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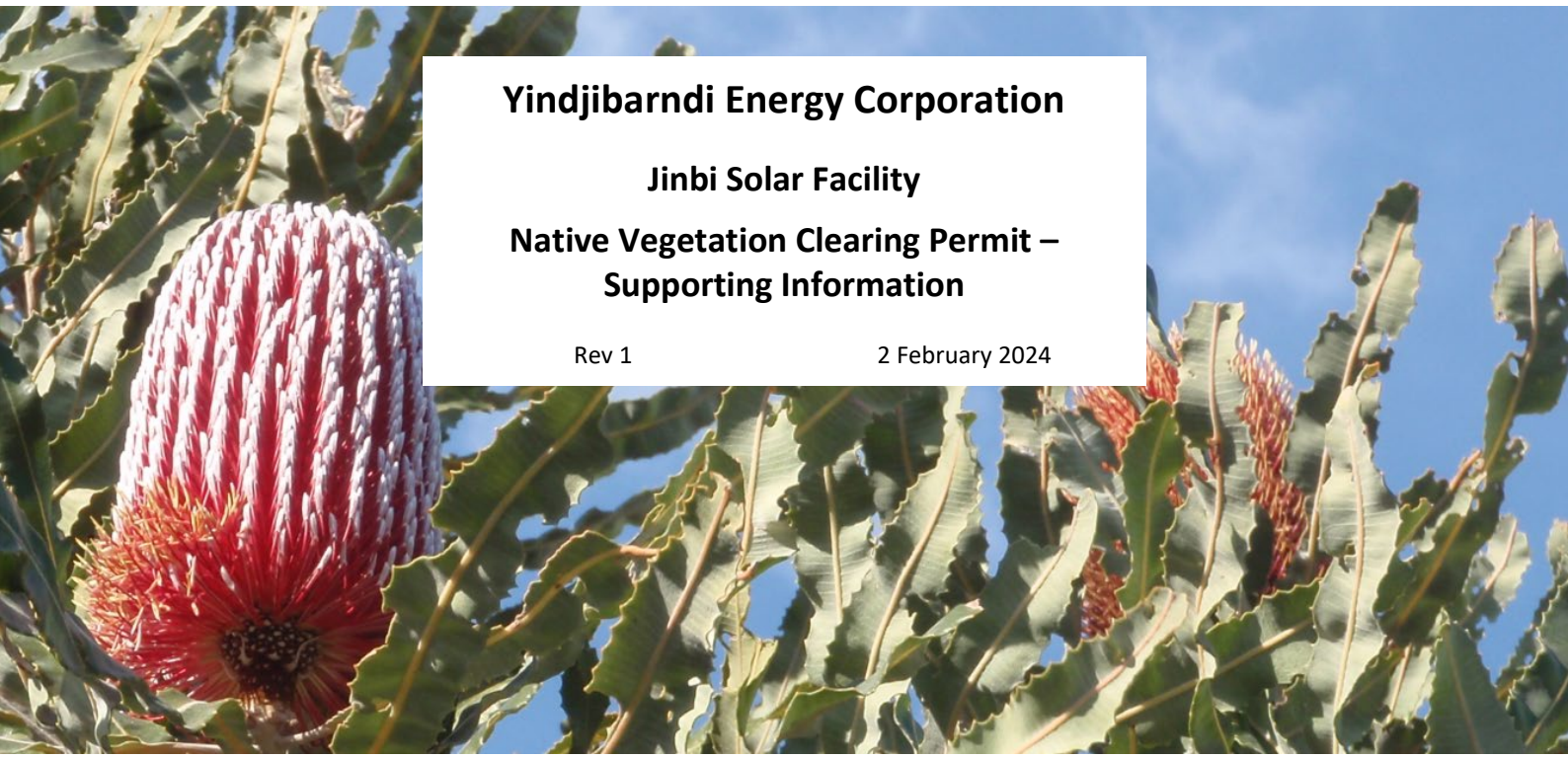

Yindjibarndi Energy Corporation

Jinbi Solar Facility

Native Vegetation Clearing Permit – Supporting Information

Rev 1 2 February 2024

CALIBRE | COMMITMENT | COLLABORATION

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Executive Summary

Yindjibarndi Energy Corporation is proposing to develop the Jinbi Solar Facility approximately 55 km south of Karratha, Western Australia, on Yindjibarndi Ngurra. The Jinbi solar facility will comprise a series of solar arrays up to 150 Megawatts, and associated hardware and infrastructure. Implementation of the Jinbi Solar Facility will necessitate the clearing of no more than 600 hectares of vegetation, within a project area of 750.35 hectares.

Renewable energy generated by the Jinbi Solar Facility will be available for the exclusive use of Rio Tinto, with whom Yindjibarndi Energy Corporation has signed a memorandum of understanding to explore the potential development of a solar power generation facility, for the supply of energy to Rio Tinto. It is anticipated that the Jinbi Solar Facility will negate greenhouse gas emissions which would otherwise have been generated through the burning of fossil fuels, and therefore represents meaningful action toward meeting Rio Tinto's and the State and Federal Government's targets of achieving net zero emissions by 2050.

A reconnaissance flora and vegetation survey (Mattiske Consulting 2024) and reconnaissance terrestrial vertebrate fauna survey (Bamford Consulting Ecologists 2024) identified environmental values across a 1606.74 hectare survey area as being concentrated around a series of permanent freshwater springs (Jinbi) in the centre of the project area, to which the Jinbi Solar Facility owes its name. The Jinbi are associated with groundwater dependent vegetation, which is likely representative of the Priority 2 listed ecological community 'Riparian Flora and Plant Communities of Springs and River Pools with High Water Permanence of the Pilbara Region'. This area was also considered to represent potential breeding and shelter habitat for Yirriwardu (Northern Quoll) as evidenced by the presence of scat, and potentially suitable habitat for the Bargunyjii (Pilbara Olive Python). The area is also considered to represent the most suitable potential habitat for Short Range Endemic fauna in the project area.

The Jinbi have been identified as being of cultural significance to the Yindjibarndi community, who have requested that this area be retained, and the community afforded ongoing and unimpeded access throughout the Jinbi Solar Facility's construction and ongoing operation.

Yindjibarndi Energy Corporation has committed to the complete avoidance of the Jinbi area and the environmental and cultural values contained therein, as well as all other areas which are not environmentally, culturally or socially acceptable to the Yindjibarndi community. Detailed development design for the Jinbi Solar Facility is currently progressing with the aim of facilitating ongoing faunal dispersal and foraging opportunities within and between solar arrays, and to take advantage of existing transmission infrastructure within the project area to further minimise potential environmental impacts. It is anticipated that the total extent of clearing ultimately required will be less than the 600 hectares herein proposed.

An assessment of the proposed vegetation clearing was undertaken against the ten native vegetation clearing principles contained in Schedule 5 of the EP Act. Based on the assessment of the known environmental values, the extent of clearing proposed, and the avoidance and mitigation measures committed to by the proponent, it is considered that the proposal clearing is not at variance with nine of the ten principles, and unlikely to be at variance with one (principle (f)). The proposed clearing is not considered to be significant at either a local or regional scale.

Glossary

Term	Definition
AH Act	*Aboriginal Heritage Act 1972*
Bargunyji	**Pilbara Olive Python (*Liasis olivaceus barroni*). The Yindjibarndi people used to use this species as food but is no longer eaten. The bones on the rib cages can be used to make hooks for fishing (Greening Australia 2016).**
BC Act	*Biodiversity Conservation Act 2016*
DBCA	Department of Biodiversity Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPLH	Department of Planning Lands and Heritage
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
Jinbi	**Freshwater spring**
LA Act	*Land Administration Act 1997*
Ngurra	**Land; country**
NT Act	*Native Title Act 1993*
PD Act	*Planning and Development Act 2005*
SRE	*Short Range Endemic*
YAC	Yindjibarndi Aboriginal Corporation
YEC	Yindjibarndi Energy Corporation
Yirriwardu	**Northern Quoll (*Dasyurus hallucatus*). Ngjarlee – This species is considered sacred and not used by Yindjibarndi. It is forbidden to harm or eat this animal as it is culturally and religiously significant. The Yindjibarndi people enjoy it when this species is observed (Greening Australia 2016).**

1 Introduction

1.1 Development overview

Yindjibarndi Energy Corporation (YEC; the proponent) is proposing to develop the Jinbi Solar Facility, approximately 55 km south of Karratha, Western Australia (WA). The Jinbi Solar Facility will comprise a series of solar arrays up to 150 Megawatts (MW), and associated hardware and infrastructure.

To provide security of tenure for the Jinbi Solar Facility, an Option to Lease is currently being sought under Section 88 of the *Land Administration Act 1997* (LA Act), corresponding to an area of 1606.74 hectares (ha) (Figure 1). Within this area, YEC have refined the preliminary location for the proposed solar facility to a 750.35 ha project area surrounding existing transmission infrastructure. To minimise the extent of vegetation clearing required, existing transmission infrastructure will be utilised in this area where practicable, and detailed development designs are progressing with the objective of consolidating and centralising some infrastructure components. To this end, the clearing of no more than 600 ha of vegetation is estimated to be required, with the 750.35 ha project area. It is anticipated that the total area of clearing ultimately required will be substantially less than the nominated 600 ha, as the development design is refined in the coming months.

Renewable energy generated by the Jinbi Solar Facility will be available for the exclusive use of Rio Tinto, with whom YEC has signed a memorandum of understanding to explore the potential development of a solar power generation facility, for the supply of energy to Rio Tinto. It is anticipated that the Jinbi Solar Facility will negate carbon dioxide emissions which would otherwise have been generated through the burning of fossil fuels, and therefore represents meaningful action toward meeting Rio Tinto's and the State and Federal Government's targets of achieving net zero emissions by 2050.

1.2 Yindjibarndi Energy Corporation

Yindjibarndi Energy Corporation is a partnership between Yindjibarndi Aboriginal Corporation (YAC) and renewable energy company ACEN Corporation. YEC was formed as a partnership to develop, own, and operate large scale renewable energy projects on Yindjibarndi Ngurra (land; country) in Western Australia's Pilbara Region.

YAC is a Registered Native Title Body Corporate (RNTBC) of the Yindjibarndi People and the institution appointed by the federal court to represent Yindjibarndi rights and interests under the *Native Title Act 1993* (NT Act). Operating under YAC is the Yindjibarndi Wealth Trust, which 100% owns Yiyangu Pty Ltd. Through Yiyangu Pty Ltd as an equity owner of YEC, and as the primary tenure holders of the project area, the Yindjibarndi people will receive long term revenue from the Jinbi Solar Facility.

ACEN is the listed energy platform of the Ayala Group. The company has approximately 4,400 MW of attributable capacity from owned facilities in the Philippines, Australia, Vietnam, Indonesia and India, with a renewable share of 98%, which is among the highest in the region. In Australia, ACEN has more than 1GW capacity in construction and more than 8GW capacity in the development pipeline. ACEN's renewable energy assets include solar, wind, battery, and pumped hydro storage projects across Australia.

Further information on YEC, YAC, and ACEN can be found on the YEC website at https://yindjibarndienergy.com.au/.

2 Legislative Context

2.1 Commonwealth Legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

At a national level, impacts on the environment are regulated through the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Matters protected under the EPBC Act (collectively referred to as Matters of National Environmental Significance (MNES)) include:

- World Heritage Areas
- Commonwealth Heritage Places
- Wetlands of International Importance (listed under the Ramsar Convention)
- Listed threatened species and ecological communities
- Listed migratory species (protected under international agreements)
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mines)
- Water resources relating to coal seam gas development and large coal mining development.

Under the EPBC Act, an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impacts on an MNES.

To determine the likelihood and significance of potential impacts on MNES, YEC undertook a self-assessment of the proposed Jinbi project, in accordance with the (then) Department of Environment's *Matters of National Environmental Significance: Significant Impact Guidelines* (2013) and *EPBC Act Referral Guideline for the Endangered Northern Quoll Dasyurus hallucatus* (2016). Considering the project area and surrounding area's known environmental values (see section 5), and the extent of avoidance and mitigation measures proposed, there are not anticipated to be any significant impacts on MNES resulting from implementation of the Jinbi Solar Facility. It is also noted that detailed design work for the Jinbi Solar facility is ongoing, and every opportunity to further avoid and minimise potential impacts on MNES will be explored as this progresses.

On this basis, YEC consider that referral of the Jinbi Solar Facility under the EPBC Act is not required.

2.1.2 Native Title Act 1993

Native title and its coexistence with the national land management system is recognised and protected through the *Native Title Act 1993* (NT Act), at a federal level.

In 1994, the Yindjibarndi people launched one of Australia's very first native title claims which was determined by the Full Federal Court in 2005. The High Court affirmed Yindjibarndi Exclusive Possession rights in a second determination claim in 2020. Yindjibarndi Aboriginal Corporation (YAC) currently serves as the Registered Native Title Body Corporate (RNTBC) for the area in which the Jinbi Solar Facility is proposed.

Most recently, an Indigenous Land Use Agreement (ILUA) was endorsed between Yiyangu, YAC and YNAC regarding the development of renewable energy facilities on Yindjibarndi Ngurra. From an environmental perspective, the ILUA includes a Heritage Protection Agreement between the two parties, which prescribes how environmental surveys on Yindjibarndi Ngurra are to be undertaken, when and how the Yindjibarndi community will be involved in such surveys, and whether heritage surveys are necessary before environmental surveys are undertaken.

The ILUA is currently with the Native Title Tribunal for registration under the NT Act.

2.2 Western Australian Legislation

2.2.1 Land Administration Act 1997

The acquisition and use of Crown land in WA is regulated through the LA Act.

On 1 August 2023, authorisation to utilise the project area for a renewable energy facility was granted to Yiyangu Pty Ltd under section 91 of the LA Act. The license is applicable for a term of 24 months, and is applicable to an area encompassing:

- Portion Lot 33 on Deposited Plan 240249 currently comprising a portion of Reserve 38991
- Portion Lot 190 on Deposited Plan 240249 currently comprising a portion of Reserve 38991
- Reserve 5510
- Portions unallocated crown land comprising PINs 1017635, 1017648, 1017652 and 1017640

Development and environmental approvals are identified as one of the Licensee's works (Milestones) in Annexure B.

Most recently, an Option to Lease under Section 88 of the LA Act is being sought across an approximately 1606.74 ha area (Figure 1). Pending access negotiations with applicable stakeholders, it is anticipated that the Section 88 Option to Lease will be granted in the coming months.

2.2.2 Planning and Development Act 2005

The system of land use planning and development in WA is provided for under the *Planning and Development Act 2005* (PD Act).

The project area lies within the Shire of Ashburton Local Government Area, and is subject to the Shire's Local Planning Scheme No 7 under which it is zoned as 'Public Purposes – Water and Drainage', and 'Other Purposes Infrastructure'. It is considered that a renewable energy facility is an accepted land use under each of these zone categories.

Approval for the Jinbi Solar Facility under the PD Act will be sought via a development application, to be lodged with the Shire of Ashburton. It is anticipated that the development application will be assessed by the regional Joint Development Assessment Panel (JDAP) concurrently with the project's assessment under Part V of the *Environmental Protection Act 1986* (EP Act).

2.2.3 Environmental Protection Act 1986

The EP Act is WA's primary piece of legislation concerning environmental protection and impact assessment within the state. Approval for the clearing of native vegetation is required under Part V of the Act via a Native Vegetation Clearing Permit (NVCP), or where the impacts are considered significant, under Part IV of the EP Act via an assessment by the Environmental Protection Authority.

Based on the results of site specific ecological assessments (see sections 5.4.2 and 5.5.1) as well as consultation with public, private, and community stakeholders (see section 4), potential environmental impacts associated with the Jinbi Solar Facility are not considered to be significant or warrant referral under Part IV of the Act. Noting also that potential environmental impacts will be limited to the clearing of native vegetation only, assessment of the project under Part V of the Act as a NVCP (Purpose Permit) is considered the most appropriate regulatory mechanism, in this circumstance.

2.3 Other Legislation and Guidance

Other legislation and guidance considered relevant to the proposal, and how these apply are detailed below in Table 1.

Table 1: Other legislation and guidance that may be relevant to the proposal

Guidance or Legislation	Responsible Authority	Description
Biodiversity Conservation Act 2016 (BC Act)	Department of Biodiversity, Conservation and Attractions (DBCA)	Provides for the listing of rare flora, fauna, and ecological communities in WA and regulates the disturbance and take of those species and ecological communities.
Aboriginal Heritage Act 1972 (AH Act)	Department of Planning, Lands and Heritage (DPLH); Aboriginal Cultural Heritage Committee	Provides for the protection of aboriginal heritage in WA and regulates activities which may cause harm to aboriginal heritage sites.
State Planning Policy 3.7 – Planning in bushfire prone areas	Department of Planning, Lands and Heritage (DPLH)	Directs how land use should address bushfire risk management. The policy applies to all land designated as bushfire prone by the Department of Fire and Emergency Services.

3 The Proposal

The Jinbi Solar facility is proposed as a green energy generation facility, comprising a series of solar arrays up to 150 MW, and associated hardware and infrastructure.

No transmission infrastructure beyond the project area is needed to facilitate the Jinbi Solar Facility. Rather, new infrastructure will tie into the existing infrastructure in the area.

Where bushfire mitigation necessitates the clearing of vegetation for Asset Protection Zones (APZ's), these areas could duplicate as internal access roads, thereby limiting the extent of native vegetation clearing required.

3.1 Clearing schedule

Clearing of native vegetation is proposed to be undertaken in a phased approach, with clearing undertaken on an as-needed basis as construction works progress.

Avoiding the clearing of all native vegetation in one event will serve to minimise the time between the exposure of topsoil and the installation of infrastructure, thereby mitigating potential wind and water erosion, and dust generation.

Prior to clearing commencing, the clearing and construction boundary will be surveyed and clearly demarcated to ensure over-clearing does not occur.

Prior to commencing works on-site, personnel will undertake an induction, which will outline the environmental and heritage values present, the importance of remaining within defined clearing areas, and day to day management measures which will mitigate the potential for environmental impacts, including vehicle speed limit restrictions and environmental incidents procedures.

4 Stakeholder Engagement

Stakeholder engagement for the Jinbi Solar Facility has been extensive, with YEC proactively engaging with multiple departments at various levels of government, as well as non-governmental organizations and traditional owners. While this level of engagement is proposed to continue concurrently with the project's assessment under the EP Act and PD Act, an inexhaustive summary of engagement undertaken to-date is provided below in Table 2. It is also understood that the DA and NVCP processes provide for periods of public advertisement and opportunity for public submissions.

Table 2: Stakeholder Engagement Undertaken to Date

Stakeholder	Date	Engagement Summary
Department of Jobs, Tourism, Science and Innovation (JTSI) and Department of Water and Environmental Regulation (DWER) Green Energy Assessment Unit (GEAU)	14 Sep 2023	Meetings focused on the Part IV and V assessment processes, informational requirements for NVCP lodgement and assessment, role and responsibilities of the DWER GEAU, and opportunity for case management by JTSI. Regular updates were also provided to each department on the results of site investigations, timeframes for lodgement of approvals applications, and outcomes of engagement with broader stakeholders.
	19 Oct 2023	
	24 Nov 2023, then weekly thereafter	
Shire of Ashburton (SoA)	25 Oct 2023	Presentation to the Shire on the Jinbi Solar Facility
	16 Nov	Project meeting with SoA Planning Department and external planning consultants
	Various	General correspondence on planning approval process
Rio Tinto	27 Nov 2023, then fortnightly thereafter	Development of communications and engagement protocols for YEC / Rio Tinto memorandum of understanding. Regular meetings between YEC, ACEN and Rio Tinto to discuss technical matters
Yindjibarndi Aboriginal Corporation (YAC) and Yindjibarndi Ngurra Aboriginal Corporation (YNAC)	31 Oct 2023	Information sharing session held between Mattiske Consulting and the Yindjibarndi community within the Jinbi Project area
	7 Dec 2023	Information sharing session held between Bamford Consulting Ecologists and the Yindjibarndi community in Ngurrawaana
	14 Dec2023	Meeting in Roebourne for the presentation of the Indigenous Land Use Agreement (ILUA)

5 Existing Environment

5.1 Landforms and Soils

At a landscape scale, land systems of the Pilbara were classified and mapped by Van Vreeswyk et al. (2004) according to similarities in landform, soil, vegetation, geology and geomorphology. The project area predominately lies at the intersection of two land systems, with a minor intersection with a third, Descriptions of which are presented in Table 3 below and illustrated in Figure 4.

Table 3: Land Systems mapped within the project area

Land System	Description
Capricorn System	Rugged sandstone hills, ridges, stoney footslopes and interfluves supporting low acacia shrublands or hard spinifex grasslands with scattered shrubs
Macroy System	Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands
Boolaloo System	Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs

Geology across the project area is represented by recent and Quaternary sediments, intrusive and extrusive volcanic rock, as well as volcanoclastic sedimentary rocks (DMIRS 200). Geological units within the project area are illustrated in Figure 3.

5.2 Topography

Topography across the project area is gently undulating, with a generally smoother terrain at lower elevations in the north and western parts of the project area, and elevated, hillier areas in the south. Isolated steep slopes are present in association with a gorge located in the centre of the project area. Elevation ranges from approximately 170 meters Australian Height Datum (mAHD) in the north to approximately 203 m AHD in the south, with broad scale contours illustrated in Figure 3.

5.3 Hydrology

5.3.1 Surface hydrology

The project area is transected by two water courses which flow from the south west and south east to the north respectively, and which serve as tributaries of the Maitland River. Surface water was observed to be generally absent from both water courses in November and December at the time that ecological investigations were conducted (see section 5.4 and 5.5), indicating that each water course is ephemeral, with flow likely based on the extent of rainfall. The location of each water course is presented within Figure 4.

The centre of the project area is defined by the presence of a small gorge located along the eastern most water course, within which are a series of Jinbi (freshwater springs). During an information sharing session held between YEC, Mattiske Consulting and the Yindjibarndi community on the 31st of October, the Yindjibarndi community confirmed that the Jinbi represent permanent water sources, and are of cultural heritage value to the Yindjibarndi. It is to this area that the Jinbi Solar Facility owes its name, in recognition of the site's cultural, hydrological and environmental importance.

The Yindjibarndi community has requested that this Jinbi area be retained, and the community afforded ongoing and unimpeded access throughout the Jinbi Solar Facility's construction and ongoing operation.

YEC has committed to the complete avoidance of the Jinbi project area and the environmental values contained therein. Detailed development design is progressing with the objective of establishing an additional buffer zone around this site, whilst balancing the need to connect to established transmission infrastructure located in proximity.

The location of the Jinbi avoidance area is presented in Figure 1.

5.3.2 Groundwater

Generally, localised perched water or shallow groundwater is anticipated to be limited to the central Jinbi area and along the two drainage lines transecting the site, particularly following heavy rainfall events. It is noted that solar facility infrastructure will be preferenced for locations where depth to groundwater is anticipated to be beyond the depth of buried infrastructure (such as shallow and piled foundations).

5.3.3 Flood risk

To inform the location and design of the Jinbi Solar Facility, a preliminary flood assessment of the section 88 application area was undertaken by Hydrologia (2023). The assessment identified flooding as largely limited to defined drainage lines, with larger water courses having deeper, faster flow than smaller drainage lines. As a part of the assessment, peak flood extents were predicted for both 1 in 10 (10%) and 1 in 100 (1%) flood events and mapped across the section 88 application area. Recognising the 1% flood risk in these locations (Hydrologia 2023), and noting that pre-development surface water flows will be maintained throughout the Jinbi solar facility's construction and operation, development design will proceed with the objective of avoiding these areas, if possible.

5.3.4 Water Resources

The project area is located within the Pilbara Proclaimed Groundwater Area and Pilbara Proclaimed Surface Water Area as listed under the *Rights in Water and Irrigation Act 1914*, and therefore a license or valid exemption is required in order to take surface or ground water from the project area.

There are no surface or groundwater licences in place over the project area. YEC will develop a methodology for construction and operational water requirements as development designs progress, in consultation with YAC and YNAC.

5.4 Vegetation and Flora

5.4.1 Pre-European Vegetation

Pre-European vegetation within Western Australia has been mapped at a broad level by Beard (1975) as vegetation system associations. Within the project area, two vegetation system associations have been mapped. This vegetation, their descriptions and the percentage of the original extent remaining in Western Australia (100%) are presented in Table 5 below.

Table 4: Vegetation System Associations

Vegetation System Association	Description	Extent Remaining in Western Australia (GoWA 2019)
Chichester Plateau_93	Hummock grasslands, shrub steppe; kanji over soft spinifex	40,988.83 ha (100%)
Chichester Plateau_587	Mosaic: Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana* / Hummock grasslands, shrub-steppe; kanji over *Triodia pungens*	462,038.96 (100%)

5.4.2 Vegetation and Flora Assessments

To understand the existing floristic condition of the project area and broader Section 88 application area, a reconnaissance flora and vegetation assessment was undertaken by Mattiske Consulting Pty Ltd between the 30th October and 3rd November 2023 (Appendix 1). The assessment was undertaken by one senior and one experienced botanist, both of whom were familiar with the local flora.

A broader, contextual understanding of botanical values was provided by a high level review of the remaining area subject to the License under Section 91 of the LA Act, which was undertaken as a part of the flora and vegetation assessment.

To inform and support the survey, a half-day information sharing session was held between Mattiske Consulting Pty Ltd and six members of the Yindjibarndi community. Information on Yindjibarndi and scientific names for species was exchanged, the traditional uses for particular flora taxa was shared (particularly for species located in and around the central Jinbi), and stories associated with specific flora taxa were told.

Knowledge of the traditional burning practices, pre-European mammal ecology, Yindjibarndi-European relationships, and ongoing environmental management issues were also discussed.

In November 2023 soon after the flora and vegetation assessment was undertaken, a substantial wildfire spread through the project area and surrounding landscape. Key findings from the assessment and which are summarised below are therefore considered to represent the pre-fire conditions of the project area. Whilst EPA guidance recommends supplementary flora and vegetation surveying being undertaken after the wet season (EPA 2016), post-fire vegetation regrowth within the project area is likely to be sparse, immature and/or sterile based on the minimal (less than 5mm) rainfall received since this time. It is therefore unlikely that any follow-up or detailed vegetation survey of the project area would provide further information than that collected as a part of the 2023 survey effort.

The above notwithstanding, information collected during the pre-wet season survey is considered to have been appropriate to make determinations on the presence, distribution and extent of conservation significant flora and ecological communities within the project area, without a supplementary survey being required. For example, key flora species and soil types necessary for the identification of PECs and TECs were noticeably absent from areas not mapped as the C2 vegetation community. Further, recordings of the Priority 1 'Cracking Clays of the Chichester and Mungaroona Range' ecological community were able to be made in the broader Section 91 investigation area, which were not duplicated within the Section 88 area, suggesting that that survey's timing and intensity was appropriate for this purpose.

5.4.3 Flora

Across 18 quadrats and three releve's within the Section 88 area, no flora listed as threatened under either the BC Act or the EPBC Act were identified. One Priority 2 listed flora species was identified, being *Pentalepis trichodesmoides* subsp. *Hispida* (Figure 5). This species was represented by one individual located on the windrow of an access track, suggesting the species' preference for at least partially disturbed habitat.

Recognising that Priority 2 species are identified by DBCA as being poorly known, with some occurrences on lands managed primarily for nature conservation, YEC has committed to the complete avoidance of this individual during clearing, construction and operational activities, with a 10 m demarcated buffer established.

It is recognised however that this flora individual may not persist within the project area following the November 2023 fire.

5.4.4 Vegetation

Based on statistical analysis of quadrat and releve' data, four vegetation communities were identified within the Section 88 area. A description of these communities, and their extents within both the Section 88 area

and project area are presented below in Table 6. The distribution of each vegetation community is illustrated in Figure 5.

Table 5: Vegetation Communities Identified within the survey area

Vegetation Community	Description	Extent within Section 88 application area (ha)	Extent within Project Area (ha)
Creekline 1 (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.	98.87	68.57
Creekline 2 (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.	3.95	0
Grassland 1 (G1)	*Acacia ancistrocarpa, Acacia pyrifolia var. pyrifolia, Acacia bivenosa* mid sparse shrubland over *Triodia wiseana, Triodia epactia* low hummock grassland on rugged sandstone hilltops.	485.01	318.96
Shrubland 1 (S1)	*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 on stony plains and granite tor fields.	1018.92	362.82
	Total	**1,606.7**	**750.35**

5.4.4.1 Conservation significant vegetation

One potential Priority Ecological Community (PEC), *Riparian Flora and Plant Communities of Springs and River Pools with High Water Permanent of the Pilbara Region* (Priority 2) (herein referred to as the Riparian Flora and Plant Communities PEC) was considered to align with the C2 vegetation community. This was based on the presence of a number of indicator species, as well as information received from the Yindjibarndi community confirming that the freshwater pools observed within the C2 community are permanent, and do not dry out over summer.

Permanent freshwater pools such as those present within the C2 community (known as Jinbi) are of cultural significance to the Yindjibarndi community, and it has been requested by the community that ongoing access to these sites be maintained.

The entirety of the C2 vegetation community, incorporating each Jinbi, is proposed to be retained throughout the project's construction and operation. Ongoing and unimpeded access to the area will also be afforded to the Yindjibarndi community for the duration of the Jinbi Solar Facility's operating life.

5.5 Fauna and Habitat

5.5.1 Fauna and Habitat Assessments

The terrestrial vertebrate fauna assemblage of the section 88 application area was assessed by Bamford Consulting Ecologists on the 6th and 7th December 2023 as part of a level 1 (basic) fauna and habitat

assessment, incorporating a desktop review and site inspection (Bamford Consulting Ecologists 2024; Appendix 2). The assessment was led by Dr Mike Bamford who has extensive experience the fauna of the Pilbara region.

To inform and support the assessment, a three hour information sharing session was held with Lorraine Coppin of YAC at Ngurrawaana. The session involved discussions on the history of the land and project area, local fauna records and observations, and Yindjibarndi creation myths and uses for specific fauna. Within the survey area, field investigations that were conducted included a general description of the environments present, as well as opportunistic fauna observations (birds and other fauna, including signs such as diggings, scats and tracks).

The site inspection was undertaken shortly after a substantial wildfire spread across the region, which may have affected the observed fauna assemblage. However, a substantial majority of the fauna identified were observed in and around the central Jinbi area, where unburnt vegetation and permanent sources of water persisted, suggesting that the area serves as a refugium during adverse conditions (Bamford Consulting Ecologists 2024). In addition, vegetation community mapping undertaken by Mattiske Consulting (2024) in the month prior to the fire, combined with observations of substrates, landforms and refugia during the site inspection provided the grounds for evidence based assessments of habitat suitability across the project area.

5.5.2 Fauna Habitat

Two broad geological components were identified across the survey area during the site inspection, including rocky basaltic hills in the south and west dissected by valleys with minor water courses, and undulating granitic plains, which are extensive and cover approximately two thirds of the survey area. These two geological components were further divided into fauna habitat types (referred to as Vegetation Substrate Associations (VSAs)) based on pre-fire vegetation community mapping and observations of substrates and landforms. These VSA's, their description, and the vegetation communities with which they correspond are presented in Table 7 below. No landforms which have the potential to support caves were identified within the survey area during the site inspection component of the assessment.

Table 6: Vegetation Substrate Associations (VSAs) identified within the survey area

VSA	Corresponding vegetation community (see Table 6)	Description
VSA 1	Grassland 1 (G1)	Acacia Open Shrubland over Spinifex Hummock Grassland on undulating rocky hills. Shallow loam soil and very rocky.
VSA 2	Shrubland 1 (S1)	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.
VSA 3	Creekline 1 (C1)	Ephemeral drainage lines crossing VSA 2. Vegetation includes patches of Eucalyptus victrix Open Woodland, Melaleuca and Acacia thickets to open shrubland, and areas of sedgement. Granite sheets often exposed and soils sandy in watercourse by sandy-loam to loam adjacent.
VSA 4	Creekline 2 (C2)	Permanent and near-permanent pools with associated riparian vegetation of Cadjeput and River Gum Woodland over dense rushes and sedges, including beds of bulrush. Acacia shrublands and thickets adjacent. Pools are fed by a spring above the gorge. The gorge is a prominent feature with boulders, crevices and rocky ledges. Soils

VSA	Corresponding vegetation community (see Table 6)	Description
		sandy with extensive exposed rock, but loam soils around the spring where water movement is slow.

5.5.3 Fauna Diversity

A total of 224 vertebrate fauna species were identified in the desktop assessment as having the potential to occur within the survey area (Bamford Consulting Ecologists 2024). While the expected fauna assemblage is generally typical for this region of Western Australia, the actual faunal assemblage is likely to be somewhat poor in a regional context, due to the harsh nature of the environments present, the lack of sandy soils and the limited amount of complex structures such as caves and overhangs that provide shelter for a variety of fauna (Bamford Consulting Ecologists 2024).

Of the species expected to occur within the project area, 26 were confirmed to be present during the site inspection, including one fish, at least two frogs, five reptiles, 16 birds, and three native mammals.

5.5.4 Conservation Significant Fauna

Based on the results of the desktop assessment and review of habitat types within the section 88 application area, six fauna species listed under either the BC Act or EPBC Act were considered to have the potential to be either regular visitors or residents of the project area. These being:

- Bargunyji (Pilbara Olive Python) (*Liaisis olivaceaus* barroni) – inferred resident – listed as Vulnerable under the BC Act and EPBC Act
- Yirriwardu (Northern Quoll) (*Dasyurus hallucatus*) – resident – listed as Vulnerable under the BC Act and EPBC Act
- Grey Falcon (*Falco hypoleucos*) – regular visitor – listed as Vulnerable under the BC Act and EPBC Act
- Peregrine Falcon (*Falco peregrinus*) – regular visitor – listed as Other Specially Protected under the BC Act
- Ghost Bat (*Macroderma gigas*) -regular visitor – listed as Vulnerable under the BC Act and EPBC Act
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia* (Pilbara)) – regular visitor – listed as Vulnerable under the BC Act and EPBC Act.

It is noted that of the above fauna species, only the Yirriwardu (Northern Quoll) was confirmed to be present during the site inspection, based on the presence of scat around the periphery of the Jinbi area (Bamford Consulting Ecologists 2024).

An additional ten fauna species listed under either the BC Act or EPBC Act were considered to be either vagrant or irregular visitors to the project area. Seven fauna species listed as Priority fauna species by DBCA were also considered to have the potential to occur.

Key vertebrate species of conservation significance are considered to be the Yirriwardu (Northern Quoll) and Bargunyji (Pilbara Olive Python), which are both non-avian fauna expected to be residents of the project area. These species are discussed further in sections 5.5.4.1 and 5.5.4.2, as follows.

5.5.4.1 Yirriwardu (Northern Quoll)

This species was once widespread across much of northern Australia from the Pilbara to south-east Queensland, however is now isolated to a number of fragmented populations across its former range. Within the Pilbara, Yirriwarduy (Northern Quoll) is often associated with rocky areas which may afford shelter.

Within the project area, potential habitat for Yirriwardu (Northern Quoll) was considered to be associated with the central Jinbi area, where rocky overhangs and granite boulders represent potential denning and breeding habitat. Scats from Yirriwardu (Northern Quoll) were identified within the Jinbi area which confirmed the species' presence. It is likely that landscapes adjacent to the central Jinbi area and broader drainage lines are utilised as foraging habitat but the species.

It is recognised that the recent fire may have caused a temporary decline in population or disappearance of this species from the project area, until vegetation regenerates.

The Yirriwardu (Northern Quoll) is considered sacred and not used by the Yindjibarndi. It is forbidden to harm or eat this animal as it is considered culturally and religiously significant. The Yindjibarndi people enjoy it when this species is observed (Greening Australia 2016).

All potential denning and breeding habitat within the project area, which is represented by the Jinbi area will be completely avoided. Broader drainage lines are unlikely to be suitable for the placement of infrastructure given the potential flood risk in these locations (see section 5.3.3).

5.5.4.2 Bargunyji (Pilbara Olive Python)

This species is restricted to ranges within the Pilbara region, usually in association with rocky landscapes. The species is usually found in proximity to water. Whilst there are no published records of the species within 40 km of the project area, suitable habitat for the species is likely present in the form of the central Jinbi area which provides both permanent water sources and rocky overhangs. Major drainage lines within the project area may also provide some suitable habitat.

Yindjibarndi people historically used Bargunyji (Pilbara Olive Python) as food, however it is no longer eaten. The bones on the rib cages can be used to make hooks for fishing (Greening Australia 2016).

It is noted that those areas of the project area which represent the most suitable habitat for Bargunyji (Pilbara Olive Python) such as the central Jinbi area will be completely avoided. Broader drainage lines are unlikely to be suitable for the placement of infrastructure given the potential flood risk in these locations (see section 5.3.3).

5.5.5 Short Range Endemic Fauna

To understand the likely assemblage of Short Range Endemic (SRE) fauna within the project area, a desktop assessment was undertaken by Bennelongia Environmental Consultants (2024) (Appendix 3). The assessment cross referenced records from the Western Australian Museum, the Atlas of Living Australia and Bennelogia databases with site specific habitat information, including vegetation mapping undertaken by Mattiske Consulting Ecologists (2024; Appendix 1), surface geology and soils, land systems, and topography. The desktop assessment was undertaken across a 100 km x 100 km area to provide a contextual understanding of the potential SRE assemblage.

Of the 134 species recorded within the assessment area, three were considered to be confirmed SRE species, 65 were considered to be potential SRE species, and 69 were considered to be widespread. None of the records were identified to be Threatened or Priority listed species at the state or federal levels.

In terms of habitat for SRE fauna, isolated areas protected from extreme weather that retain moisture throughout drier months of the year are generally considered to be the most suitable, particularly where landforms provide a combination of habitat elements conducive to SRE habitat, such as soft sandy soils, tree coverage and litter, and gullies and ridges. Considering the known vegetation communities within the section 88 area and general topography, it could be reasonably concluded that the most suitable habitat for SRE species within the project area is the Jinbi avoidance area (Figure 1). The two major water courses running through the project area may also support suitable SRE habitat. It is noted that flood risk in these areas will likely limit the extent to which infrastructure will be developed in these locations.

5.6 Yindjibarndi Cultural Heritage

Yiyangu Pty Ltd as an equity owner of YEC has agreed it will consult with YAC and YNAC in relation to the proposed location of renewable energy projects, and that it will not develop a project in areas that are culturally, socially, or environmentally not acceptable to YAC and YNAC. Yiyangu Pty Ltd has also agreed to not carry out any activities for a renewable energy project without first complying with the ILUA and Heritage Protection Agreement established between these parties.

On 6 September 2023, Yiyangu Pty Ltd requested that YAC and YNAC consider whether the proposed location for the Jinbi Solar Facility (i.e. the project area) is culturally, socially and environmentally acceptable to YAC and YNAC. On the same date, YAC and YNAC resolved that, subject to a detailed cultural heritage survey being completed, the project area is a location which is culturally, socially and environmentally acceptable to YAC and YNAC.

A detailed cultural heritage survey is scheduled to be undertaken of the project area once detailed project layout has been refined. The results of the survey will further inform the final siting of proposed solar infrastructure. Where places and objects of cultural significance are identified in the course of heritage surveys, no disturbance to these sites will occur without the express consent of YAC and YNAC.

One cultural heritage site within the project area is registered in the Aboriginal Cultural Heritage Inquiry System. The site (Place ID: 10937) is registered as a 'Grinding areas / Grooves' place type, and was recorded in February 2001, likely in conjunction with the installation of transmission infrastructure in this location.

The Yindjibarndi community have also voiced through two information sharing sessions, the cultural importance of the central Jinbi area. While not a registered site, YEC has committed to the complete avoidance of this area.

5.7 Bushfire Risk

The Jinbi project is located in a bushfire prone area, as mapped by the Department of Fire and Emergency Services (DFES) (Landgate 2023). These areas are defined as being subject to, or likely to be subject to, bushfire attack, and are identified by the presence of and proximity to bush fire prone vegetation and includes both the area containing the bush fire prone vegetation and a 100 m buffer zone immediately surrounding it.

In accordance with *State Planning Policy 3.7: Planning in Bushfire Prone Areas*, a Bushfire Management Plan (BMP) is currently being prepared to support the Development Application for the Jinbi Solar facility. The BMP will be developed to address the siting and separation of infrastructure from bushfire hazards, vehicular access, and firewater supply. The BMP will also specify the requirement for Asset Protection Zones which will likely be installed to limit the potential for bushfire impact on infrastructure and the surrounding landscape. Asset Protection Zones will also be prioritised for the placement of internal access roads, so as to mitigate the overall extent of native vegetation clearing required.

5.8 Conservation Areas

The project area is located approximately 240 m west of the Millstream Chichester National Park (R 30071; Figure 2), a class A reserve managed by DBCA on behalf of the Conservation and Parks Commission of Western Australia under the *Conservation and Land Management Act 1984.*

From a surface water perspective, Millstream Chichester National Park is generally disconnected from the project area, excluding a small area in the west of the park from which surface water appears to flow to the project area.

Noting the buffer distance between the project area and the Millstream Chichester National Park, as well as a general absence of hydrological connectivity between the two sites, there are not anticipated to be any impacts from the Jinbi project on the conservation estate.

There are no Environmentally Sensitive Areas (ESAs) mapped within or adjacent to the project area, as defined under the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005.* The nearest ESA to the project area is located approximately 240 m to the east, and is associated within the Millstream Chichester National Park.

6 Actions to Avoid and Minimise Impacts

6.1 Direct Impacts

Potential direct impacts on the environment resulting from implementation of the Jinbi Solar Facility are anticipated to be limited to the clearing of native vegetation which represents potential foraging and dispersal habitat for native fauna, only.

Onsite flora, vegetation and terrestrial fauna surveys, as well as a review of SRE habitat suitability have identified environmental values across the project area as being concentrated within a central gorge, within which permanent freshwater Jinbi are located. This area has also been identified as being of cultural significance to the Yindjibarndi community, who have requested that the area be retained and the community afforded ongoing and unimpeded access throughout the Jinbi Solar Facility's construction and ongoing operation.

YEC has committed to the complete avoidance of this area and the environmental and cultural values contained therein, as well as all other areas which are not environmentally, culturally or socially acceptable to the Yindjibarndi community.

Whilst detailed development design is progressing with the objective of establishing an appropriate buffer distance between the Jinbi avoidance area and the proposed solar facility, it is recognised that existing transmission infrastructure is already located approximately 30 m to the south west, in the form of the Rio Tinto Millstream Switchyard. An appropriate balance between centralising and consolidating new infrastructure in immediate proximity to the Millstream switchyard and establishing an appropriate buffer from the Jinbi avoidance area will be a primary focus for the development design.

The above notwithstanding, YEC is committed to ensuring that opportunities for fauna dispersal and foraging habitat is maintained throughout the Jinbi Solar Facility.

ACEN Australia has successfully implemented a development design at the Stubbo Solar facility in New South Wales, where pastures retained between panel rows is of an extent which facilitates ongoing sheep grazing. It is anticipated that a similar approach taken for the Jinbi Solar Facility will provide for ongoing foraging and dispersal opportunities for conservation significant fauna, where bushfire mitigation measures permit. Example images of Stubbo Solar during and post construction are presented in Plate 1 below.

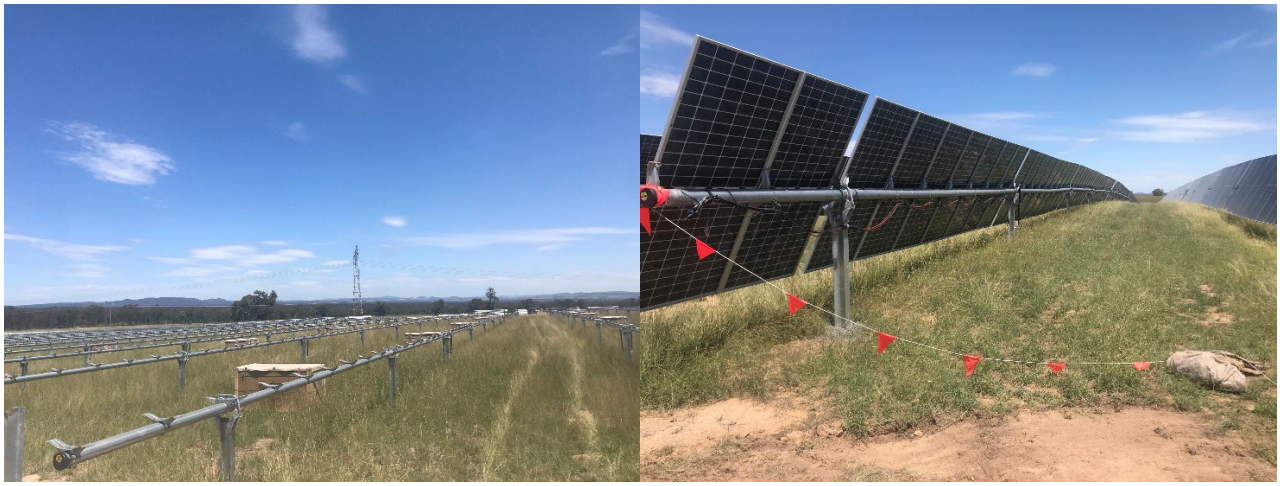


Plate 1: ACEN Australia Stubbo Solar facility, New South Wales. The retention of pastures between panel rows during and post construction facilitates ongoing sheep grazing.

Where fencing is to be installed along the facility's perimeter, this will be constructed in such as manner as to allow both Yirriwardu (Northern Quoll) and Bargunyji (Pilbara Olive Python) access and egress between the facility and the central Jinbi area.

In identifying the most appropriate location for the Jinbi Solar facility, due consideration was given to the potential to utilise existing transmission infrastructure, where this is available. No additional transmission infrastructure beyond the project area is anticipated to be required.

6.2 Indirect Impacts

Potential indirect impacts on the environment resulting from implementation of the Jinbi Solar Facility are anticipated to be limited to dust emissions during construction activities, as well as potential vehicle fauna strike, only.

YEC is investigating the implementation of terrain-following technology that is fit for installation on variable topography. This will enable the project to utilise the existing terrain to the fullest extent practicable, thereby minimising the total extent of earthworks and vegetation clearing required.

To minimise the length of time during which soils are exposed following the clearing of vegetation, clearing and construction is proposed to be undertaken in a phased approach, with clearing undertaken on an as-needed basis as construction works progress. Vegetation will generally remain in-situ within solar array areas to further stabilise topsoil, where bushfire mitigation measures permit. Water carts will be available for use throughout the project area during clearing and construction activities to further minimise the potential for dust emissions.

Pre development surface water flows will be maintained during and post construction, thereby eliminating the potential for altered hydrological regimes within and downstream of the project area.

All site personnel will undertake an induction which will outline the environmental and cultural values within the project area, as well the management measures to be implemented to mitigate potential environmental impacts, which will include (at minimum) vehicle speed restrictions within the project area and the establishment and utilisation of an environmental and cultural incidents procedures.

7 Assessment Against Native Vegetation Clearing Principles

An assessment of the proposed vegetation clearing against the ten native vegetation clearing principles contained in Schedule 5 of the EP Act is provided in Table 8. Based on the assessment of the known environmental values, the maximum extent of clearing proposed, and the avoidance and mitigation measures committed to by YEC, it is considered that the proposed clearing is not at variance with nine of the ten clearing principles, and unlikely to be at variance with one (principle f). It is recognised that as the development design is refined, the final extent of clearing requirement may not be at variance with any of the ten clearing principles.

Table 7: Assessment Against Clearing Principles

Clearing principle	Discussion	Assessment
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity	No more than 177 vascular plant taxa were recorded within the Mattiske Consulting (2024) survey area. Generally, vegetation recorded within the project area was considered to be consistent with that of the region more broadly. The only vegetation within the project area considered to represent conservation significant vegetation was associated with the C2 vegetation community, which is considered likely representative of the Priority 2 listed Riparian Flora and Plant Communities PEC. The entirety of the C2 vegetation community is proposed to be retained within the Jinbi avoidance area (Figure 1). It is recognised that following the fire through the region in November 2023, biological diversity within the project area has likely further reduced. No vegetation considered to comprise a high level of biological diversity will be cleared to facilitate the proposal.	The proposed clearing is not considered to be at variance with this principle.
(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	The reconnaissance fauna assessment undertaken of the project area and broader Section 88 application area identified faunal values as being focused around the gorge and various Jinbi in the centre of the project area. This area was considered likely to represent potential denning and breeding habitat for Yirriwardu (Northern Quoll), and preferred habitat for Bargunyji (Pilbara Olive Python). The fauna assessment also confirmed the function of this area as a refugium for a broader faunal assemblage during adverse conditions, such as was observed from the November 2023 bushfire. A review of habitat suitability within the project area for SRE fauna also identified the central Jinbi area as being the most conducive to supporting SRE fauna, based on the presence of diverse habitat elements, such as soft sandy soils, tree coverage and litter, and gullies and ridges. The entirety of the central Jinbi area is proposed to be retained throughout the course of the Jinbi Solar Facility's construction and operation. Noting that vegetation in landscapes surrounding the central Jinbi area is considered to represent potentially suitable foraging and dispersal habitat for native fauna, YEC have committed to pursuing a development design which seeks to maintain foraging and dispersal opportunities where possible. Semi permeable perimeter fencing where required, as well as appropriate solar row separations which provide for the availability of fauna habitat are both key means by which this will be achieved. On this basis, significant habitat for fauna indigenous to Western Australia is not anticipated to be clearing to facilitate the proposal.	The proposed clearing is not considered to be at variance with this principle.
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora	Only one conservation significant flora species was identified within the project area, being the Priority 2 listed *Pentalepis trichodesmoides* subsp. *Hispida.* The species was represented by a single individual located on the windrow of an existing access track (Figure 5), suggesting the species' preference for at least partially disturbed habitat. It is unclear whether this species persists within the project area following the fire. YEC has committed to the complete avoidance of this individual during clearing, construction and operational activities, with a 10 m demarcated buffer established. On this basis, no native vegetation will be cleared which is considered necessary for the continued existence of rare flora.	The proposed clearing is not considered to be at variance with this principle.
(d) Native vegetation should not be cleared if it comprises the whole, or a part of, or is necessary for the maintenance of, a threatened ecological community	No threatened ecological communities have been identified within the project area or broader section 88 application area. The entire extent of the likely priority 2 listed Riparian Flora and Plant Communities PEC will be retained in the central Jinbi area. No native vegetation representing a threatened ecological community will be cleared to facilitate the Jinbi Solar Facility.	The proposed clearing is not considered to be at variance with this principle.
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	The project area is located in the extensive land use zone of Western Australia, with two pre-european vegetation system associations mapped as intersecting the project area boundary. Both of these vegetation system associations are considered to have 100% of their original extents remaining within the state (GoWA 2019). The Jinbi Solar Facility is not considered to be in an area that has been extensively cleared, on this basis.	The proposed clearing is not considered to be at variance with this principle.
(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or a wetland	Two vegetation communities mapped within the broader Section 88 application area were considered to be growing in association with a watercourse or wetland, being the C1 and C2 vegetation communities (Figure 5). The entire extent of the C2 vegetation type is proposed to be retained within the Jinbi avoidance area, and will not be impacted by the proposal. The C1 vegetation type aligns with the remainder of two main watercourses which traverse the site from the south to the north. An assessment of flood risk undertaken of the section 88 application area by Hydrologia (2023) identified these watercourses as being of particularly high risk of flooding, with deeper and faster potential flows observed in these areas than elsewhere.	The proposed clearing is considered unlikely to be at variance with this principle.

Clearing principle	Discussion	Assessment
	Noting the high risk of flooding in these areas, it is highly unlikely that they will be identified as appropriate locations for the installation of solar infrastructure. Notwithstanding, access roads may need to be constructed which transect portions of the C1 vegetation community, depending on the final development design. On this basis it is considered unlikely that native vegetation will be cleared which is associated with a watercourse or wetland.	
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	YEC is committed to ensuring pre development surface water flow paths are maintained during and post construction through the installation of terrain-following technology that is fit for installation on variable topography, without the need for extensive earthworks or vegetation clearing. This is anticipated t to eliminate the potential for water erosion within or downstream of the project area. Dust emissions will be mitigated via a phased approach to clearing and construction works, with clearing undertaken on an as-needed bases as construction works progress to minimise the length of time during which soils are potentially exposed. Vegetation will generally remain in-situ within solar array areas to further stabilise topsoil, where bushfire mitigation measures permit. Water carts will be available for use through the project area during clearing and construction activities to further minimise the potential for dust emissions or erosion. On this basis, the proposed clearing is not anticipate to cause appreciable land degradation.	The proposed clearing is not considered to be at variance with this 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	The nearest conservation area to the project area is Millstream National Park, which is separated from the project area by a buffer of approximately 240 m. It is recognised however that this buffer distance represents the minimum potential distance between the location of new infrastructure and the national park, and that following detailed development design, this buffer may be substantially increased. From a surface water perspective, the Millstream National Park is also noted to be hydrologically upstream of the project area. On this basis, the proposed clearing is not anticipated to have a potential impact on the environmental values of any conservation area.	The proposed clearing is not considered to be at variance with this principle.
(i) Native vegetation should not be cleared if the clearing of vegetation is likely to cause deterioration in the quality of the surface or underground water	Permanent surface water expressions within the project area are limited to a series of Jinbi associated with the C2 vegetation community, the entire extent of which is proposed to be completely avoided throughout the project's implementation. Surface water flows across the project area which may occur following rainfall events will be maintained throughout the course of the Jinbi Solar Facility's construction and operation. In terms of groundwater, localised perched or shallow groundwater is anticipated to be limited to the central Jinbi area and along the two drainage lines transecting the site. Recognising the flood risks in these areas, the final location of solar facility infrastructure will be preferenced away from these areas, where depth to groundwater is beyond the depth of any buried infrastructure (such as shallow and piled foundations. YEC will develop a methodology for construction and operational water requirements as development designs progress, in consultation with YAC and YNAC. On this basis, the proposed clearing is not anticipated to cause any deterioration in the quality of surface or underground water.	The proposed clearing is not considered to be at variance with this principle.
(j) Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding	Construction of the Jinbi Solar Facility is proposed to be undertaken in a manner which generally maintains existing topographic contours and surface water flows across the project area. A flood risk assessment of the broader section 88 application area undertaken by Hydrologia (2023) identified the two major watercourses which transect the project area as being of particularly high risk of pre development flooding, with deeper and faster potential flows observed in these areas than elsewhere. Noting the apparent risk of flooding in these areas, it is highly unlikely that they will be identified as appropriate locations for the installation of solar infrastructure. On this basis, the proposed clearing of native vegetation is not anticipated to cause or exacerbate the incidence or intensity of flooding.	The proposed clearing is not considered to be at variance with this principle.

8 Conclusion

The Jinbi Solar Facility is a Yindjibarndi owned initiative which will negate greenhouse gas emissions which would otherwise have been generated through the burning of fossil fuels, and therefore represents meaningful action toward achieving Rio Tinto's and the State and Federal Government's targets of achieving net zero emissions by 2050.

On-site ecological investigations identified environmental values across the surveyed area as being concentrated around a series of permanent freshwater Jinbi in the centre of the project area. The Jinbi are associated with groundwater dependent vegetation, which is likely representative of the Priority 2 listed ecological community 'Riparian Flora and Plant Communities of Springs and River Pools with High Water Permanence of the Pilbara Region'. This area was also considered to represent potential breeding and shelter habitat for Yirriwardu (Northern Quoll) as evidenced by the presence of scat, and potentially suitable habitat for the Bargunyjii (Pilbara Olive Python). The area is also considered to represent the most suitable potential habitat for Short Range Endemic fauna in the project area.

The Jinbi have been identified as being of cultural significance to the Yindjibarndi community, who have requested that this area be retained, and the community afforded ongoing and unimpeded access throughout the Jinbi Solar Facility's construction and ongoing operation.

YEC has committed to the complete avoidance of the Jinbi area and the environmental and cultural values contained therein, as well as all other areas which are not environmentally, culturally or socially acceptable to the Yindjibarndi community. Detailed development design for the Jinbi Solar Facility is currently progressing with the aim of facilitating ongoing faunal dispersal and foraging opportunities within and between solar arrays, and to take advantage of existing transmission infrastructure within the project area to further minimise potential environmental impacts. It is anticipated that the total extent of clearing ultimately required will be less than the 600 ha herein proposed.

An assessment of the proposed vegetation clearing was undertaken against the ten native vegetation clearing principles contained in Schedule 5 of the EP Act. Based on the assessment of the known environmental values, the maximum extent of clearing proposed, and the avoidance and mitigation measures committed to by the proponent, it is considered that the proposal clearing is not at variance with nine of the ten principles, and unlikely to be at variance with one (principle (f)). The proposed clearing is not considered to be significant at either a local or regional scale.

9 References

Bamford Consulting Ecologists (2024). *Yindjibarndi Renewable Energy Project: Fauna Assessment Report.* Prepared for Yindjibarndi Energy Corporation.

Beard, J. S. (1975). Vegetation Survey of Western Australia: Pilbara. 1:1000000 Vegetation Series. The Vegetation of the Pilbara Area. University of Western Australia Press.

Bennelongia Environmental Consultants (2024). *Yindjibarndi Renewable Energy Jinbi Project: Short Range Endemic Invertebrate Desktop Assessment.* Prepared for Yindjibarndi Energy Corporation.

Department of Environment (2016). *EPBC Act Referral Guideline for the Endangered Northern Quoll Dasyurus* hallucatus

Department of Mines, Industry Regulation and Safety (DMIRS) (2000). *1:100,000 Geological series map – Pinderi Hills (2255)*.

Environmental Protection Authority (EPA) (2016). *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment*. Government of Western Australia.

Government of Western Australia (2019). *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019.* WA Department of Biodiversity Conservation and Attractions, Perth.

Greening Australia (2016). *Report: Yindjibarndi Ethnobiological Survey.* Prepared for Yindjibarndi Aboriginal Corporation.

Hydrologia (2023). *Yinjibarndi Energy Project: Section 88 Flood Extents. Prepared for Yindjibarndi Energy Corporation.*

Juluwarlu Aboriginal Corporation (2005). *Garruragan: Yindjibarndi Fauna.* Juluwarlu Aboriginal Corporation, Roebourne WA.

Landgate (2023). Shared Land Information Platform (SLIP) – Locate V5. Available via https://maps.slip.wa.gov.au/landgate/locate/. Government of Western Australia, Perth Western Australia.

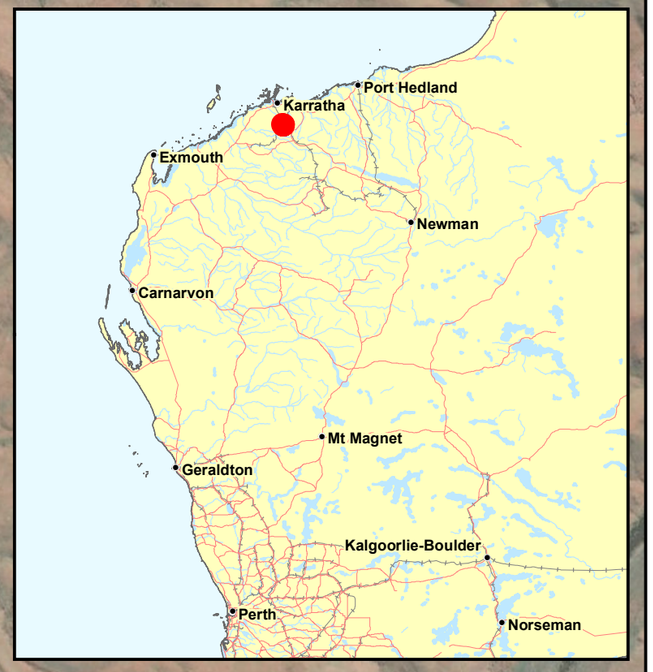
Mattiske Consulting Pty Ltd (2024). *Reconnaissance Flora and Vegetation Assessment: Jinbi Project.* Prepared for Yindjibarndi Energy Corporation.

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.

Figures

LEGEND
- Jinbi Project Area (750.35 ha)
- Section 88 Option to Lease Application Area (1606.75 ha)
- Jinbi Avoidance Area
- Railway
- Road

133.53 ha
207.96 ha
324.39 ha
52.64 ha
31.83 ha



N

0 125 250 500 750 1,000 m

Scale: 1:20,000 @ A3
GDA2020 MGA Zone 50

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Yindjibarndi Energy Corporation
NATIVE VEGETATION CLEARING PERMIT APPLICATION
MILLSTREAM, W.A.

PROJECT AREA LOCATION

Figure 1

LEGEND
- Jinbi Project Area
- Section 88 Option to Lease Application Area
- Millstream Chichester National Park
- Railway
- Major Road

MANUWARRA RED DOG HWY
Lake Poongkaliyarra
TABLE HILL
HIGH TABLE HILL
ROEBOURNE - WITTENOOM ROAD
PROJECT AREA
249 m
390 m
Munni Munni Creek
CHICHESTER RANGE
Portland River
MILLSTREAM-CHICHESTER
MILLSTREAM CHICHESTER NATIONAL PARK
390 m

N
0 1.25 2.5 5 7.5 10 km
Scale: 1:250,000 @ A3
GDA 1994 MGA Zone 50
Source: Legislated Lands and Waters - DBCA

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MILLSTREAM, W.A.

SURROUNDING LAND USE

Figure 2

LEGEND

- Jinbi Project
- Section 88 Option to Lease Application
- Jinbi Avoidance
- Railway
- Contour (mAHD)

Geology

- Ad: Dolerite. Altered basic
- Ag: Granite. Leucocratic medium to coarse grained equigranular granite, porphyritic in places; granitic gneiss; migmatite.
- P_fc: CLIFF SPRINGS FORMATION. Tuff and tuffaceous detrital rocks; shale, siltstone, sandstone, conglomerate; with volcanic pisoliths.
- P_fcl: Lyre Creek Agglomerate Member. Tuff, fine hrained agglomerate, tuffaceous quartzite, and calcareous beds; with volcanic pisoliths and lava "bombs".
- P_fk: KYLENA VOLCANICS. Basic, intermediate, and acid lavas, with thin intercalated pyroclastic rocks; sandstone.

Ad
P_fc
200
200
200
Ag
200
200
P_fc
250
P_fk
P_fcl
P_fk
250
300
P_fk

N

0 125 250 500 750 1,000 m

Scale: 1:20,000 @ A3
GDA2020

Source: Geology - DMIRS Contours - Geoscience Australia

ENVIRONMAPS | t: 0406 590 006
Environmental Mapping Solutions | www.environmaps.com.au

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NATIVE VEGETATION CLEARING PERMIT APPLICATION
MILLSTREAM, W.A.

TOPOGRAPHY AND SOILS

Figure 3

LEGEND

- Jinbi Project
- Section 88 Option to Lease Application
- Jinbi Avoidance
- Railway
- Catchment Boundary
- Watercourse - minor, non-perennial

Soil Landscape

- Boolaloo System: Granite hills, domes, tor fields and sandy plains supporting spinifex grasslands with scattered shrubs.
- Capricorn System: Rugged sandstone hills, ridges, stony footslopes and interfluves supporting low acacia shrublands or hard spinifex grasslands with scattered shrubs.
- Macroy System: Stony plains and occasional tor fields based on granite supporting hard and soft spinifex shrubby grasslands.
- Rocklea System: Basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex and occasionally soft spinifex grasslands with scattered shrubs.

Capricorn System

Macroy System

Capricorn System

Rocklea System

MAITLAND RIVER CATCHMENT

HARDING RIVER CATCHMENT

N

0 130 260 520 780 1,040 m

Scale: 1:21,437 @ A3
GDA2020

Source: Landscapes - DMIRS Catchments - DWER

ENVIRONMAPS | t: 0406 590 006
Environmental Mapping Solutions | www.environmaps.com.au

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LANDFORMS AND HYDROLOGY

Figure 4

Q001
Q002
Q003
Q004
Q005
Q006
Q007
Q008
Q009
Q010
Q011
Q013
Q015
Q016
Q017
Q019
Q020
Q021
R012
R014
R018

LEGEND

- Jinbi Project Area
- Section 88 Option to Lease Application
- Railway
- Road
- Quadrat
- Releve
- *Pentalepis trichodesmoides subsp. hispida* (P2)

Preliminary Vegetation Types

Shrubland

S1 (c): *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 on stony plains and granite tor fields.

Grassland

G1 (b): *Acacia ancistrocarpa, Acacia pyrifolia var. pyrifolia, Acacia bivenosa* mid sparse shrubland over KRT267 Triodia 12 paid ID, *Triodia epactia* low hummock grassland on rugged sandstone hilltops.

Creeklines

C1 (a): *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.

C1 (d): *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.

N

0 125 250 500 750 1,000 m

Scale: 1:20,000 @ A3
GDA2020 MGA Zone 50

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Environmental Mapping Solutions | www.environmaps.com.au

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ENVIRONMENTAL APPROVALS ROADMAP
MILLSTREAM, W.A.

VEGETATION COMMUNITIES

Figure 5

Appendix 1 Mattiske (2023) Jinbi Project Flora and Vegetation Survey

Appendix 2 Bamford Consulting Ecologists (2023). Jinbi Project: Terrestrial Vertebrate Fauna Survey

Appendix 3 Bennelongia (2024). Jinbi Project: Short Range Endemic Desktop Assessment