 1 |
| *Goodenia obscurata* | P3 | Y | Y | N | 46.8 | 3 |
| *Ipomoea racemigera* | P2 | Y | Y | N | 41.3 | 1 |
| *Livistona alfredii* | P4 | Y | Y | N | 37.5 | 1 |
| *Neptunia longipila* | P2 | Y | Y | N | 17.8 | 5 |
| *Owenia acidula* | P3 | N | N | N | 38.2 | 30 |
| *Paspalidium retiglume* | P2 | Y | Y | N | 24 | 3 |
| *Pentalepis trichodesmoides* subsp. *hispida* | P2 | Y | Y | N | 47.7 | 2 |
| *Rhynchosia bungarensis* | P4 | Y | Y | N | 46 | 5 |
| *Solanum albostellatum* | P3 | Y | Y | N | 43.1 | 6 |
| *Swainsona thompsoniana* | P3 | N | N | N | 37.5 | 1 |
| *Tephrosia lithosperma* | P1 | Y | Y | Y | | |
| *Terminalia supranitifolia* | P3 | Y | Y | N | 24.3 | 4 |
| *Teucrium pilbaranum* | P2 | N | Y | N | 42.2 | 11 |

| Species name | Conservation status | Suitable habitat features ? [Y/N] | Suitable vegetation type? [Y/N] | Suitable soil type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) |
|---|---|---|---|---|---|---|
| *Themeda sp.* Hamersley Station (M.E. Trudgen 11431) | P3 | N | N | N | 41.3 | 5 |
| *Trianthema* sp. Python Pool (G.R. Guerin & M.E. Trudgen GG 1023) | P2 | Y | Y | N | 32.9 | 1 |
| *Triodia basitricha* | P3 | Y | Y | N | 48 | 5 |
| *Triodia pisoliticola* | P3 | Y | Y | N | 35.1 | 3 |
| *Vigna triodiophila* | P3 | N | Y | N | 24.2 | 1 |

## B.4. Fauna analysis table

| Species name | Conservation status | Suitable habitat features? [Y/N] | Suitable vegetation type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) |
|---|---|---|---|---|---|
| **Birds** | | | | | |
| *Actitis hypoleucos* | MI | N | Y | 26.88 | 5 |
| *Arenaria interpres* | MI | N | N | 7.36 | 1 |
| *Calidris acuminata* | MI | N | N | 30.76 | 1 |
| *Calidris ruficollis* | MI | N | N | 30.76 | 1 |
| *Chlidonias leucopterus* | MI | N | N | 40.31 | 1 |
| *Falco hypoleucos* | VU | Y | Y | 32.46 | 1 |
| *Falco peregrinus* | OS | Y | Y | 49.39 | 1 |
| *Gelochelidon nilotica* | MI | N | N | 25.31 | 1 |
| *Glareola maldivarum* | MI | N | Y | 16.36 | 3 |
| *Hydroprogne caspia* | MI | N | N | 25.32 | 12 |
| *Pandion haliaetus* | MI | N | N | 48.44 | 5 |
| *Rostratula australis* | EN | N | N | 8.43 | 2 |
| *Tringa glareola* | MI | Y | Y | 29.88 | 3 |
| *Tringa nebularia* | MI | N | N | 40.31 | 3 |
| *Tringa stagnatilis* | MI | N | N | 49.18 | 1 |
| **Mammals** | | | | | |
| *Dasyurus hallucatus* | EN | Y | Y | 19.83 | 265 |
| *Leggadina lakedownensis* | P4 | Y | Y | 16.61 | 49 |
| *Macroderma gigas* | VU | Y | Y | 38.23 | 1 |
| *Pseudomys chapmani* | P4 | Y | Y | 16.61 | 14 |
| *Rhinonicteris aurantia* (Pilbara form) | VU | N | Y | 38.37 | 2 |
| **Reptiles** | | | | | |
| *Anilios ganei* | P1 | Y | Y | 37.49 | 1 |
| *Lerista quadrivincula* | P1 | N | N | 28.16 | 2 |
| *Liasis olivaceus barroni* | VU | Y | Y | 38.23 | 4 |
| *Notoscincus butleri* | P4 | Y | Y | 12.95 | 32 |
| **Invertebrates** | | | | | |
| *Antipodogomphus hodgkini* | P3 | Y | Y | 37.05 | 2 |
| *Nososticta pilbara* | P2 | Y | Y | 35.19 | 6 |

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

### B.5. Ecological community analysis table

| Community name | Conservation status | Suitable habitat features? [Y/N] | Suitable vegetation type? [Y/N] | Suitable soil type? [Y/N] | Distance of closest record to application area (km) | Number of known records (total) | Are surveys adequate to identify? [Y, N, N/A] |
|---|---|---|---|---|---|---|---|
| Four plant assemblages of the Wona Land System (previously 'Cracking clays of the Chichester and Mungaroona Range') | P1 | N | N | N | 13.34 | 42 | Y |
| Horseflat Land System of the Roebourne Plains | P3 | N | N | N | 17.95 | 33 | Y |
| Kanjenjie Land System | P3 | N | N | N | 35.78 | 10 | Y |
| Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (Roebourne Plains gilgai grasslands) | P1 | N | N | N | 41.08 | 13 | Y |
| Riparian flora and plant communities of springs and river pools with high water permanence of the Pilbara Region | P2 | Y | Y | Y | Recorded during field survey | No database record within 50 km | Y |

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

## Appendix C. Assessment against the clearing principles

| Assessment against the clearing principles | Variance level | Is further consideration required? |
|---|---|---|
| **Environmental value: biological values** | | |
| Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."*<br>Assessment:<br>The area proposed to be cleared is comprised of vegetation types, flora taxa and fauna assemblages typical to the region. However, it may contain locally or regionally significant flora and fauna habitat. | May be at variance | Yes<br>Refer to Section 3.2.1 and 3.2.2, above. |
| Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."*<br>Assessment:<br>The area proposed to be cleared contains dispersal and foraging habitat for conservation significant fauna in the local area. Part of the vegetation proposed to be cleared may form a dispersal route for fauna utilising the permanent pool (Jinbi). | At variance | Yes<br>Refer to Section 3.2.2, above. |
| Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."*<br>Assessment:<br>Based on the known database records from the local area, field survey results, habitat requirements and distribution of potential threatened flora for the region, the area proposed to be cleared is unlikely to contain habitat for threatened flora. | Not likely to be at variance | No |
| Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."*<br>Assessment: | Not likely to be at variance | No |

| Assessment against the clearing principles | Variance level | Is further consideration required? |
|---|---|---|
| The area proposed to be cleared does not contain characteristic species or assemblages that can indicate a threatened ecological community with a potential to occur in the region. There are also no records of any known threatened ecological communities within the local area (50 km of the application area). | | |
| **Environmental value: significant remnant vegetation and conservation areas** | | |
| Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."*<br>Assessment:<br>The extent of the mapped vegetation types and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area. | Not likely to be at variance | No |
| Principle (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."*<br>Assessment:<br>While the Millstream Chichester National Park is located only 250 m to the east, the application area is down gradient of the park for surface water flows and large areas of intact native vegetation remain in the vicinity of the National Park boundary. Accordingly, the proposed clearing is not likely to have an impact on the environmental values of adjacent or nearby conservation areas. | Not likely to be at variance | No |
| **Environmental value: land and water resources** | | |
| Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."*<br>Assessment:<br>Five watercourses and a number of minor drainage lines are recorded within the application area. Accordingly, the proposed clearing is likely to impact an environment associated with a watercourse.<br>Noting that a majority of the watercourse vegetation has been removed from the revised application area, the proposed clearing is unlikely to impact surface or ground water quality. A condition has been placed on the permit to minimise clearing of mapped watercourse vegetation. | At variance | Yes<br>*Refer to Section 3.2.3, above.* |
| Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."*<br>Assessment:<br>The mapped soils are considered a risk to the various forms of land degradation. Noting the location of the application area and the size of the proposed clearing, the proposed clearing may have an appreciable impact on land degradation.. A condition has been placed on the permit to manage the risk of erosion leading to land degradation. | May be at variance | No |
| Principle (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."*<br>Assessment: | Not likely to be at variance | No |

| Assessment against the clearing principles | Variance level | Is further consideration required? |
|---|---|---|
| The Harding Dam Catchment Public Drinking Water Source Protection Area is located 750 m to the east, however the application area is down hydraulic gradient of the PDWSA with surface water draining away towards the north and northwest.<br><br>Noting that vegetation within a buffer area around the Jinbi has been removed from the revised application area, the proposed clearing is unlikely to impact surface or ground water quality. | | |
| Principle (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."*<br><br>Assessment:<br><br>The mapped soils, topographic contours, flood plain and flood risk mapping in the area does not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding. | Not likely to be at variance | No |

## Appendix D. 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 Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

**Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)**

| Condition | Description |
|---|---|
| Excellent | Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement. |
| Very good | Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks. |
| Good | More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds. |
| Poor | Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds. |
| Very poor | Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species. |
| Completely degraded | Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs. |

## Appendix E. Biological survey information excerpts and photographs of the vegetation (Bamford, 2024; Mattiske, 2024)

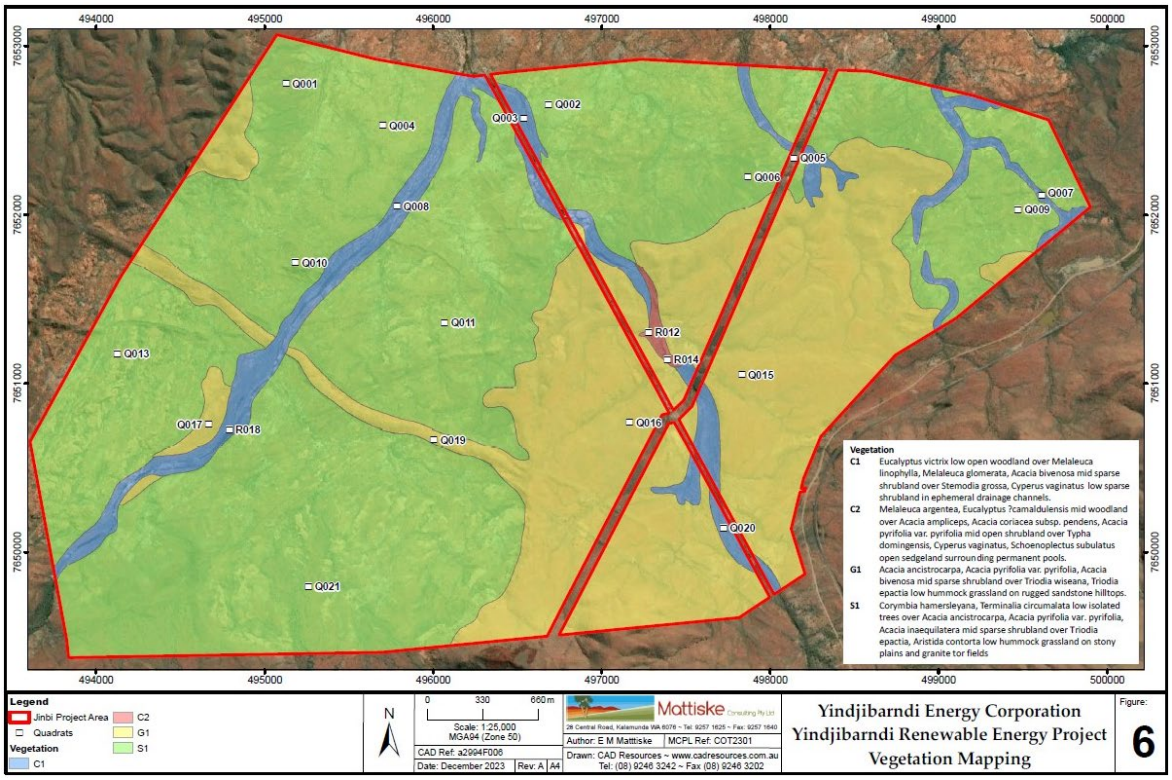


**Figure 3: The mapped vegetation communities in the survey area**

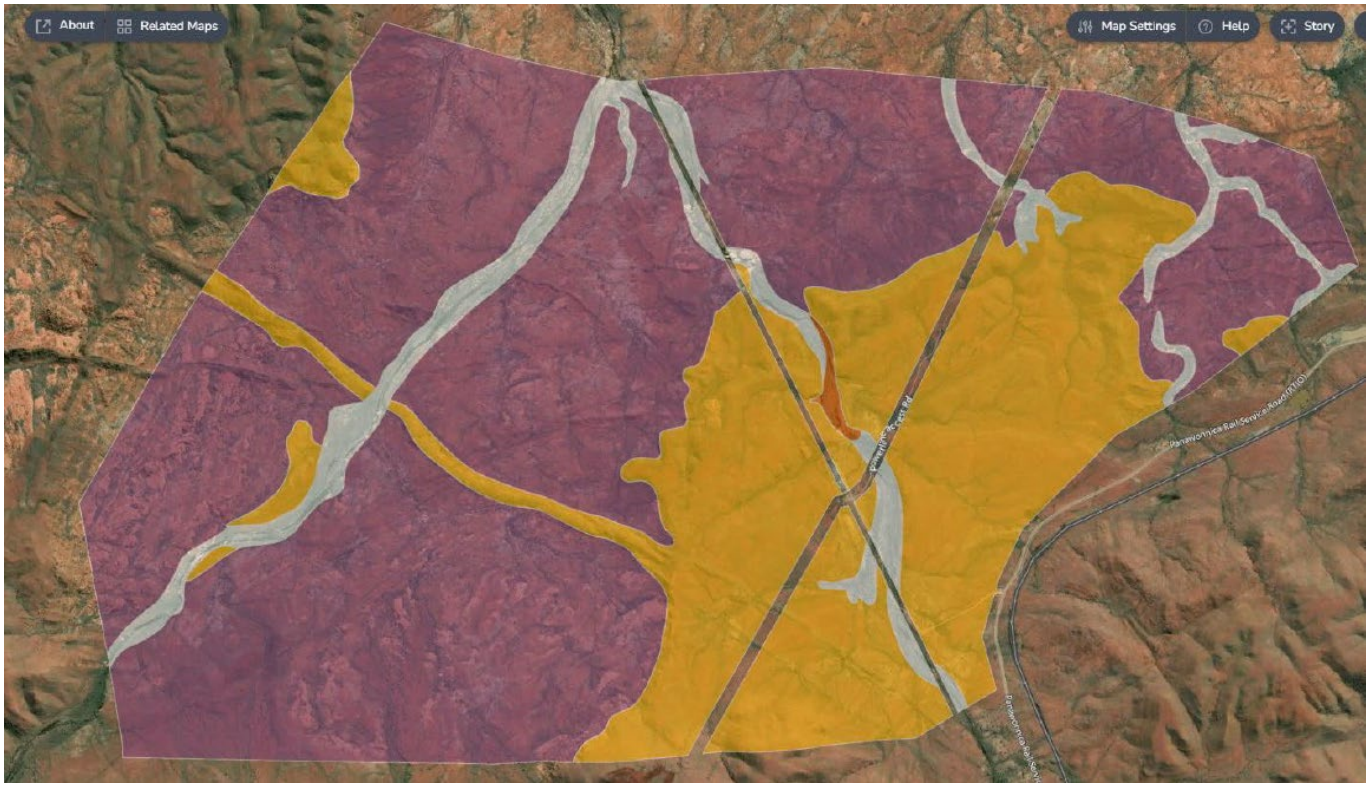


**Figure 4: The fauna habitats in the survey area. VSA 1 is shown in orange; VSA 2 is shown in purple; VSA 3 is shown in grey; and VSA 4 is shown in brown**

| VEGETATION COMMUNITY DESCRIPTION | | | |
|---|---|---|---|
| **Community Code: C1** | | | |
| **Community Description:** | | | |
| *Eucalyptus victrix* low open woodland over *Melaleuca linophylla, Melaleuca glomerata, Acacia bivenosa* mid sparse shrubland over *Stemodia grossa, Cyperus vaginatus* low sparse shrubland. | | | |
| **Soil and Landform:** | Rocky ephemeral drainage channels | **Surface Rocks:** | Present |
| **Outcropping:** | Minor sandstone and granite outcropping | **Vegetation Condition:** | Excellent |
| **Community Area:** | 98.87 ha | **Proportion of Jinbi Project Area:** | 6.15% |
| **Total No. Quadrats (Relevés):** | 4 (1) | **Average Quadrat Spp. Richness:** | 27.5 |
| **REPRESENTATIVE PHOTOGRAPH:** | | | |

**Quadrat Q007**

**Figure 5: Vegetation Community C1, mostly excluded from the application area**

| VEGETATION COMMUNITY DESCRIPTION | | | |
|---|---|---|---|
| **Community Code: C2** | | | |
| **Community Description:** | | | |
| *Melaleuca argentea, Eucalyptus ? camaldulensis* mid woodland over *Acacia ampliceps, Acacia coriacea* subsp. *pendens, Acacia pyrifolia* var. *pyrifolia* mid open shrubland over *Typha domingensis, Cyperus vaginatus, Schoenoplectus subulatus* open sedgeland. | | | |
| **Soil and Landform:** | Brown clayey sand in gorges around permanent springs | **Surface Rocks:** | Present |
| **Outcropping:** | Sandstone | **Vegetation Condition:** | Very Good |
| **Community Area:** | 3.95 ha | **Proportion of Jinbi Project Area:** | 0.24% |
| **Total No. Relevés:** | 2 | **Average Quadrat Spp. Richness:** | N/A |
| **REPRESENTATIVE PHOTOGRAPH:** | | | |

**Relevé R012**

**Figure 6: Vegetation Community C2 fully excluded from the application area**

| VEGETATION COMMUNITY DESCRIPTION | | | |
|---|---|---|---|
| **Community Code: G1** | | | |
| **Community Description:** | | | |
| *Acacia ancistrocarpa, Acacia pyrifolia* var. *pyrifolia, Acacia bivenosa* mid sparse shrubland over *Triodia wiseana, Triodia epactia* low hummock grassland. | | | |
| **Soil and Landform:** | Red sandy clay on rugged sandstone hilltops | **Surface Rocks:** | Present |
| **Outcropping:** | Sandstone | **Vegetation Condition:** | Excellent |
| **Community Area:** | 485.01 ha | **Proportion of Jinbi Project Area:** | 30.18% |
| **Total No. Quadrats:** | 4 | **Average Quadrat Spp. Richness:** | 27.5 |
| **REPRESENTATIVE PHOTOGRAPH:** | | | |

**Quadrat Q016**

**Figure 7: Vegetation Community G1 within the project area**

| VEGETATION COMMUNITY DESCRIPTION | | | |
|---|---|---|---|
| **Community Code: S1** | | | |
| **Community Description:** | | | |
| *Corymbia hamersleyana, Terminalia circumalata* low isolated trees over *Acacia ancistrocarpa, Acacia pyrifolia* var. *pyrifolia, Acacia inaequilatera* mid sparse shrubland over *Triodia epactia, Aristida contorta* low hummock grassland. | | | |
| **Soil and Landform:** | Orange gravel loam on stony plains and granite tor fields | **Surface Rocks:** | Present |
| **Outcropping:** | Granite | **Vegetation Condition:** | Excellent |
| **Community Area:** | 1018.92 | **Proportion of Jinbi Project Area:** | 63.41% |
| **Total No. Quadrats:** | 10 | **Average Quadrat Spp. Richness:** | 16.6 |
| **REPRESENTATIVE PHOTOGRAPH:** | | | |

**Quadrat Q013**

**Figure 8: Vegetation Community S1 within the project area**

# Appendix F. Sources of information

## F.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- 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)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- WA Now Aerial Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- 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 – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- 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
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

## F.2. References

Aplin, K., Burbidge, A.A., Morrison, K. and Woinarski, J. (2016) *Leggadina lakedownensis. The IUCN Red List of Threatened Species 2016: e.T11384A22459416*. Available from: http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T11384A22459416.en.

Australian Museum (2019) *Peregrine falcon (Falco peregrinus)*. The Australian Museum, New South Wales. Available from: https://australian.museum/learn/animals/birds/peregrine-falcon/ (accessed March 2024).

Bamford Consulting Ecologists (Bamford) (2024) *Yindjibarndi Renewable Energy Project, Fauna Assessment report*, received 02 February 2024.

Bat Call WA (2021a) *A review of ghost bat ecology, threats and survey requirements*. Report prepared for the Department of Agriculture, Water and the Environment, Canberra. Available from: https://www.dcceew.gov.au/sites/default/files/documents/review-ghostbat-ecology-threats.pdf.

Bat Call WA (2021b) *A review of Pilbara leaf-nosed bat ecology, threats and survey requirements*. Report prepared for the Department of Agriculture, Water and the Environment, Canberra. Available from: https://www.dcceew.gov.au/sites/default/files/documents/review-pilbara-leaf-nosed-bat-ecology-threats.pdf.

Bennelongia Pty Ltd (Bennelongia) (2024) *Yindjibarndi Renewable Energy Project, Short Range Endemic Invertebrate Desktop Assessment,* received: 02 February 2024

Burbidge, A.A. (2016) *Pseudomys chapmani. The IUCN Red List of Threatened Species 2016: e.T42648A115198963*. Available from: http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T42648A22398949.en

Coterra Environment (Coterra) (2024a) *Yingjibarndi Energy Corporation, Jinbi Solar Facility, Native Vegetation Clearing Permit Supporting Information*, received 02 February 2024. DWER Ref: DWERDT899217

Coterra (2024b) *Post survey likelihood assessment*, received 16 February 2024. DWER Ref: DWERDT906275

Department of Agriculture, Water and the Environment (DAWE) Commonwealth of Australia (2020) *Conservation Advice Falco hypoleucos Grey Falcon*. Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/929-conservation-advice-09072020.pdf

Department of Biodiversity, Conservation and Attractions (DBCA) (2024a) *Species and Communities Branch advice for clearing permit application CPS 10494/1*, received 25 March 2024. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT926012).

DBCA (2024b) *Fauna Profiles: Lakeland Downs Short-tailed Mouse Leggadina lakedownensis (Watts, 1976)*, accessed April 2024. Available from: https://library.dbca.wa.gov.au/static/FullTextFiles/071381.pdf.

Department of Environment, Climate Change and Water (DECCW) New South Wales (2009) *Identification guide to the Australian Odonata*. Sydney. Available from: https://www.environment.nsw.gov.au/resources/publications/09730AustOdonata.pdf.

Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of the Environment, Water, Heritage and the Arts (DEWHA) Commonwealth of Australia (2008). *Approved Conservation Advice for Liasis olivaceus barroni (Olive Python - Pilbara subspecies)*. Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/66699-conservation-advice.pdf.

Department of Natural Resources, Environment, The Arts and Sport (DNREAS) Northern Territory (2010). *National Recovery Plan for the Northern Quoll Dasyurus hallucatus*. Darwin. Available from: https://www.dcceew.gov.au/sites/default/files/documents/northern-quoll.pdf

Department of Water (DoW) (2012). *Factsheet: Supplementary information for permit applications to interfere with bed or banks of watercourses*. Perth. Available from: https://www.wa.gov.au/system/files/2023-03/Supplementary-permit-applications-to-interfere-with-bed-or-banks-of-watercourses.pdf.

Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

DWER (Regulatory Services – Water) (2024a) *Rights in Water and Irrigation Act 1914 advice for clearing permit application CPS 10494/1*, received 8 February 2024 (DWER Ref: DWERDT926039).

DWER (Regulatory Services – Water) (2024b) *Further advice for clearing permit application CPS 10494/1 regarding bed and banks permits*, received 17 April 2024 (DWER Ref: DWERDT935625).

Doughty, P., Rolfe, J. K., Burbidge, A. H., Pearson, D. J. and Kendrick, P. G. (2011) *Herpetological assemblages of the Pilbara biogeographic region, Western Australia: ecological associations, biogeographic patterns and conservation*. Records of the Western Australian Museum, Supplement 78: 315-341. DOI: 10.18195/issn.0313-122x.78(2).2011.315-341.

Dow, R.A. (2017) *Nososticta pilbara. The IUCN Red List of Threatened Species 2017: e.T163583A87528344*. Accessed from: http://dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T163583A87528344.en.

Dow, R.A. (2019) *Antipodogomphus hodgkini. The IUCN Red List of Threatened Species 2019: e.T14276088A59256638*. Accessed from: http://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T14276088A59256638.en.

Environmental Protection Authority (EPA) (2016a). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf.

EPA (2016b). *Technical Guidance – Terrestrial Fauna Surveys.* Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.

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

Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) *Vegetation Complexes of the Darling System, Western Australia*. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

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

Shire of Ashburton (2024) *Advice for clearing permit application CPS 10494/1*, received 23 February 2024 (DWER Ref: DWERDT911440.

Mattiske Consulting Pty Ltd (Mattiske) (2024) *Reconnaissance Flora and Vegetation Assessment,* Jinbi Project. Prepared For Yinjibarndi Energy Corporation. January 2024.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.

Rio Tinto Ltd (2023) *Rio Tinto and Yindjibarndi Energy sign Pilbara renewables MOU*. Media release dated 20 October 2023. Available from: https://yindjibarndi.com.au/wp-content/uploads/2023/11/Rio-Tinto-YEC-MOU-Media-Release-.pdf.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

Van Vreeswyk, A M, Leighton, K A, Payne, A L, and Hennig, P. (2004), *An inventory and condition survey of the Pilbara region, Western Australia*. Department of Agriculture, Western Australia, Perth. Technical Bulletin 92. Available from: https://library.dpird.wa.gov.au/cgi/viewcontent.cgi?article=1006&context=tech_bull

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/ (Accessed February 2024)

Wilson, S. and Swan, G. (2020) *A Complete Guide to Reptiles of Australia*. Sixth Edition. New Holland Publishers, Sydney.

Yinjibarndi Energy Corporation (2024a) *Clearing permit application CPS 10494/1*, received 24 January 2024 (DWER Ref: DWERDT896274).

Yinjibarndi Energy Corporation (2024b) Further information for clearing permit application CPS 10494/1, received 4 April 2024 (DWER Ref: A2269461).

Yinjibarndi Energy Corporation (2024c) Further information for clearing permit application CPS 10494/1, received 19 April 2024 (DWER Ref: DWERDT939094).

Yinjibarndi Energy Corporation (2024d) Further information for clearing permit application CPS 10494/1, received 24 April 2024 (DWER Ref: DWERDT941627).

Yinjibarndi Energy Corporation (2024e) Further information for clearing permit application CPS 10494/1, received 25 April 2024 (DWER Ref: DWERDT941626).