Marri Wind Farm

Supporting Environmental Referral Document

Marri WF Pty Ltd trustee for Marri WF Unit Trust (the Proponent)

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Document control record

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Executive summary

Marri WF Pty Ltd as trustee for the Marri WF Unit Trust (the Proponent), a wholly owned subsidiary of Alinta Energy Pty Limited (Alinta Energy), is seeking approval to develop the Marri Wind Farm (the Proposal) located approximately 20 kilometres (km) south of the township of Dandaragan within the Shire of Dandaragan.

This Proposal will have up to 82 turbines, each up to 275 metres (m) maximum height and capacity to generate up to 550 megawatts (MW) of renewable energy. This equates to approximently 10% of the current demand for electricity through the Southwest Interconnected System (SWIS). The Proposal will connect to the SWIS, Western Power's transmission network across the south west of Western Australia. This connection will allow the Proposal to benefit from the Clean Energy Link North infrastructure upgrade works.

Additionally, a 6,600 megawatt hour (MW/h) battery energy storage system (BESS) and all ancillary infrastructure may also be incorporated into the Proposal, pending the final financial investment decision. The scope of this document incorporates all proposed activities which may be required to construct, commission, operate and decommission the Proposal. The final turbine make and model is yet to be confirmed and will depend on the procurement and commercial processes following the Proposal's approval.

This Environmental Referral Supporting Document is submitted to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986* (WA) (EP Act).

Pre-referral consultation was undertaken with the Department of Water and Environmental Regulation (DWER) and EPA on 30 January 2025; 10 February 2025 and 8 September 2025. Further consultation has been completed during post referral with DWER and EPA on 15 January 2026, 9 February 2026 and 1 April 2026.

Additional pre-referral meetings were held with the state government Department of Planning, Lands and Heritage (DPLH) on 24 November 2024 and 13 March 2025 and the Commonwealth government Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 27 March 2025; 5 June 2025 and 27 August 2025, as the federal leading authority.

The following Environmental Factors, as listed in EPA guidance (EPA, 2023b), have been identified as preliminary key environmental factors for this Proposal:

- Flora and vegetation
- Terrestrial fauna
- Social surroundings

Potential impacts from implementing this Proposal on these factors will be managed through adoption of the EPA's hierarchy of avoid, minimise, rehabilitate and offset in accordance with the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023).

All potential impacts have been identified and can be effectively managed through implementation of the EPA's mitigation hierarchy in conjunction with industry best practice management measures to ensure residual impacts are avoided, reduced or minimised.

A summary of the Proposal is provided in the following tables (ES Table 1; ES Table 2 and ES Table 3) as per the EPA's current Environmental Referral Document guidance material.

ES Table 1 General Proposal Content Description

Proposal title	Marri Wind Farm
Proponent name	Marri WF Pty Ltd
Short description	The Marri Wind Farm is a renewable energy generation project located in the Shire of Dandaragan approximately 110 km north of Perth in Western Australia. The Proposal includes infrastructure capable of generating and delivering up to a maximum of 550 MW of renewable energy from turbines able to generate up to 2,000 GWh annually, or 10% of the current SWIS demand. The engineered design includes up to a maximum of 82 turbines with a maximum tip height of 275 m. These are to be positioned within the 12,483.55 hectare (ha) Development Envelope (DE). A potential future battery energy storage system (BESS) with capacity up to 6,600 MWh is also included within this Proposal. Additional supporting infrastructure incorporates internal roads, hardstands, laydown areas, substations, cables, and a transmission line connecting to the adjacent 330 kV transmission line that forms part of the SWIS. This connection will enable the Proposal to benefit from the Clean Energy Link North infrastructure upgrade.

ES Table 2 General Proposal Content Description

General Proposal Content Description		
Proposal elements	**Location/description**	**Maximum extent/capacity/range**
Development Envelope includes the Indicative Disturbance Footprint with the following features: ■ Turbines ■ Turbine foundations ■ Turbine hardstands ■ Wind farm substation ■ Connector substation ■ Transmission line to Connector substation ■ Battery energy storage system (BESS) ■ Operational and maintenance area ■ Permanent meteorological masts ■ Permanent communication tower External site access ■ Internal access roads or tracks ■ Clearing to necessitate site entry ■ Supporting utilities (temporary Infrastructure)	Within the Development Envelope Figure 1-1: Location Figure 1-3: Site plan	Development Envelope of approximately 12,483.55 ha Indicative Disturbance Footprint of approximately 964.37 ha Proposed Operation Footprint of approximately 462.92 ha
Construction elements	**Location/description**	**Maximum extent/capacity/range**
Temporary construction compound, laydown areas and hardstands, biosecurity laydown and site security areas. Borrow pits/quarries and stockpiles Temporary workers accommodation	Within the Development Envelope Figure 1-3	Indicative Disturbance Footprint of approximately 964.37 ha

General Proposal Content Description		
Water supply and temporary turkey's nests		
Concrete batching plants	Within the Development Envelope Figure 1-3	Concrete for the foundations will be mixed at concrete batching plants. Concrete batching material may be sourced offsite or from onsite borrow pits.
Construction water supply within the Development Envelope	Water abstraction for construction will not exceed current annual allocation of 672,000 kL	Anticipated water use over the three years for construction is 297ML or 0.03ML/day
Operational elements	**Location/description**	**Maximum extent/capacity/range**
Wind energy production	Within the Development Envelope	Up to 82 WTGs with total wind capacity of up to 550 MW
Battery Energy Storage System (BESS)		6,600 MW
Transmission line and connection substation and wind farm substation.		
Operational maintenance building/s and all permanent roads, structures and fuel storage.		Approximately 275.69 ha for permanent supporting infrastructure
Proposal Elements with Greenhouse Gas Emissions		
Construction elements	**Details**	
Scope 1	4,200 t CO_2-e per year (or 12,500 t CO_2-e over a 3-year construction phase).	
Scope 2	Not applicable	
Scope 3	66,666 t CO_2-e per year (or 200,000 t CO_2-e over 3 years construction period).	
Operational elements	**Details**	
Scope 1	750 t CO_2-e/annum	
Scope 2	1,500 t CO_2-e/annum	
Scope 3	650 t CO_2-e/annum	
Rehabilitation		
At the end of the construction and commissioning phases, all identified temporary construction areas will be returned to pre-construction land use activities where practical and as agreed with landowners. If due to the proximity of capital infrastructure, any area unable to be returned to agricultural production will be rehabilitated following decommissioning. Following eventual decommissioning all previously operational areas, and any amendments which may occur during the operational life of the Proposal, are to be rehabilitated to support the continuance of the previous land use as agreed with landowners.		
Commissioning		
There are no environmental impacts specific to the commissioning phase.		
Decommissioning		
At the end of the initial land lease term (approximately 2059), the Proponent will perform a feasibility study to decide whether to continue use and/or upgrades of the capital infrastructure and technologies or to decommission and rehabilitate. Decommissioning would incorporate the following: ■ Systematic de-energisation of all infrastructure, plant and equipment ■ Dismantling, repurposing, recycling or complete removal for disposal of all infrastructure, plant and equipment or componentry ■ Rehabilitation activities implemented across the decommissioned operation footprint and any additional disturbance during decommissioning ■ Recycling of recyclable materials (including batteries, precious and base metals, glass etc.) During the decommissioning phase some constructed elements may be subject to the landowner's discretion and remain post rehabilitation assessment (such as upgraded or sealed roads and tracks). All decommissioning activities will be developed in consultation with relevant stakeholders, for Post-Development Land Use.		

General Proposal Content Description		
Other elements		
Initial Proposal timeline	Maximum life	The proposed technology is expected to have an economic life of greater than 35 years
	Construction phase	Up to 3 years (2027 to 2030)
	Operational phase	> 35 years
	Decommissioning phase	Approximately 1 year To be determined no later than 2 years prior to final power production.
Potential to extend operational life	Prior to the operational phase ending, the Proponent may seek additional approval (State, local government) to extend the initial operation for an additional 35 years. Any decision to extend the operation of the Proposal will depend on technology advancement and other conditions which may only become known closer to 2059. If no extension is sought, the decommissioning phase will commence.	

ES Table 3 Summary of potential impacts, proposed mitigation and proposed environmental outcomes

Potential impacts, proposed mitigation and proposed environmental outcomes of key environmental factors	
Key environmental factor 1: Flora and vegetation	
Potential impacts	■ Direct impact through vegetation clearing. (refer Table 6-15) – Clearing of 7.02 ha of native vegetation (comprised of 4.08 ha native vegetation and 2.94 ha scattered native trees on agricultural land), including 0.168 ha of Banksia Woodland TEC ■ Indirect impact through edge effects, dust mobilisation and deposition during construction phase, introduction or spread of weeds from unclean machinery or equipment (refer Table 6-16).
Mitigation hierarchy	Avoid: ■ Superseding transmission line option A and continuing with the much shorter transmission line option B. This avoids the Moore River and riparian vegetation systems. ■ Relocation of internal roads to avoid isolated potential forage or roosting trees. ■ Relocation of internal cable corridor to avoid isolated potential nesting trees. ■ Where practicable utilise existing tracks or fence lines (existing disturbance) over clearing of vegetation or disrupting waterways. ■ Where possible, trimming rather than complete removal of roadside vegetation to allow oversized infrastructure transport. ■ Pre-clearance flora and vegetation surveys within the defined construction footprint to ensure identification of any previously unidentified occurrences of Priority flora. Minimise: ■ A temporary impact of approximately 3.65 ha of trimming roadside vegetation above the height of 1.8 m to allow oversized infrastructure transport to minimise the clearing required. The trimming of roadside vegetation within the Development Envelope will only be maintained during the construction phase and be allowed to regrow on completion of oversized infrastructure transport. ■ Refinement of turbine orientation and road access alignment for WP53, WP57, WP10 and relocation of laydown area from WP46 to WP37. ■ Amend access to temporary batch plant to avoid potential nesting trees and geomorphic wetland features. ■ Minimising disturbance to the Carin Carin Creek using directional drilling for the cable corridor, as opposed to constructing a dual use road with cable corridor and for oversize overmass transports. ■ Measures included within the future Construction Environmental Management Plan (CEMP) and Biosecurity Management Plan to minimise potential indirect impacts to flora and vegetation and landholder commercial practices. Rehabilitate:

Potential impacts, proposed mitigation and proposed environmental outcomes of key environmental factors	
	■ Post commissioning, approximately 462.96 ha (48% of Indicative Development Footprint) of land disturbed during proposed work delivery will be returned to pre-construction land use. ■ Rehabilitation activities will be managed under the Proponents Decommissioning and Rehabilitation Management Plan. Offsets: ■ Offsets for the clearing of approximately 0.168 ha (Banksia Woodlands TEC) to align with EPBC offset guidance if required. Considering the mitigation measures mentioned, and that some low volume of residual impact will occur, the Proposal is not expected to have a significant residual impact on the biological diversity or ecological integrity of the local and regional flora species and vegetation associations.
Residual impacts, including assessment of significance	Clearing of native vegetation (excluding completely cleared agricultural land, including degraded agricultural land with scattered native vegetation) within the Development Envelope will not exceed 7.02 ha (0.73%) of remnant native vegetation including 4.08 ha of native vegetation and 2.94 ha of isolated native trees in agricultural land is proposed to be cleared in the IDF (total area of IDF 964.37 ha). ■ Inclusive of clearing of approximately 0.168 ha Banksia Woodlands TEC of which 0.153 ha is in 'Excellent' condition and 0.015 ha in 'Very Good' condition.
Proposed environmental outcomes	■ All clearing and ground disturbing activities will be limited to the extent provided within this Supporting Environmental Referral Document to minimise the potential for significant impacts to flora and vegetation. ■ No clearing of Protected Ecological Community listed endangered species or species which are considered extinct in wild populations is proposed.
Assessment of offsets (if relevant)	Offsets are potentially required for native vegetation clearing either through the Part IV assessment (this referral) or via a Part V EP Act Native Vegetation Clearing Permit (not assessed in the Proposal). Under the EPBC offsets guidance this may include a minimum of acquiring up to 2 ha (like for like) Banksia Woodlands TEC of excellent condition.
Key environmental factor 2: Terrestrial Fauna	
Potential impacts	■ Direct impact of fauna habitat loss through clearing. ■ Direct impact through potential loss of fauna individuals. ■ Indirect impact habitat fragmentation, loss of fauna habitat connectivity, further spread of pest fauna or weeds.
Mitigation hierachy	Avoid: ■ Avoid, through design optimisation, any form of disturbance to identified Carnaby's Black Cockatoo or other Black Cockatoo potential or actual nesting trees, stands of roosting trees and foraging trees by prioritising use of previously cleared land (>89% of the Development Envelope and survey vicinity) (Phoenix, 2025b). ■ No clearing of suitable Black Cockatoo nesting trees will occur. ■ Avoidance of impacts to flight paths of protected bird and bat species through adoption of taller turbines, with resultant rotor sweep area above that of preferred flight height range. The proposed minimum rotor sweep area of approximately 66 m above ground level (agl) is higher than documented Carnaby's Black Cockatoo preferred flight height range maximum of around 40 m agl. ■ Maximise use of existing disturbed areas and agricultural land where possible to minimise clearing of quality terrestrial fauna habitat where conservation significant fauna may occur. ■ Avoidance of placing turbines within 3.5 km of wetlands where migratory shorebirds may occur. ■ Superseding transmission line option A and continuing with the much shorter transmission line option B, avoid the Moore River, confirmed potential nesting tree hollows and greater area of forage habitat. Minimise: ■ Through design minimise the number of turbine locations that impact PNT and/or habitat with high foraging value for Black-cockatoos. Clearing of approximately 5.01 ha potential foraging habitat within the Indicative Disturbance Footprint. ■ Undertake additional species studies over 24 months, including but not limited to the following: – Bird and bat observation and utilisation surveys (in progress)

Potential impacts, proposed mitigation and proposed environmental outcomes of key environmental factors	
	– Black Cockatoo habitat, potential nesting tree surveys and inspections – Black Cockatoo breeding season surveys ■ Refinement of internal road alignment between WP39 and WP40 (potential foraging tree). ■ Avoid future potential impacts through development and implementation of a Bird and Bat Management Plan (inclusion of all birds and bats likely to occur). ■ Minimising the Indicative Development Footprint placement over existing fauna habitat that is of good or higher value. ■ Implementation of Construction Environmental Management Plan (CEMP) that includes vegetation clearing procedure to minimise impacts to fauna habitat. Rehabilitate: ■ Post commissioning phase, all disturbed areas not required for day to day operations will be returned to landholders in a manner suitable for agricultural land use practices to continue. ■ Post commissioning phase, up to 5.02 ha identified as potential foraging habitat for black cockatoos disturbed by the proposed work will be returned to pre-disturbance land use. ■ Rehabilitation activities will be managed under the Proponents Decommissioning and Rehabilitation Management Plan.
Residual impacts, including assessment of significance	The Proposal will result in the permanent removal of approximately 5.02 ha of moderate to high foraging habitat for CC and 3.36 ha of moderate foraging habitat for FRTBC.
Proposed environmental outcomes	■ Fauna habitat removal will be limited and contained to the Indicative Development Footprint only as described within this Supporting Environmental Referral Document to ensure significant impacts to terrestrial fauna are limited. ■ No Clearing of Rank 1 and Rank 2 black-cockatoo nesting trees. ■ No significant impacts to birds and bats as a result of wind farm operations.
Assessment of offsets (if relevant)	Offsets for potential terrestrial fauna habitat of approximately 5.02 ha (CC) may be required and are described under the flora and vegetation environmental factor above. Offsets may also be required for native vegetation clearing either through the Part IV assessment (this referral) or via a Part V EP Act Native Vegetation Clearing Permit (not assessed in the Proposal). Impacts to habitat critical to the survival of the Carnaby's Black Cockatoo is considered highly unlikely to occur. This is largely due to the pre-cleared agricultural condition of 97.48% of the Development Envelope and survey vicinity and which has been prioritised for the location of turbine and other infrastructure. If required, the fauna habitat quality within any offset will need to be representative of the same or better condition and value than that to be cleared.
Key environmental factor 3: Social surroundings	
Potential impacts	■ Direct impacts to Aboriginal cultural heritage or European heritage value. ■ Direct impact to localised air quality from the generation of dust from clearing activities, vehicle and equipment exhaust, use of unsealed roads, the extraction of gravel from borrow pits or use of temporary stockpiles. ■ Direct impact on neighbouring dwellings from noise emissions due to construction and operational activities as well as increased traffic during construction. ■ Direct reduction in visual amenity. ■ Indirect impacts on individuals or groups as a result of changes to the physical environment.
Mitigation hierachy	Avoid: ■ Early consultation and involvement with the Yued Aboriginal Corporation (Yued Heritage Protection Agreement). ■ Pre-construction archaeological and heritage survey. ■ Commencement of early engagement with key stakeholders about the Proposal including community consultation events, presentations and the opening of a community drop-in centre. ■ Superseding transmission line option A and continuing with the much shorter transmission line option B, to avoid the Moore River and Aboriginal Ethnographic Cultural Heritage.

Potential impacts, proposed mitigation and proposed environmental outcomes of key environmental factors	
	■ Identify dwellings where there is the potential to exceed the Environmental Protection (Noise) Regulations 1997, during the operational phase, and implement the precautionary principle where the impact has the potential to be magnified as a result of cumulative impacts. ■ Early consultation with key stakeholders about the proposed locations of turbines and all ancillary equipment and implement design refinements, as required. ■ Avoid unnecessary impacts and delays by obtaining and complying with all access authorisations, permits, licences and approvals prior to commencement of pre-construction activities. Minimise: ■ Completion of social impact assessments, including but not limited to noise, dust and bushfire; visual amenity, shadow flicker, telecommunications, aviation, transport route assessment and surface hydrology. ■ Include representatives from the Yued Aboriginal Corporation during environmental field surveys, where possible. ■ Engagement of representatives from the Yued Aboriginal Corporation as field monitors as required during ground disturbance activities. ■ Develop and implement a CEMP to guide mitigation activities (including and not limited to clearing of vegetation, dust, noise, fire risk, water use and waste management). ■ Development and implementation of a Traffic Management Plan (TMP) for site speed restrictions, call up communications and work health and safety during construction and commissioning activities. This will include strategies for the enforcement of site speed restrictions. ■ Minimise overall volume of daily traffic through the provision of onsite worker accommodation (up to 450 equivalent persons). Rehabilitate: ■ Return all areas of land utilised for the construction and commissioning phases, and not required for the operational phase, back to key stakeholders in a condition suitable for the intended land use. ■ As part of decommissioning at end of life, rehabilitation activities will be managed under the Proponents Decommissioning and Rehabilitation Management Plan.
Residual impacts, including assessment of significance	Refinement of the Development Envelope and infrastructure layout to reduce and mitigate residual impacts identified through worst-case scenario assessments. Significant social surrounding residual impacts are not expected due to favourable on ground conditions and the minimal opposition to turbines in the landscape, as discussed within Section 8 of this Supporting Environmental Referral Document.
Proposed environmental outcomes	■ No impact or loss of Aboriginal cultural heritage or European heritage. ■ Early, consistent and informed stakeholder and community consultation. ■ Safe delivery of all construction activities.
Assessment of offsets (if relevant)	Not considered relevant to this factor.

Contents

Appendices

Figures

Tables

Abbreviations

Abbreviations	Definitions
ACH	Aboriginal Cultural Heritage
ACHIS	Aboriginal Cultural Heritage Inquiry System
ACMA	Australian Communications and Media Authority
AEP	Annual Exceedance Probability
agl	above ground level
AIP	Australian Industry Participation Authority
AIS	Aviation Impact Assessment
AMC	Australian Marine Complex
APZs	Asset Protection Zones
AS	Australian Standard
BAL	Bushfire Attack Level
BBAMP	Preliminary Bird and Bat Management Plan
BBUS	Bird and Bat Utilisation Survey
BC Act	*Biodiversity Conservation Act 2016* (WA)
BESS	Battery energy storage system
bgl	below ground level
BOM	Bureau of Meteorology
CAD	Computer Aided Design
CASA	Civil Aviation Services Authority
CASR	Civil Aviation Safety Regulations
CC	Carnaby's Black Cockatoo
CEC	Clean Energy Council
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
Community	Everyone and anyone who may be interested, live locally, work or visit the region
CR	Critically Endangered
CRC	Community Resource Centre
Cth	Commonwealth
DA	Development Application
DBCA	Department of Biodiversity, Conservation and Attractions (WA)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Cth)
DDA	Due Diligence Assessment
DE	Development Envelope
DEED	Department of Energy and Economic Diversification (WA)
DFES	Department of Fire and Emergency Services (WA)
DPLH	Department of Planning, Lands and Heritage (WA)
DSM	Digital Surface Model
DWER	Department of Water and Environment Regulation (WA)
EIA	Environmental Impact Assessment
EMI	Electromagnetic interference

Abbreviations	Definitions
EN	Endangered
EP Act	*Environmental Protection Act 1986* (WA)
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ERA	Economic Regulation Authority Western Australia
ES	Executive Summary
FID	Financial Investment Decision
FRTBC	Forest Red Tailed Black Cockatoo
GDE	Groundwater dependent ecosystems
GHG	Greenhouse gas
GIS	Geographic Information Systems
GW	Gigawatt
ha	Hectares
HPA	Heritage Protection Agreement
IAP2	International Association for Public Participation
IBRA	Interim Bio-Regionalisation of Australia (Version 7)
IDF	Indicative Disturbance Footprint
ILUA	Indigenous Land Use Agreement
JTSI	Department of Jobs, Tourism, Science and Innovation (WA)
kL	Kilolitre
km	Kilometres
LIA	Local Impact Area
m	Metres
ML	Megalitre
mm	millimetres
MNES	Matters of National Environmental Significance
MRWA	Main Roads Western Australia
MS	Ministerial Statement
MW	Megawatt
MWh	Megawatt hour
NASAG	National Airports Safeguarding Advisory Group
NVCP	Part V Native Vegetation Clearing Permit
OSOM	Oversized over mass
PD Act	*Planning and Development Act 2005* (WA)
PEC	Priority Ecological Community
PEP	Project Execution Plan
PMST	Protected Matters Search Tool
PNT	Potential Nesting Trees
QRA	Qualitative Risk Assessment
RIA	Regional Impact Area
RIWI Act	*Rights in Water and Irrigation Act 1914* (WA)
SA	South Australian
SECP	Stakeholder Engagement and Communication Plan

Abbreviations	Definitions
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
SM4	Songmeter 4
SPP	State Planning Policy
SRE	Short RangeEndemic
Stakeholders	Major key entities who may have contractual or regulatory interest
SWALSC	Southwest Aboriginal Land and Sea Council
SWIS	Southwest Interconnected System
TEC	Threatened Ecological Community
The Proponent	Marri WF Pty Ltd
The Proposal	The Marri Wind Farm
TIS	Traffic Impact Statement
TMP	Traffic Management Plan
VU	Vulnerable
WA	Western Australia
WAPC	Western Australia Planning Commission
WDC	Wheatbelt Development Commission
WP	Western Power
WRIA	Water Resources Impact Assessment

1 The Proposal

This Supporting Environmental Referral Document describes the proposed Marri Wind Farm development (referred to as the Proposal here after) in detail to support referral under section 38 the *Environmental Protection Act 1986* (WA) (EP Act).

This document has been prepared in accordance with Part IV Division 1 of the EP Act, the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2024a); *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures* (EPA, 2021b) and *Instructions: Referral of a proposal under section 38 of the Environmental Protection Act 1986* (EPA, 2024b).

The Proposal was originally referred in late 2025. An application to amend the Proposal, under s.38C of the EP Act, whilst the EPA was deciding whether or not to assess the referred Proposal accompanies this revised Supporting Environmental Referral Document.

In addition to this Proposal under the EP Act, two separate referrals are required under different legislative frameworks. These consist of:

- A separate referral under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).
- A Development Application under the *Planning and Development Act 2005* (WA) (PD Act) and the Planning and Development (Local Planning Schemes) Regulations 2015.

Marri WF Pty Ltd as trustee for the Marri WF Unit Trust (the Proponent), a wholly owned subsidiary of Alinta Energy Pty Ltd (Alinta Energy), is seeking approval to develop the Marri Wind Farm (the Proposal) located approximately 20 kilometres (km) south of the township of Dandaragan within the Shire of Dandaragan. The township of Gingin is situated approximately 42 km to the south in the neighbouring Shire of Gingin, as presented in Figure 1-1.

This document incorporates plans to construct and commission a large-scale wind farm – the Marri Wind Farm - connected to the State owned Southwest Interconnected System (SWIS), consisting of up to 82 turbines with supporting infrastructure designed to generate up to 550 megawatts (MW) of renewable energy. The SWIS is the Western Power transmission network that extends over the south west of Western Australia. This Proposal will be connected via the Clean Energy Link North infrastructure upgrade works.

In addition, the Proposal makes provision for a potential 6,600-megawatt hour (MW/h) battery energy storage system (BESS) as well as temporary worker accommodation and associated ablution facilities for up to 450 equivalent persons during the construction and commissioning phases.

The Proposal is to be located on freehold land approximately 110 km north of Perth, entirely within a designated Development Envelope consisting of approximately 12,483.55 hectares (ha). Up to four site entry points transversing the adjacent road reserves are planned to support the construction phase. The total ground disturbance within the Indicative Disturbance Footprint is estimated as 964.37 ha.

Location of the Proposal has been carefully selected, and placement of individual infrastructure has been undertaken to take advantage of land areas that are not highly populated or trafficked and have already been cleared of native vegetation and associated fauna habitat. This highly modified landscape is suitable for agricultural cropping and is of low conservation importance demonstrating the Proponent's commitment to the EPA's environmental guideline for flora and vegetation objective, *"to protect flora and vegetation so that biological diversity and ecological integrity are maintained"* (EPA, 2016a).

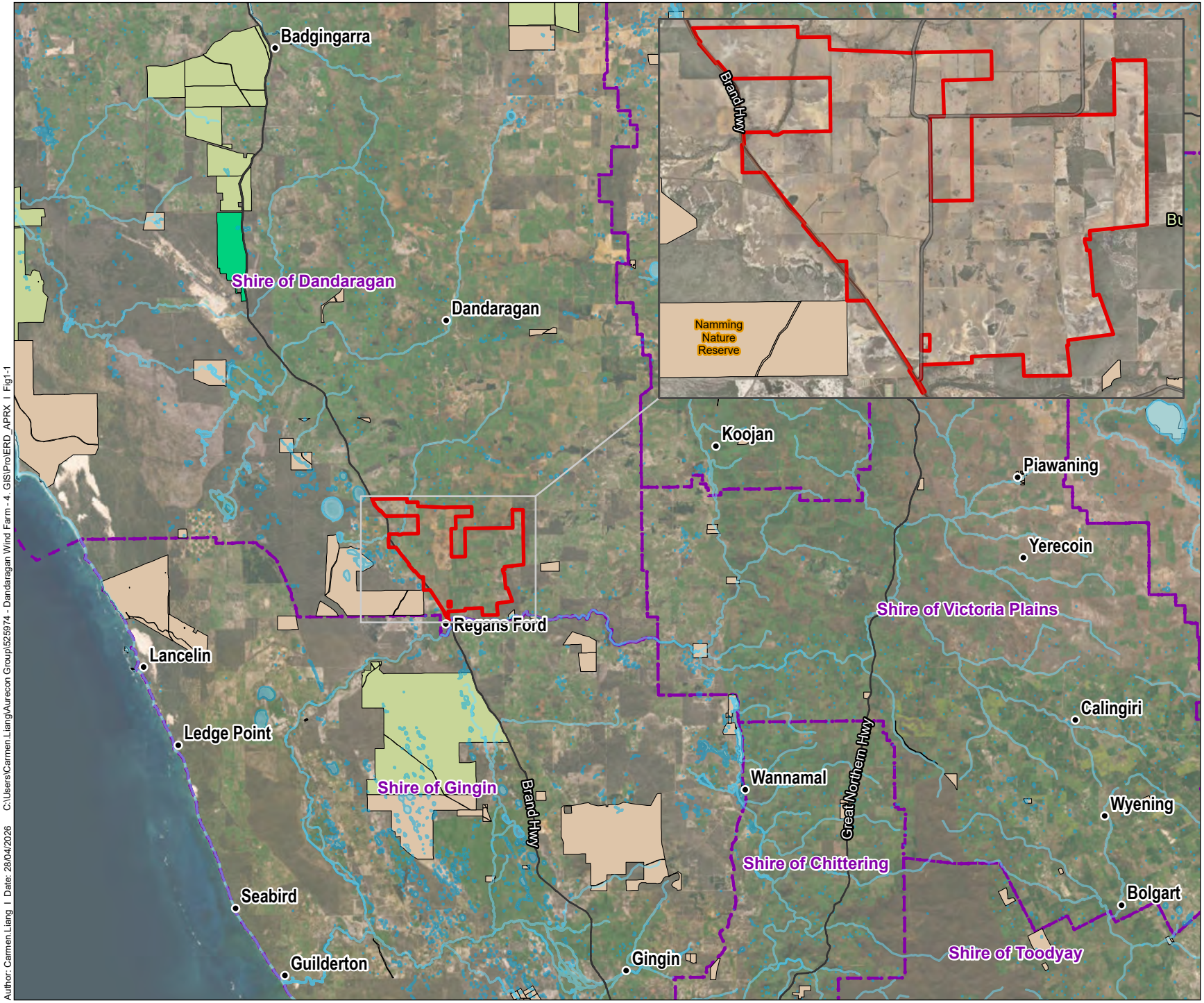
A small area of clearing will however be required to enable full delivery of the Proposal. The direct impact of clearing activity has been minimised through the iteratively engineered design of the layout as modifications have been guided by preliminary impact assessment findings.

In addition, specific engineering design limitations have been imposed to guide the placement of tall infrastructure within the Development Envelope to minimise and, where possible, avoid potential impacts under the environmental factor Guideline for both social surroundings and Aboriginal Cultural Heritage matters. These self-imposed design restraints demonstrate the Proponent's commitment to the EPA's environmental objectives of "*to protect social surroundings from significant harm*" (EPA, 2023d) and

"*consider Aboriginal Cultural Heritage values through understanding significance of the physical or biological surroundings*" (EPA, 2023d).

The co-existence of energy infrastructure with agricultural production is expected to continue throughout all planned phases of the Proposal and for the life expectancy of the infrastructure (>35 years). Extension of the operational life of the infrastructure past 2059 is considered probable given the expected technological change likely to occur within that time. It is acknowledged that any extension to the Proposal's operational life will require a separate approval process to be progressed, if appropriate, at a future time.

The State Government has made a commitment to close all State-owned thermal coal fired electricity generation facilities by 2030. As coal retires, new renewable generation capacity is required to meet the State's growing electricity demand and support a more diverse economy. The Proposal will play a crucial role in supporting this transition as the natural topography, climate and geological placement of the Development Envelope in relation to the SWIS, provides an opportunity to harness a reliable wind resource, with minimal environmental impacts. Through this Proposal, the Government will sustainably increase the State's renewable generation capacity, progressing the State's energy transition and the necessary emissions targets.



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- Watercourses (DWER-031)
- Waterbodies (LGATE-016)
- LGA Boundaries (LGATE-233)
- Development Envelope

DBCA - Legislated Lands and Waters (DBCA-011)

- Conservation Park
- National Park
- Nature Reserve

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, DBCA

0 5 10 15
Kilometres

Author: Carmen.Liang I Date: 28/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX I Fig1-1

Marri Wind Farm Environmental Review Document

Figure 1-1 Development Envelope Location

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:600,000

1.1 Purpose and scope

The purpose of this document is to support a referral under Section 38 of the EP Act for the construction, operation and eventual decommissioning of the Proposal, that once operating will generate up to 550 MW of dispatchable renewable energy to the SWIS. The referral is supported by numerous technical assessments and analyses, which identify the potential for environmental and related impacts and how they can be effectively managed using the EPA's mitigation hierarchy. As part of this process, the potential impacts were assessed with reference to the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* (EPA, 2024a) and the *Statement of Environmental Principles, Factors and Objectives* (EPA, 2023b).

The scope of the technical assessments and analyses has incorporated all aspects of the Proposal including all activities to construct, commission, operate and decommission the required infrastructure. The scope assumes the operational life of the infrastructure is 35 years, based on the current regulatory requirements and technological capabilities. While it is possible that regulatory changes and technology advancements may extend the life of the Proposal beyond the current assumptions, given the high level of uncertainty beyond 2059 the assessments and analyses are based on current expectations – a 35-year operational life.

The Environmental Factors considered relevant to the Proposal include Flora and Vegetation, Terrestrial Fauna (including short-ranged endemic species) and social surroundings (including Aboriginal Cultural Heritage). Conclusions from impact assessments have been incorporated into the management approach proposed to mitigate and minimise any identified impacts associated with the Proposal to achieve acceptable environmental outcomes.

1.2 Proponent details

Proponent and key contact details for this Proposal are provided in Table 1-1.

Table 1-1 Proponent key contact details

Business Name / Trustee	Marri WF Pty Ltd
ACN	684 707 551
ABN	36 684 707 551
Principle Place of Business	Grosvenor Place, 225 George St, Sydney, NSW 2000
Trust Name	Marri Wind Farm Unit Trust
Trust ABN	78 658 559 049
Trust Registered Address	Grosvenor Place, Level 13, 225 George Street, Sydney NSW 2000
Authorised representative contact details	
Representative Name	Linden Blair
Representative Position	Head of Power Development (West Coast)
Representative Email	Linden.Blair@alintaenergy.com.au

1.3 Proposal definitions

The following section defines key terms with respect to the Proposal elements and other terms.

For the purposes of this Proposal, the terms presented in Table 1-2 and Table 1-3 have been adopted to describe both the hierarchy and inter-relationship between individual Proposal elements. These terms are used throughout this document and are visually identified in supporting figures.

Table 1-2 Proposal element definitions

Key term	Element definition
The Proposal	The construction, commissioning, operation and decommissioning of the Marri Wind Farm as set out in this Supporting Environmental Referral Document submitted to WA regulators for assessment under the EP Act.
Development Envelope (DE)	The maximum spatial boundary (in ha) within which all physical and operational elements of the Proposal may occur (Figure 1-1).
Indicative Disturbance Footprint (IDF)	The maximum total area (in ha) of land surface disturbance and clearing associated with the Proposal within the Development Envelope. This includes areas of temporary impact such as laydown areas, batch plant pads and temporary site office buildings. The IDF represents the upper limit of disturbance for all construction, commissioning and operational activities, including clearing of native and non native vegetation. Following completion of construction, areas not required for the operational phase of the Proposal (i.e., areas of temporary clearing and/or disturbance) will become the Progressive Rehabilitation Areas and be progressively returned to the landholders for preconstruction use.
Proposed Operation Footprint	The maximum land surface area occupied by the operational windfarm on completion of construction outcomes (i.e. permanent impact). The Proposed Operation Footprint sits wholly inside of the Indicative Disturbance Footprint.

Table 1-3 Other definitions

Key term	Element definition
Native vegetation	Indigenous aquatic or terrestrial vegetation, and includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but does not include vegetation in a plantation.
Post Development Land Use	The landuse agreed with relevant stakeholders to which land within the Development Envelope which has been impacted by the Proposal will be returned at the end of the operational life, should the wind farm cease operation and be decommissioned.
Transport Corridor	Transport route(s) selected by the Proponent for movement of all materials to site from the selected port, noting that the Transport Corridor does not form part of the Proposal.

1.4 Proposal description

1.4.1 Proposal summary

The Proposal is located approximately 110 km north of Perth, and approximately 20 km south of Dandaragan. The Proponent is seeking approval to develop the 550 MW Marri Wind Farm. Each of the proposed 82 turbines will have the capacity to generate between 6 to 8 MW. The Proposal will potentially be supported by a 6,600 MWh BESS, subject to the final investment decision. All the renewable energy generated will feed into the SWIS.

A separate fully operational wind farm, registered in the Wholesale Electricity Market as Yandin_WF1, is located approximately 15 km to the north of the Proposal. The Yandin Wind Farm has been operational since October 2020 and consists of 51 turbines with a total generation capacity of approximately 214 MW. The potential for future additional wind farms in the vicinity is likely and includes the Yathroo project which is positioned between the existing Yandin Wind Farm and the Proposal.

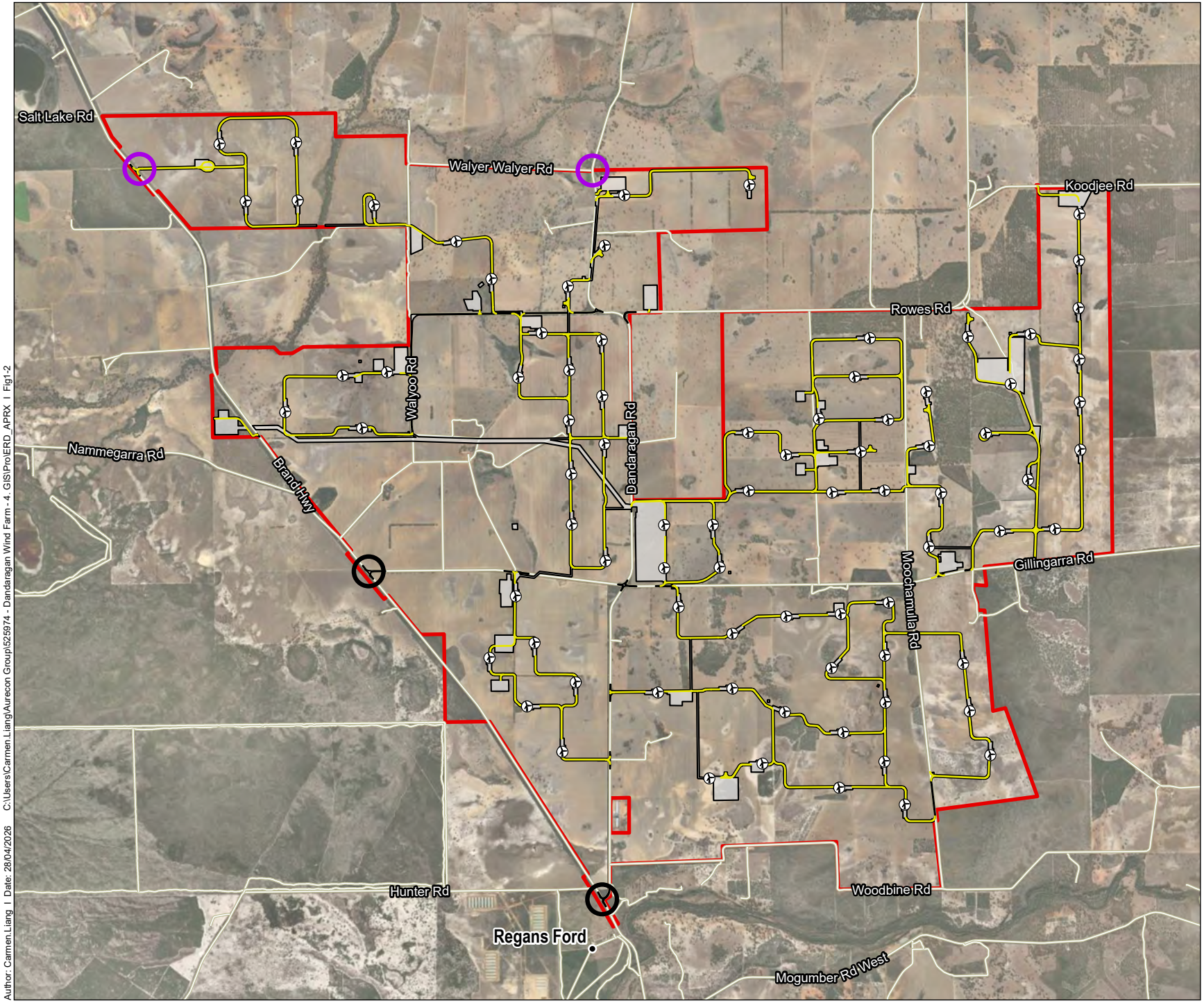
All Proposed Activities required to deliver the Proposal are to be implemented within the Development Envelope of approximately 12,483.55 ha. All clearing and land disturbance (temporary and permanent) activities required to facilitate construction will occur within the Indicative Disturbance Footprint (approximately 964.37 ha).

Some engineered design flexibility has been incorporated into the Proposal elements as discussed in Section 1.4.8 and has been factored into the Indicative Disturbance Footprint. During all phases, the Development Envelope completely encapsulates the Indicative Disturbance Footprint, and Proposed Operation Footprint as presented in Figure 1-2.This approach will enable, as necessary, on the ground refinement during the construction phase of the Proposal elements to effectively manage unexpected

findings of an environmental, social or cultural nature. Any such unexpected finds will be assessed during on-ground delivery to determine the necessary alternate design requirements to ensure the finds can be protected in a manner where impacts are avoided or minimised.

Environmental constraints, findings from specialised environmental studies, outcomes from stakeholder and community engagement and financial considerations have all influenced and shaped several amendments to the Proposal's original design. These amendments are discussed in Section 1.4.8.

Proposal construction is scheduled to commence in 2027, with full operation by 2030. An initial expected operational life of >35 years (2059) is proposed. Subject to future environmental approvals, supply and demand and financial investment decisions, this could, be extended up to an additional 35 years.



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- Development Envelope
- Indicative Disturbance Footprint
- Turbine Layout
- Public Local Roads
- Access Tracks
- Main Access Points
- Alternative Access

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang | Date: 28/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX | Fig1-2

Marri Wind Farm Environmental Review Document

Figure 1-2 Proposed Marri Wind Farm Development

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:90,000

1.4.2 Site details

To support on ground activities, four site entrance points will be established to enable site access for deliveries, site personnel and safety evacuation if required. The proposed Site layout is presented in Figure 1-2, Figure 1-3, and supported by ES Table 2 and Table 1-4.

Table 1-4 Proposed site details

Term	Description
Basic site amenities	■ Transportable administration / site office, crib room and ablution facilities ■ Site sign in and sign out ■ Assembly points and pre-starts ■ Emergency evacuation sites ■ Site traffic management plan display board (daily update) ■ Clear site radio communication calls up points ■ Directional signage to laydown areas
Local and state roads	■ Approximately 16 km of the western boundary will follow the Brand Highway ■ The Brand Highway intersects the Development Envelope at two locations ■ Smaller local roads including Dandaragan Road, Gillingarra Road and Rowes Road all intersect the Development Envelope. ■ Wherever possible, the Proposal will utilise existing tracks to minimise and avoid the likelihood of additional disturbance. Pre-existing internal farm roads and tracks already exist for agricultural activities. Continued use, upgrades and maintenance of these roads are subject to confidential agreements with the relevant landowners.
Permanent areas will include	■ Up to 82 turbine generator footings and supported turbine infrastructure ■ Approximately 50 ha for the 6,600 MWh BESS and associated emergency response infrastructure ■ 7.5 km of 330 kV overhead transmission line and connection point ■ 462.96 ha of permanent infrastructure for the operational life expectancy of >35 years excluding turbine footings ■ Additional permanent fencing with a standard 1.8 m chain link fence with three rows of barbed wire may be erected for critical infrastructure such as switchyard and BESS. ■ Approximately 130 km of internal roads and upgrades to approximately 6 km of existing Shire owned roads to support essential over size over mass (OSOM) deliveries of capital infrastructure and specialised machinery
Temporary areas will include:	■ 72 ha temporary lay down or hardstand laydown areas only during the construction phase ■ Temporary construction screening fence to be erected around active construction areas (e.g., laydown and storage areas, site compounds) ■ Temporary workers accommodation and associated ablution facilities and work areas

The site safety aspects will be managed through a dedicated Traffic Management Plan (TMP) and Construction Environmental Management Plan (CEMP). Inclusion of requirements under the *Work Health and Safety Act 2020* and *Work Health and Safety (General) Regulations 2022* will be incorporated into these site management documents.

1.4.3 Land tenure

Land tenure for the allotments intersecting the Development Envelope is freehold land, primarily utilised for primary production (agricultural) which is owned and managed by private landholders. The Proponent is partnering with landholders (key stakeholders) with negotiations well underway. Community consultation to support the Proposal commenced in 2024.

Roadside verges and road reserves will remain managed by local Shires or Main Roads Western Australia. Land tenure within the Development Envelope are presented in Table 1-5.

Table 1-5 Land tenure within the Development Envelope

Land parcel number	Area (ha)	Percentage of the Development Envelope
1306/385	482.91	3.87
1380/593	226.36	1.81
1385/876	502.53	4.03
1388/508	423.25	3.39
1388/509	560.33	4.49
1388/510	267.13	2.14
1388/511	202.34	1.62
141/172A	1038.89	8.32
141/173A	247.80	1.98
1446/945	1259.89	10.09
1646/980	354.21	2.84
1648/342	1245.00	9.97
1660/217	533.44	4.27
1669/387	880.69	7.05
1669/388	16.22	0.13
1669/389	121.48	0.97
1669/390	885.81	7.10
2192/613	779.28	6.24
2219/597	832.60	6.67
261/49A	497.94	3.99
2680/230	313.92	2.51
2803/442	524.36	4.20
Other areas (roads)	287.18	2.30
Total	**12,483.55**	**100.00**

1.4.4 Permanent infrastructure

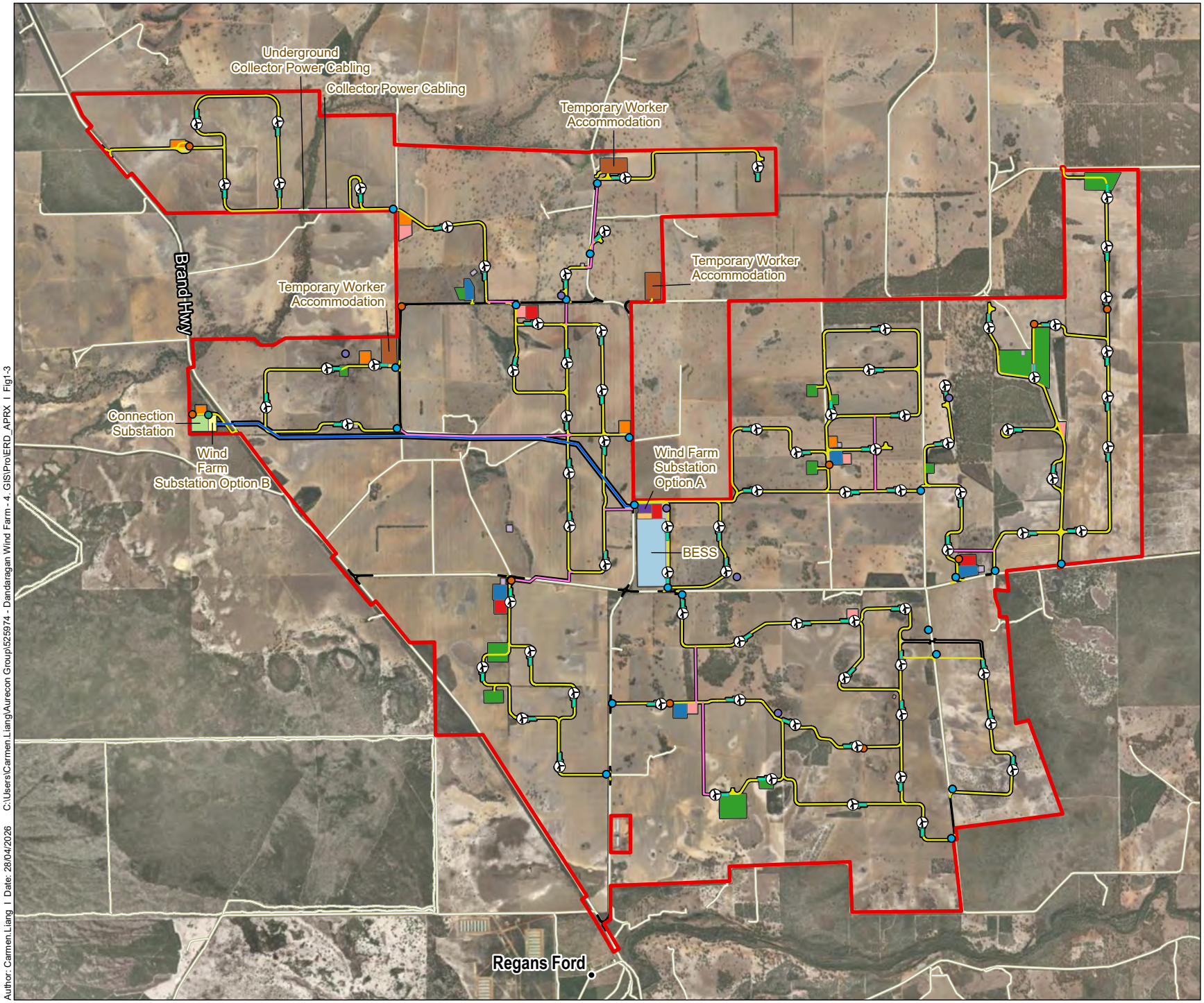
The Proposal will include a range of permanent key infrastructure elements as presented in Table 1-6 and Figure 1-3.

Table 1-6 Permanent infrastructure elements and specifications

Infrastructure element	Key features	
Turbines	Maximum number of turbines	82
	Proposal generation capacity	Up to 550 MW
	Maximum tip height	Up to 275 m
	Minimum tip height	Equal or greater than 66 m
	Hub height	Up to 184 m
	Blade length	Up to 91 m
	All turbines will be the same make and model	

Infrastructure element	Key features	
Turbine foundations and hardstands	Supported by concrete gravity foundations. The final design of turbines, foundations and hardstand areas will be dependent on turbine selection.	Approximately 1.5 ha per turbine
Underground collector power cabling	Total length	Approximately 165 km
	Alignment	Primarily adjacent to access tracks
	Installation depth	Trenched up to 1.5 m below ground level (bgl)
Battery energy storage system (BESS)	Power capacity	Up to 550 MW
	Energy capacity	Up to 6,600 MWh
	Approximate area	50 ha
	Components may include	■ Battery containers ■ Inverters ■ Transformers ■ Control and switchgear ■ Lightning protection masts ■ Security exclusion fencing
Wind farm substation	Approximate area	3 ha
	Equipment	■ High-voltage switch gear and metering equipment ■ High Voltage step-up transformers ■ Harmonic filters ■ Capacitor banks ■ Relay equipment, switchgear ■ Lightning protection masts ■ Communication tower ■ Security exclusion fencing
Connection substation	Approximate area	7 ha
	Equipment	■ HV busbars ■ Circuit breakers ■ Disconnectors ■ Transmission towers ■ Current transformers ■ Voltage transformers ■ Surge arresters ■ Metering equipment ■ Relay equipment ■ Lightning protection masts ■ Communications tower ■ Security exclusion fencing
Operations and Maintenance Facilities	Approximate area	2.2 ha
	Building height	Up to 10 m
	Facilities include	■ Offices ■ Control rooms and servers ■ First aid room, ■ Toilets and showers ■ Locker room ■ Warehousing ■ Workshop ■ Outdoor storage and parking

Infrastructure element	Key features	
		■ Security exclusion fencing
	Water supply	Rainwater collection supplemented by trucked or piped water
	Sewage	■ Septic tank with leach drains, with approvals under relevant health regulations ■ Security exclusion fencing
Meteorological masts	Number of meteorological masts	Up to 6 masts
	Approximate area	Combined up to 1 ha
	Setback from boundary	Minimum 1.1 times mast height
	Height	Up to 180 m
	Features	■ Wind and weather measuring devices ■ Aviation safety lighting ■ Marker balls/painted sections
	Power supply	Solar panels
	Security	Security exclusion fencing
Communication towers	Number of towers	1 communication tower
	Approximate area	0.5 ha
	Height	Up to 85 m
	Type	■ Steel lattice ■ Self-supporting or guy-wired
	Equipment	■ Microwave transmitters and receivers (15 to 85 m elevation) ■ Relay and instrument cabinets
	Locations	Connection terminal site and substation
Site access (Figure 1-2) (Likely road upgrades included)	Main access points	■ Intersection of Brand Highway and Gillingarra Road ■ Intersection of Brand Highway and Dandaragan Road ■ Brand Highway turn off to Substation
	Approximate area	3.5 ha combined
	Additional access/egress points during construction phase for deliveries to site	Dandaragan Road, Gillingarra Road, Walyoo Road, Moochamulla Road, and Koodjee Road
	Approximate area	3 ha combined
Access tracks	Design	Follow existing farm tracks where possible, with passing and turning areas
	Width	Up to 10 m
Public road access	Requirement	Localised upgrades for delivery of construction materials and over-size, over-mass components
Firefighting water tanks	Number	To be determined following finalisation of building and infrastructure design, layout and capacity
	Capacity per tank	Maximum 600 kL
	Diameter	Up to 13 m
	Height	Up to 5.6 m
Transmission line and towers	Length of overhead transmission line	Up to 7.5 km
	Tower height	Up to 60 m
	Tower type	Lattice and/or pole tower structures
	Tower spacing	Approximately 250 to 500 m
	Corridor width	Up to 60 m wide



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- Development Envelope
- Indicative Disturbance Footprint

Permanent Infrastructures :

- Turbine Layout
- Communication Towners
- Firefighting Water Tanks
- Meteorological Masts
- Transmission Line
- Collector Power Cabling
- Underground Collector Power Cabling
- Public Local Roads
- Access Tracks
- Battery Energy Storage System (BESS)
- Connection Substation Option
- Operations & Maintenance Facilities
- Wind Farm Substation Option A
- Wind Farm Substation Option B
- Tubrine Foundations

Temporary Infrastructures :

- Site security including biosecurity
- Concrete Batching Plants
- Borrow Pits
- Laydown Areas
- Main Compounds
- Satellite Compound Areas
- Turkey's Nest Dams
- Temporary Worker Accommodation

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Marri Wind Farm Environmental Review Document

Figure 1-3 Proposed Site Plan

Version: 1
Job No.: 525974
Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:85,000

1.4.5 Temporary construction infrastructure

The Proposal will require numerous temporary infrastructure elements during the construction phase. Once the construction phase is completed some temporary infrastructure will be removed. Following the commissioning phase all temporary infrastructure will be removed from the site.

All ground areas disturbed during construction and commissioning which are not required for the wind farm operation will be returned to support previous land use, in agreement with the landowner.

All temporary infrastructure likely to be required has been presented in Table 1-6.

Table 1-7 Temporary construction infrastructure specifications

Infrastructure element	Approximate sizes/ area	Key features/description
Main Compound - Temporary	Up to four areas Each up to 4 ha	▪ Temporary office and crib rooms ▪ Storage buildings ▪ Parking ▪ Hardstand areas ▪ Security fencing ▪ Power supply ▪ Potable water tanks ▪ Portable toilets ▪ Septic sewage system (as per Code of Practice for Product Approval of Onsite Wastewater Systems under the *Health Act (Miscellaneous Provisions) 1911* and Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974. ▪ Dangerous goods storage as per Edition 7.9 is the latest edition of the ADG Code, AS1940 and AS1692.
Temporary Satellite Compound Areas	Up to six areas Up to 3 ha each	▪ Portable toilets ▪ Potable water tanks ▪ Site office ▪ Hardstand area ▪ Security fencing
Temporary Laydown Areas	Up to six laydown areas each up to 3 ha	▪ Hardstand areas ▪ Stockpiles ▪ Security fencing ▪ Portable toilets ▪ Site office
Temporary Concrete Batching Plants	Up to six batching plant locations Each Batch Plant total capacity of 240 m^3/hr Each Batch Plant pad up to 5 ha	▪ Truck loading hardstands ▪ Loading bays ▪ Hoppers ▪ Silos ▪ Water tank ▪ Stockpiles ▪ In-ground water recycling/first flush pit (*Contaminated Sites Act 2003* and National Environment Protection (Assessment of Site Contamination) Measure 1999) ▪ The final design and layout of the batching plants will depend upon chosen contractor.
Temporary Borrow Pits	Up to 14 Total combined area of approximately 106 ha	▪ Gravel for roads, access tracks, laydown areas and other construction requirements is proposed to be sourced from existing borrow areas located across the Development Envelope. The final locations of borrow pits to be used for the Proposal are dependent on outcomes from geotechnical investigations. Should geotechnical investigations determine that there is not quarry material on site, the Proposal may source quarry material from nearby licensed pits and quarries. ▪ Rehabilitation of these disturbance areas post construction

Infrastructure element	Approximate sizes/ area	Key features/description
Temporary Construction Water	Total water demand 297 ML and total water demand (daily average) 0.3 ML/day	▪ Construction water is expected to be sourced from existing onsite bores, although additional bores may be constructed to meet Proposal demand requirements. Abstraction and construction of new bores (if any) will be undertaken in accordance with the approvals issued or required under the *Rights in Water and Irrigation Act 1914* (RIWI Act)
Temporary Turkey's Nest Dams	Up to 10 turkey nests, each Each with capacity up to 15,000 m^3	▪ Earth walled turkey's nest dam with lining to provide local water storage and security of supply, primarily during the construction phase. ▪ Turkey's nests may be constructed new or improved from existing water storage. Turkey's nests will primarily be constructed or improved for the construction phase delivery. ▪ Turkey nest's which are not required post construction will be rehabilitated to support previous land use.
Temporary Site Security areas	Up to 22 Combined total of approximately 1 ha	▪ Hardstand areas ▪ Security personnel huts ▪ Vehicle inspection area ▪ Vehicle/plant/equipment wash down facilities
Temporary Biosecurity Laydown Area	18 ha in total Considered to form part of the temp laydown area total	▪ Hardstand area set aside for placement of deliveries to site ▪ Area also for containment if any biosecurity issues arise (quarantine)
Temporary Security Fence	Temporary construction site fence	▪ Temporary security exclusion fencing is to be utilised in line with standard construction codes of practice and the *Work Health and Safety (general) Regulations 2022* and removed following cessation of construction and commissioning phases.
Temporary Worker Accommodation	Up to 10 ha combined total 450 people capacity with a capacity for up to 300 guests. One site to be selected from 2 identified options.	The Proponent is conscious of the potential negative effects of surges in demand for existing local accommodation from large projects such as the Proposal, including shortages of rental accommodation for residents (SocialIQ 2025). At the same time, the Proponent understands the potential economic stimulus from workers staying within or close to existing population centres. Accordingly, the Proposal includes options for temporary worker accommodation located within the Development Envelope, to provide flexibility for the Proponent to strike the right balance, in consultation with local stakeholders. ▪ Includes bedrooms, toilets and showers, catering facilities, mess hall, recreation areas, parking. ▪ Power provided by temporary generators or temporary connection to Western Power distribution network. ▪ Water supply piped or trucked. ▪ Sewage trucked out or septic system with leach drains with approvals under relevant health regulations. Food and garbage will be trucked in and out. ▪ The worker accommodation facilities would be removed and rehabilitated following the construction period, unless an alternative beneficial use could be found in consultation with the Shire and other local stakeholders.

1.4.6 Proposed capital infrastructure transport routes

To support the construction phase delivery, the majority of capital investment infrastructure must be purchased from overseas manufacturers and transported by sea to Western Australia. Once a decision has been made as which Port these materials will be imported through, the road transport route from port to site will be confirmed.

Over size over mass (OSOM) and other transportation permits will be secured prior to delivery of goods to the receiving Port. All infrastructure will then be transported from the confirmed Port facility by road to the Development Envelope, noting that the Transport Corridor does not form part of the Proposal.

Key engagement with the Ports Authority, Main Roads WA, the Shire of Dandaragan, and the Shire of Mullewa will continue as part of the OSOM route assessment. Currently two potential transport route options are being considered:

- From the Australian Marine Complex (AMC) Port located south of Perth, by road north to the Development Envelope as presented in Figure 1-4.
- From the Geraldton Port facility, by road south to the Development Envelope as presented in Figure 1-5.

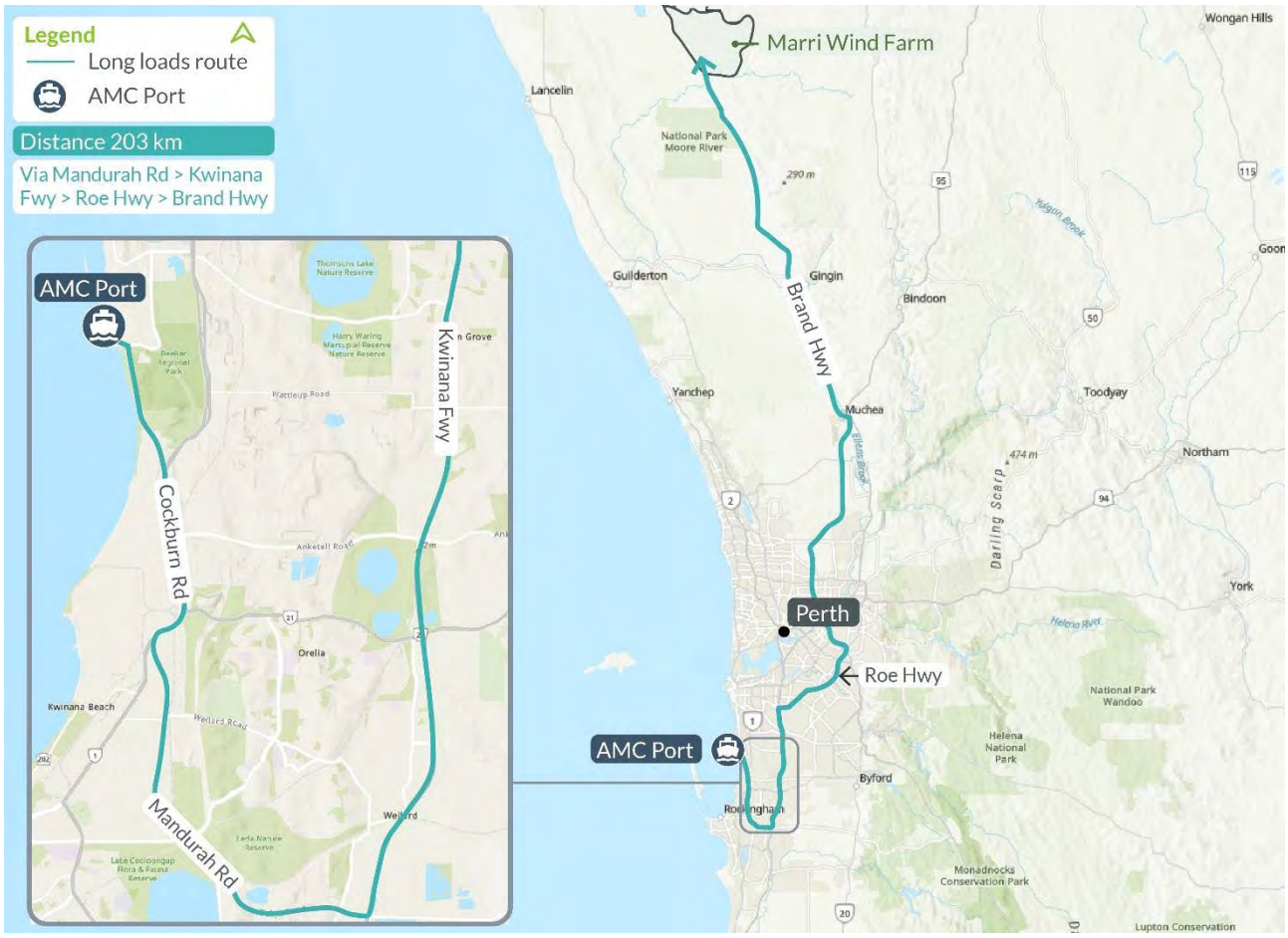


Figure 1-4 Potential transport route Option #1: AMC Port to the Development Envelope

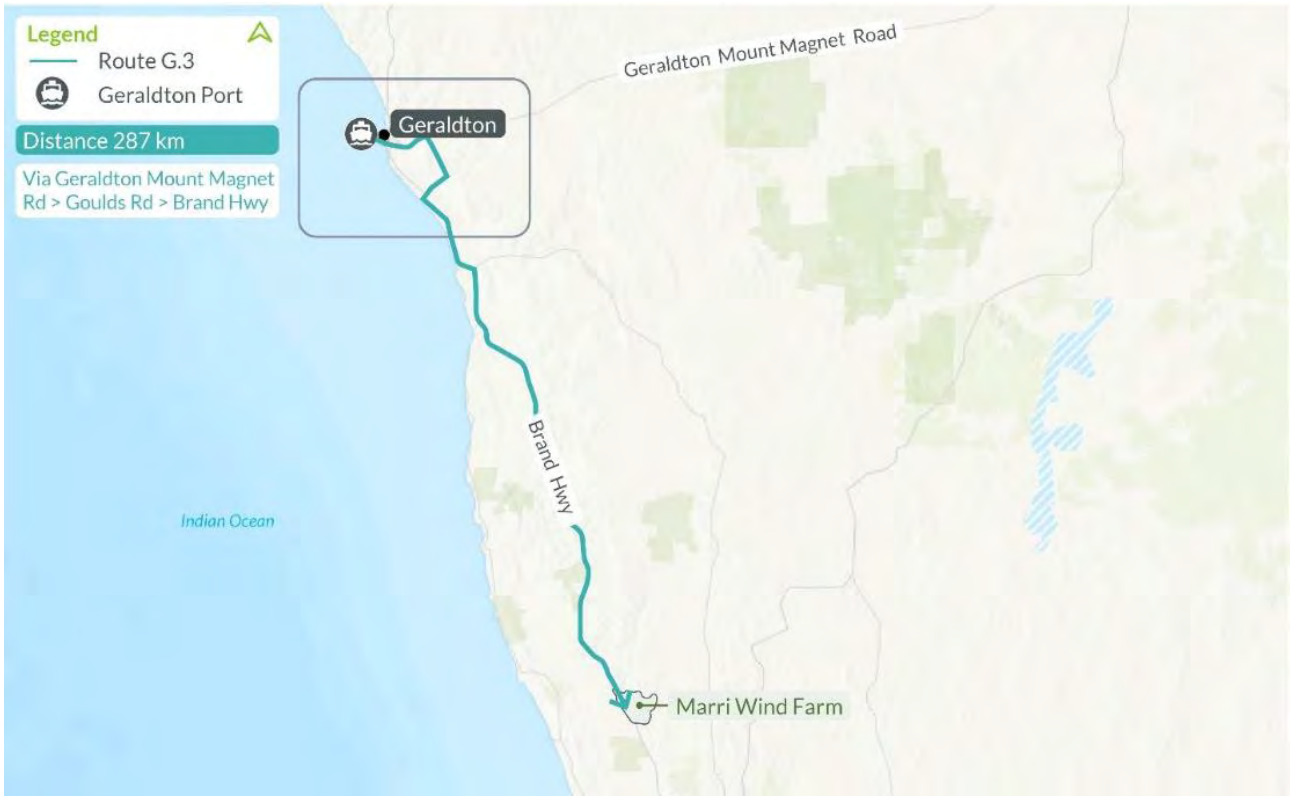


Figure 1-5 Potential transport route Option #2: Geraldton Port to the Development Envelope

The Traffic Impact Statement (TIS) to support the Proposal has been completed (Appendix F). The TIS evaluated both proposed transport route options as most likely to be safely achievable, compared to other Port facilities where receival points could not accommodate the size of some components.

The TIS included a risk assessment of OSOM transports with overhang to ensure turning requirements could be achieved. Instances where safe turning requirements could not be achieved prompted investigation of alternatives. Once a Port facility is confirmed all permits and or work requests will be lodged with Main Roads WA or the governing Shire, as appropriate and all additional permits and approvals will be obtained to ensure safety, stakeholder engagement and other regulatory requirements are implemented and compliant prior to any transportation activities commence.

1.4.7 Proposal timing

Construction of the Proposal will start construction in 2027 and is scheduled to last for up to three years. All supporting infrastructure will be maintained as needed, with a projected initial energy delivery lifespan of approximately >35 years. Proposed timing details are presented below in Table 1-7.

Table 1-8 Proposal timing

Phase	Details
Pre-construction Phase	Planning for the Proposal commenced in early 2024 with: ■ An Environmental Constraints Assessment ■ Commencement of consultation with key stakeholders ■ Commencement of community consultation and information events This referral process is supported by additional approval pathways being prepared in parallel. These include a development approval application and subsequent supporting permits, and the lodgement of an EPBC referral for assessment. A Financial Investment Decision (FID) is scheduled for late-2026 on the basis that regulatory approvals can be obtained in a timely manner.
Construction Phase	Construction is scheduled to commence in 2027 for a duration of up to three years. This phase involves the physical development and assembly of infrastructure components in accordance with approved designs and plans to deliver the Proposal's infrastructure.

Phase	Details
Commissioning Phase	Following construction, the commissioning phase will commence. This phase involves systematically testing, verifying and activating all systems and components to ensure the Proposal is fully operational and meets the intended performance and compliance requirements.
Operational Phase	Operation phase will commence following the successful completion of commissioning activities. Current manufacturing life expectancy of capital investment infrastructure (turbines) is generally accepted up to 35 years (operational life). Dependant on maintenance and operational conditions this may vary slightly. If additional investment is proposed to extend the operational life beyond this initial timeframe, an amended environmental approval will be required. If this eventuates it is likely to be achieved through adoption of new technologies as they become more readily available, key stakeholder agreement continuation and future market supply and demand. The Proposal life expectancy may be up to 2096 with additional approvals for upgrades to be sought and obtained prior to 2059. For clarity, the initial operational phase for the Proposal is up to 2059 (i.e., 35 years).
Decommissioning Phase	Prior to 2059, a decision to either decommission the Proposal or provide additional investment to extend the operational life of the infrastructure will be required. This decision will be reflective of future advancement of technologies, commercial agreements, energy supply and demand, and other factors which can only be contemplated and assessed closer to that time. It will also be subject to additional approvals and compliance requirements. If the Marri Wind Farm is to be decommissioned, all aboveground structures will be removed and the site will be rehabilitated, in consultation with landowners to the extent reasonably practicable. The decommissioning options for the infrastructure will be to: reuse, repurpose, recycle or disposal of in accordance with waste management legislation. Every effort will be made to reduce the volume of waste to landfill in line with best-practice sustainability principles. If the operational life of the Proposal is extended decommissioning is expected to be postponed up to approximately 2096.

1.4.8 Justification and alternatives

Australia became a signatory to the Paris Agreement 2015 in 2016, an intergovernmental agreement adopted by 195 countries to reduce greenhouse gas emissions. This Agreement has led to the substantial growth and adoption of renewable energy technologies as Australia progresses the 2030 and 2050 emission reduction targets. Western Australia is currently experiencing increased numbers of renewable energy projects entering the approval pipeline. All of these assist Australia's commitment to reduce greenhouse gas emissions under the Paris Agreement, and Western Australia's interim emissions target.

The conceptual engineered design presented for the Proposal, has progressed significantly since 2024. An iterative approach to the refinement of the layout has been taken that supports this referral. There have been four improvements to the Proposal layout based on the outcomes of supporting studies and the application of the hierarchy of risk mitigation (avoid, minimise, mitigate) to protect environmental values. Site selection was completed with proposed locations and layouts assessed under the mitigation hierarchy (avoid, minimise, mitigate, offset) with reference to the criteria outlined in Table 1-8 below.

Several design elements have been considered including but not limited to the types of turbines, number of turbines, surface placement of turbines and maximum and minimum infrastructure heights to identify the most suitable options which would minimise impacts, not only during construction but through the operational life of the Proposal.

Proposal designs tend to be fluid, often changing during the environmental impact assessment phase. This is represented in Figure 1-6 for this Proposal. Each amended layout is representative of an outcome (refinement of design) to an encountered issue. These issues are a mix of economic, environmental, and social context and values. The majority of the encountered issues resulted in design changes to avoid negative impacts.

The Indicative Disturbance Footprint (IDF) was developed in mid-2025 and represents the outer most boundary of where all Proposed Activities will occur. Any land disturbance during the construction phase of this Proposal will only occur within the Indicative Disturbance Footprint (964.37 ha area). The Indicative Disturbance Footprint also incorporates enough additional area to enable some degree of on ground flexibility to amend the construction footprint during the early stages of site works. The reasoning is to enable

additional allowance for slight adjustments to the Proposal's layout or design, to avoid unknown discoveries, if they occur, thus minimising the impact to environmental values and project schedules.

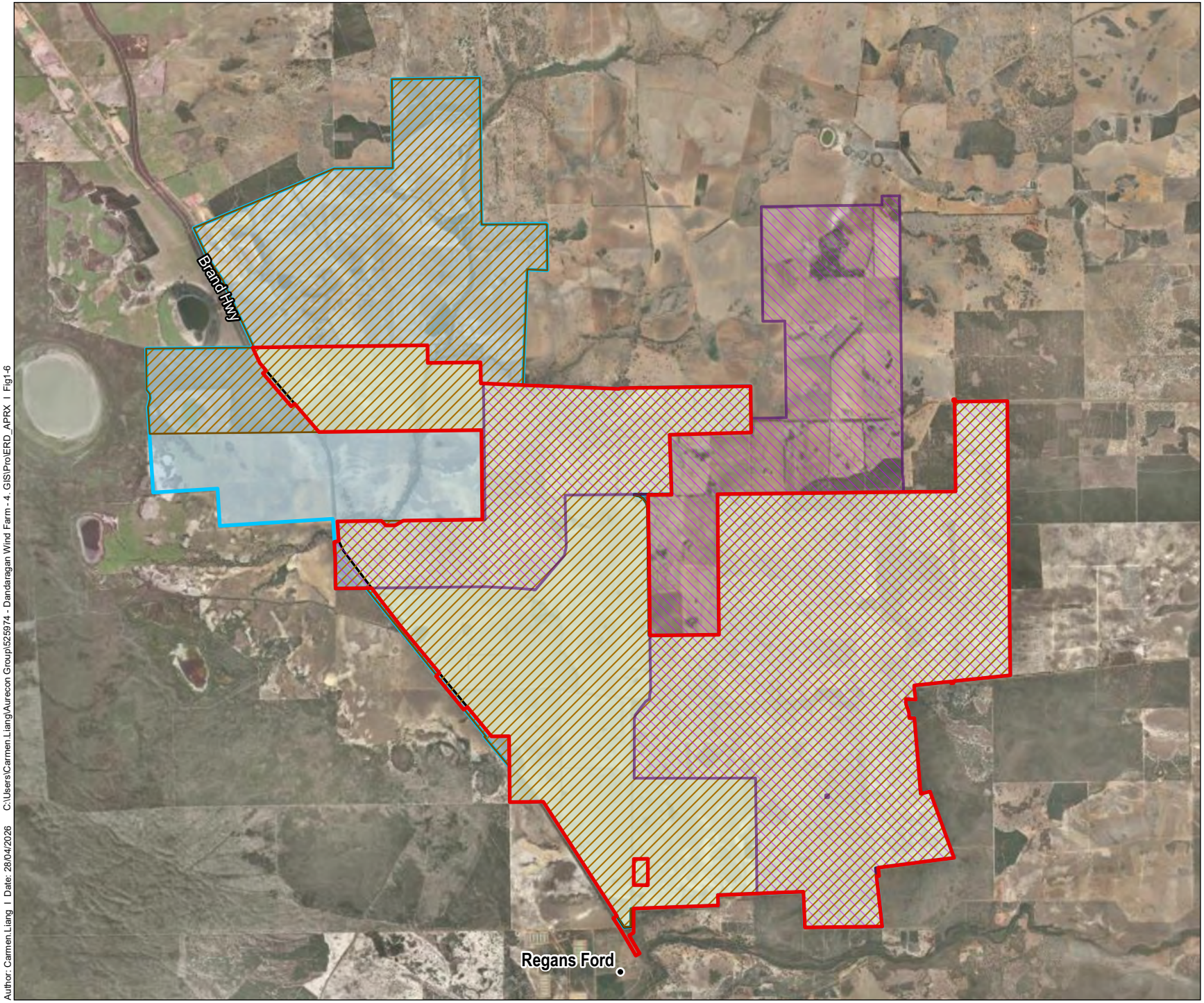
The Proposed Operation Footprint is located wholly within boundaries of the Indicative Disturbance Footprint. This is the area of permanent disturbance that will remain on completion of construction and after partial rehabilitation.

The Proposal was originally to be connected to the SWIS at the Regan's Ford substation utilising transmission line (Option A). This intersected the Moore River and the associated riparian vegetation systems. Further design changes, including consultation with Western Power, have allowed for the adoption of a shorter transmission line (Option B) which avoids impacts to the Moore River and associated environmental and social values.

Table 1-9 Factors influencing justification and alternative considerations

Factors	Description of justification or alternatives	
Underlying Tenure	Agricultural lands that have low vegetation coverage and minimal need for vegetation clearance. They exist in rural settings with minimal existing dwellings within proximity to the Proposal and associated infrastructure.	
Avoidance of Registered Sites of Cultural Heritage Significance	Based on pre-existing Aboriginal cultural heritage surveys and knowledge (Aboriginal Cultural Heritage Inquiry System (DPLH, 2025)).	
Avoidance of Environmental Values	Flora and vegetation	Including Priority 3 Priority Ecological Communities (PEC) (and Threatened Ecological Community (TEC) under EPBC Act) (hereafter referred to as Banksia Woodlands TEC)
	Fauna and fauna habitat	Including *Biodiversity Conservation Act* 2016 (BC Act) and EPBC Act listed Carnaby's Black Cockatoo
	Areas of groundwater dependent ecosystems (GDE)	Use of pre-existing studies to identify constraints and sensitive receptors. No GDEs have been identified.
		Layout of turbines and support infrastructure.
		Co-location of Proposal components, for example access roads to be located away from known areas for listed threatened species or communities.
Noise and Vibration	Based on preliminary noise assessments, locations of sensitive receptors in comparison to turbine locations.	
Surface Topography	With a focus on areas of pre-disturbed land to minimise earthworks and associated disturbance.	
Avoidance of Major Creeks or Drainage	Within the Indicative Disturbance Footprint based on high resolution satellite imagery.	
Reasonable Road Access	Required to access the site and proximity to common infrastructure.	
Stakeholder Engagement	Subsequent changes from stakeholder considerations.	

The initial layout was revised following the completion of desktop and field assessments consisting of specialist studies to maximise the avoidance of impacts to environmental values across the Development Envelope as a whole.



Development Envelope

Archived Proposed Development Envelope

Proposed Development Envelope (Jan 2023)

Proposed Development Envelope (May 2024)

Proposed Development Envelope (Jul 2024)

Proposed Development Envelope (Sep 2024)

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Marri Wind Farm Environmental Review Document

Figure 1-6 Overview of Concept Design Refinement of the Development Envelope

Version: 1 | Coordinate System: GDA2020 MGA Zone 50

Job No.: 525974 | A4 Scale: 1:120,000

1.5 Regional and local context

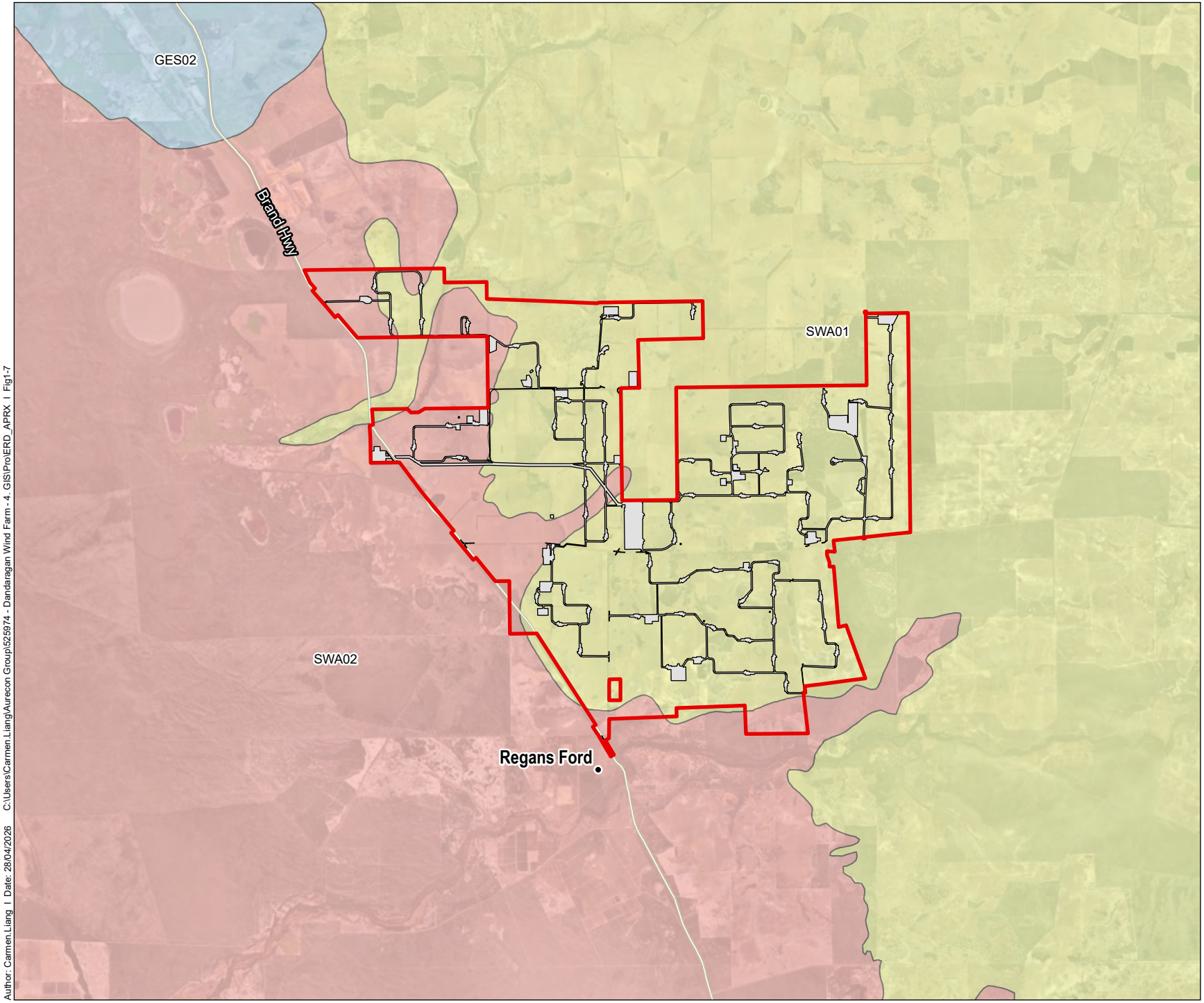
The following sections provide a brief description of the regional and local context for key environmental, cultural and social characteristics. This information is provided to support and is to be read in conjunction with the information presented in the receiving environment sections of the preliminary key environmental factor sections (Sections 6 to 8).

1.5.1 Bioregion

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies Australia's landscapes into large 'bioregions' and 'subregions' based on climate, geology, landform, native vegetation and species information (DoEE, 2016b). The Development Envelope lies on the border of the Perth (SWA2) and Dandaragan Plateau (SWA1) subregions, of which both occur the Swan Coastal Plain bioregion (Figure 1-7).

The Perth subregion spans an area of 1,333,901 ha and experiences a Mediterranean climate, with annual rainfall ranging from 600 to 1,000 millimetres (mm). It is characterised by a varied landscape that includes colluvial and aeolian sands, alluvial river flats, and coastal limestone. The region features heath and/or Tuart woodlands on limestone, alongside Banksia and Jarrah/Banksia woodlands situated on Quaternary marine dunes of differing ages, as well as Marri trees found on colluvial and alluvial soils.

The Dandaragan Plateau subregion spans an area of 447,862 ha and has a Warm Mediterranean climate, with annual rainfall averaging 700 mm. It is characterised by Cretaceous marine sediments covered by sands and laterites. The landscape features Banksia low woodlands, as well as Jarrah-Marri and Marri woodlands, along with scrub-heaths found on laterite pavements and gravelly sandplains (Desmond, 2001).



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Development Envelope

Indicative Disturbance Footprint

Interim Biogeographic Regionalisation for Australia (IBRA) Subregions

GES02 - Lesueur Sandplain

SWA01 - Dandaragan Plateau

SWA02 - Perth

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 1-7 IBRA Subregions - Development Envelopment

Version: 1 | Coordinate System: GDA2020 MGA Zone 50

Job No.: 525974 | A4 Scale: 1:150,000

1.5.2 Flora and vegetation

The Dandaragan Plateau and the Perth Coastal Plain are distinguished by Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) Woodlands and Banksia heath (*Banksia ericifolia*) on sandy soils. Four Threatened Ecological Communities (TEC) are known (i.e., have been recorded) within the area, which include two national TECs: the vulnerable Subtropical and Temperate Coastal Saltmarsh and the endangered Banksia Woodlands of the Swan Coastal Plain (NARvis, 2021; Phoenix, 2025b).

Pre-European vegetation mapping for Western Australia (Phoenix, 2025b) has identified four vegetation associations within the Development Envelope (Table 1-9). The conservation status of these associations was evaluated at various levels: statewide, Swan Coastal Plain bioregion, and the two subregions (Perth and Dandaragan Plateau). Association 999, covering over half of the area, is classified as Vulnerable and Endangered across all extents. Association 1030 is considered depleted in the Dandaragan subregion but of least concern elsewhere. Association 1031 is also depleted statewide and rated Endangered/Vulnerable in the bioregion and subregions, although more than 40% of it is in the Department of Biodiversity, Conservation and Attractions (DBCA) managed lands. Lastly, association 1035 is Vulnerable in both subregions and Endangered statewide, with less than 493 ha remaining.

Further details on flora and vegetation and fauna habitats within the Development Envelope is based on surveys completed for the Proposal are provided in Section 6.

Table 1-10 Extent of pre-European vegetation associations present in the Development Envelope

Vegetation association	Pre-European extent (ha)	Current extent (ha)	Remaining statewide (%)	Remaining in bioregion (%)	Remaining Dandaragan subregion (%)	Remaining Perth subregion (%)	Current extent of DBCA lands (%)	Total area within Surveyed Development Envelope (ha)	% of Surveyed Development Envelope
999, Medium woodland; marri	115,706.59	13,024.44	11.26	9.33	21.06	9.24	23.91	6,474.28	51.86
1030, Low woodland; *Banksia attenuata* & *B. menziesii*	139,012.86 8	88,949.55	63.99	63.81	69.66	31.36	19.24	1,700.10	13.62
1031, Mosaic: Shrublands; *Hakea* scrub-heath/Shrublands; *Dryandra* heath	269,490.91	88,668.30	32.90	19.3	9.27	21.37	42.66	1,321.00	10.58
1035, Mosaic: Medium open woodland; marri/Shrublands; *Dryandra* heath	5,018.34	492.93	9.82	10.47	44.3	10.24	53.78	2,988.17	23.94
Total	**274,509.25**	**191,135.22**	**117.97**	**102.91**	**144.29**	**72.21**	**139.59**	**12,483.55**	**100.00**

Source: Phoenix (2025b)

1.5.3 Surface geology and land systems

The Development Envelope intersects seven geological formations as described on the Surface Geology of Australia 1:1,000,000 scale data base for Western Australia (Stewart et al, 2008). These formations underpin the geological features summarised in Table 1-10 and Figure 1-8.

Table 1-11 Regional surface geology and extent within the Development Envelope

Surface geology	Lithography abbreviation	Description	Total area within Development Envelope (ha)	% of Development Envelope
Sand plain 38499	Czs	Sand or gravel plains; quartz sand sheets commonly with ferruginous pisoliths or pebbles, minor clay; local calcrete, laterite, silcrete, silt, clay, alluvium, colluvium, aeolian sand	5,741.45	45.99
Ferruginous duricrust 38498	Czl	Pisolitic, nodular or vuggy ferruginous laterite; some lateritic soils; ferricrete; magnesite; ferruginous and siliceous duricrusts and reworked products, calcrete, kaolinised rock, gossan; residual ferruginous saprolite	5,723.84	45.85
Molecap Greensand	Kscm	Glauconitic sand, sandstone, clay, minor phosphatic nodules	516.40	4.14
Bassendean Sand	Qdcb	Basal conglomerate overlain by dune quartz sand with heavy mineral concentrations	21.87	0.18
Yarragadee Formation	Jsya	Variegated sandstone, feldspathic sandstone, siltstone, shale, conglomerate, coal	101.38	0.81
Poison Hill Greensand	Kscp	Glauconitic sand and clay	358.56	2.87
Guildford Formation	Qag	Alluvial sand and clay with shallow-marine and estuarine lenses and local basal conglomerate	20.07	0.16
Total			**12,483.55**	**100.00**

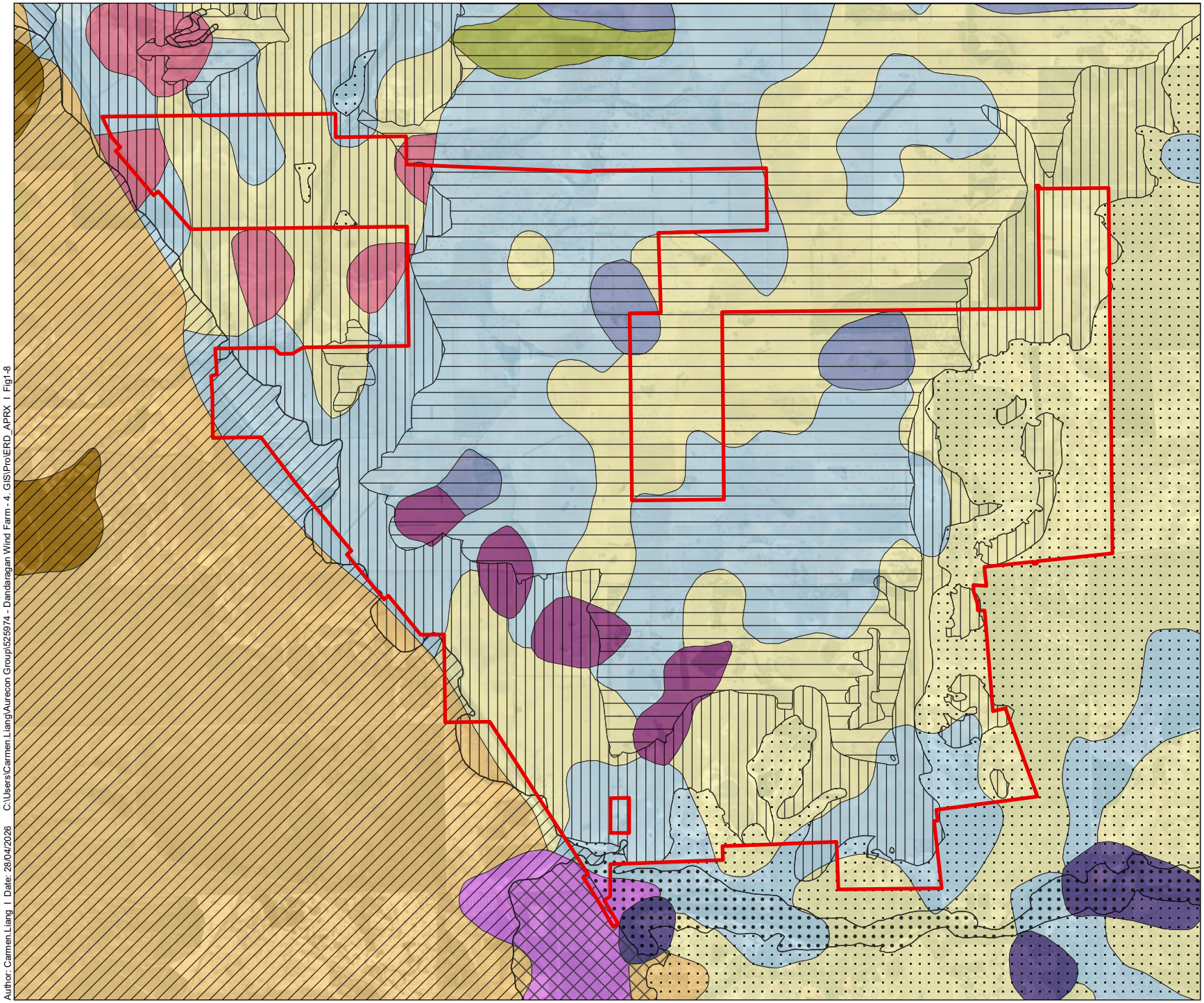
Land systems consist of various recurring forms of topography, soils, and vegetation, which are described through a series of land units (Christian & Stewart, 1953). The Department of Agriculture (now part of the Department of Primary Industries and Regional Development) categorised the land systems within the Perth and adjacent regions using a nested soil-landscape mapping hierarchy to inform pastoral and primary agricultural land use.

Under this hierarchy, land systems are defined as areas with recurring patterns of landforms, soils, vegetation and drainage (Payne & Leighton, 2004). The Proposal intersects five land systems as shown in Table 1-11.

Table 1-12 Land systems and extent within the Development Envelope

Land systems	Description	Total area within Development Envelope (ha)	% of Development Envelope
Rowes System	Subdued partly dissected lateritic plateau, gently undulating plains and gently undulating to undulating rises; yellow and pale sand, sandy earth and sandy gravel; weathered sandstone	4,522.00	36.22
Dandaragan System	Subdued dissected lateritic plateau, undulating low hills and rises with narrow alluvial plains. Variable deep sands and sandy gravels plus minor earths, duplexes and clays. Marri woodlands and shrublands	5,911.92	47.36
Capitella System	Subdued stripped lateritic plateau, undulating to gently undulating low rises with gently undulating plain including dunes; pale and yellow deep sands, sandy gravels, some duplex; from sandstones plus alluvial and aeolian deposits	1,717.67	13.76

Land systems	Description	Total area within Development Envelope (ha)	% of Development Envelope
Bassendean System	Swan Coastal Plain from Busselton to Jurien. Sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths	295.55	2.37
Moochamulla System	Level to gently undulating plain being a relict flood plain, partially rejuvenated; sandy duplex, sandy earth, some sandy gravel; alluvium and weathered sandstone	26.61	0.21
Total		**12,483.55**	**100.00**



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Development Envelope

Surface Geology (1M)

- Czl
- Czs
- Jsya
- Klcg
- Kscm
- Ksco
- Kscp
- Qag
- Qdcb
- Qt

Soil Landscape Mapping - Systems (DPIRD-064)

- Bassendean System
- Boothendarra System
- Capitella System
- Dandaragan System
- Moochamulla System
- Moore River System
- Rowes System

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 1-8 Land Systems and Surface Geology of the Development Envelope

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:90,000

1.5.4 Surface water

The Development Envelope is situated in the Minyulo-Caren Caren Catchment and the Moore River Catchment. Both catchments are included in the proclaimed surface water area of the Moore-Hill Rivers Basin (DWER, 2020b).

The Moore River – Regans Ford is located directly to the south of the Proposal, whilst the Caren Caren Brook is located to the north-east. Only the Caren Caren Brook surface water course intersects the Development Envelope. Both surface drainage systems form part of the Nambung/Cataby Coastal Tributaries Surface Water Area and are lined with riparian vegetation.

These water systems intersect two geomorphic wetlands, of which are classified as the wetland types: Dampland and Palusplain (DBCA, 2018). Majority of these wetland types are found in the surrounding region on similar agricultural settings (i.e., on disturbed and/or degraded land). The closest Drinking Water Source Protection Area is approximately 23.8 km to the southwest of the Development Envelope.

Under existing conditions, surface runoff generated across the site is generally unconfined and drains toward the Brand Highway, which forms the western boundary of the Proposal (and surface water study area). Drainage beneath the highway is facilitated via a network of MRWA culverts and 2 major bridge structures that cross Caren-Caren Brook and the Moore River. These structures represent key hydraulic control points influencing downstream flow conditions and flood behaviour (Aurecon, 2025g).

An active stream gauging station is located approximately 1 km south of the Development Envelope, servicing the Moore River, known as Quinns Ford (station number 617001) (DWER, 2025b). Surface water flow is an important consideration guiding the Proposal design process. An updated surface water study (hydrology) model has been developed to highlight any potential high flow impacts on proposed infrastructure.

1.5.5 Groundwater

The Development Envelope is situated within the Gingin Groundwater Area (DWER-034), a Proclaimed Ground Water Area (DWER, 2020a). Three aquifers are located beneath the Proposal which include the unconfined upper Superficial Swan, the middle Leederville Formation, and the confined lower Yarragadee Formation (BOM, 2025c).

The Development Envelope encompasses a part of the Victoria Plains and Namming Lake, while a section of the transmission line extends into the North Moore River Park groundwater subareas. Within a 10 km radius of the Development Envelope, several groundwater bores and sampling sites exist, many of which are privately owned (DWER, 2025b).

Mapping by the Bureau of Meteorology (BOM, 2025a) indicates that GDEs with a low, moderate or high potential for groundwater interaction may be present in the Development Envelope. The majority of the GDEs are of low or moderate potential with only one area of high potential along Caren Caren Brook. Although this mapping highlights an important environmental consideration, the Proposal has been actively redesigned (Section 1.4.8) to avoid these areas of vegetation such that it does not adversely impact these sensitive ecosystems.

GDE mapping by the Bureau of Meteorology classifies ecosystems based on the potential for dependence on groundwater. Findings from the Proposal's flora and vegetation surveys conclude no areas of high dependence groundwater systems exist within the Proposed Development Envelope (see Section 6.4).

1.5.6 Climate

The Proposal is situated in a region generally characterised by a warm Mediterranean climate, consistent with the broader Dandaragan Plateau and Perth subregions. The Dandaragan Plateau IBRA subregion receives an average annual rainfall of approximately 700 mm (Desmond, 2001), while rainfall across the greater Perth IBRA subregion ranges between 600 to 1,000 mm annually (Mitchell, Williams, & Desmond, 2002).

Climate data has been sourced from the Bureau of Meteorology's Gingin Aero station (station no. 009178; Latitude: 31.46°S, Longitude: 115.86°E). The weather station is located approximately 55.8 km south of the Development Envelope (BOM, 2025b).

The mean day time maximum monthly temperature of approximately 33.3°C typically occurs in January and February, whilst the mean day time minimum monthly temperature of approximately 18.4°C is generally observed during July. Temperatures typically reach their lowest daily minimum, during winter (July and August, averaging 6.6°C) and peak in February (summer) at around 17.1°C.

Recorded mean annual rainfall is approximately 633.8 mm, with the highest monthly averages recorded during the winter months: July (126.3 mm), June (109.4 mm), and August (108.2 mm).

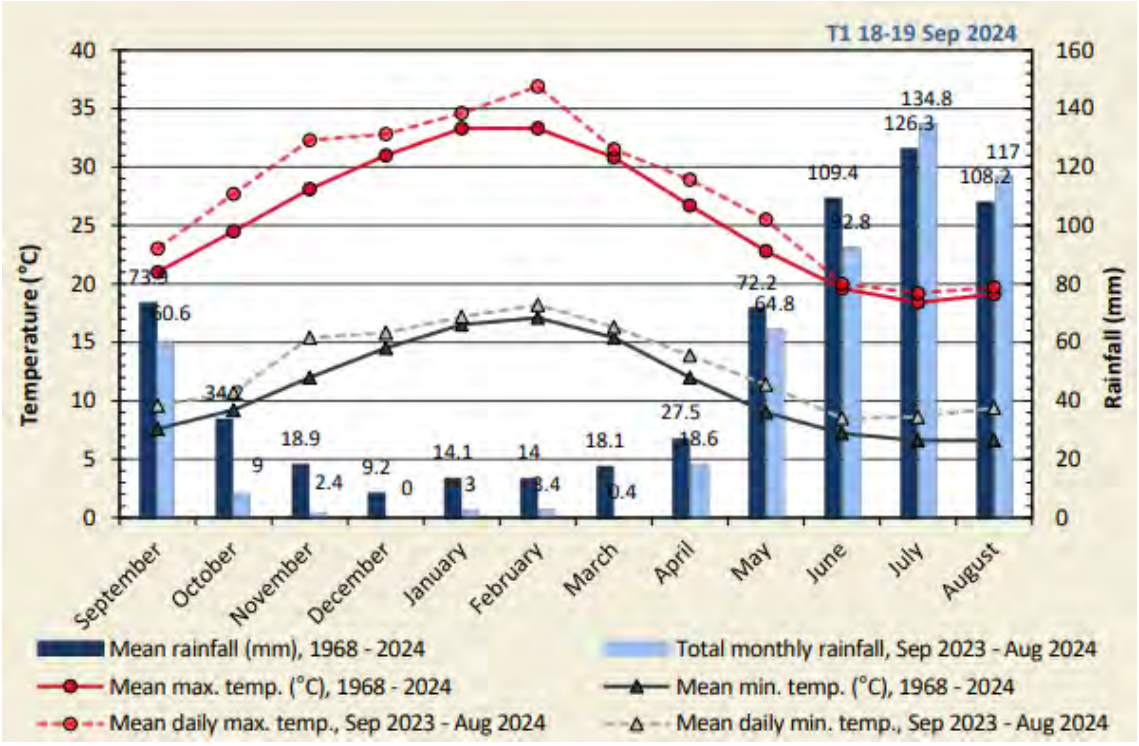


Figure 1-9 Annual climate and weather data for Gingin Aero Station (No. 009178)

Source: BoM (2025b)

1.5.7 Environmentally Sensitive Areas

Environmentally Sensitive Areas are areas declared by the Department of Water and Environmental Regulation (DWER) and consist of vegetation of high conservation value. This may include, but not be limited to the following:

- An area covered by vegetation within 50 m of Threatened flora, to the extent to which the vegetation is continuous with the vegetation in which the Threatened flora is located
- An area covered by a TEC
- A defined wetland (Ramsar wetlands, conservation category wetlands and nationally important wetlands) and the area within 50 m of the wetland
- Bush Forever sites

The Development Envelope does not overlap with any conservation reserves, DBCA lands or Environmentally Sensitive Areas (Phoenix, 2025b) as presented in Figure 1-10.

1.5.8 National parks, state forests and reserves

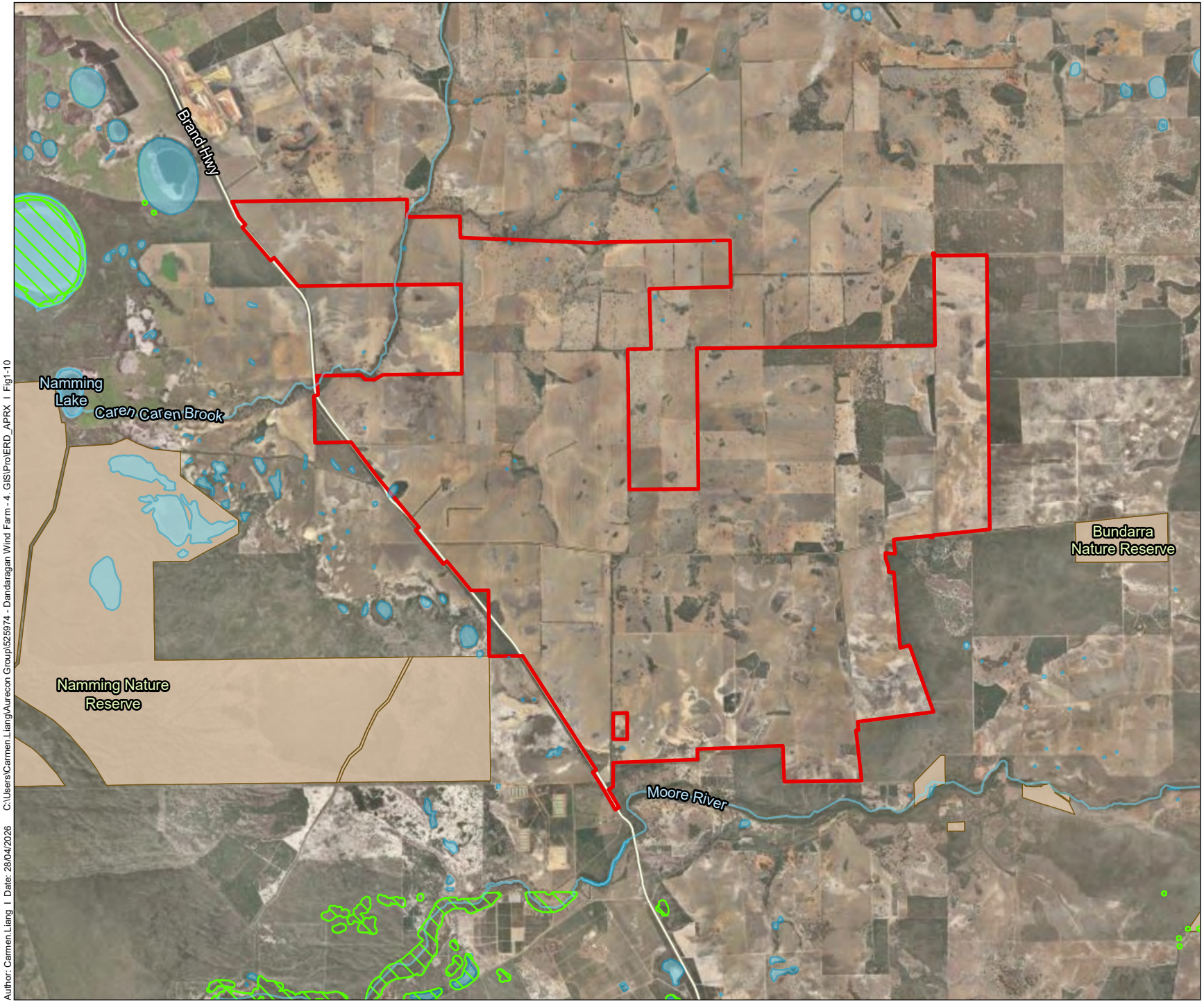
Within a 30 km radius from the Development Envelope the following conservation areas exist:

- One National Park (Moore River National Park) located approximately 10 km to the south

- One State Forest (Gnangara-Moore River State Forest) located approximately 24.4 km to the southwest
- One Conservation Park (Unnamed Reserve R41986) situated approximately 6.8 km to the south
- Nature Reserves - 32. The two closest nature reserves are (refer Figure 1-10):
  - Namming Nature Reserve, which borders the western side of the Development Envelope
  - Bundarra Nature Reserve, located approximately 2 km to the east

None of the above areas intersect the Development Envelope or Indicative Development Envelope (Phoenix, 2025b).

No RAMSAR Wetlands are mapped within the Development Envelope. The closest wetland of national significance is the Forrestdale and Thomsons Lakes, located approximately 130 km to the south, within the Southwest (SWA02) IBRA subregion.



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Development Envelope

Watercourses (DWER-031)

Waterbodies (LGATE-016)

Clearing Regulations - Environmentally Sensitive Areas (DWER-046)

DBCA - Legislated Lands and Waters (DBCA-011)

Nature Reserve

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 1-10 Environmentally Sensitive Areas, National Parks, State Forests and Reserves

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:120,000

1.5.9 Social context

The whole of the Proposal (i.e., wind farm and transmission line) is located within the Shire of Dandaragan within the Central Coast subregion of the Wheatbelt (WDC, 2025). The Shire of Dandaragan covers an area of approximately 6,716 km² and has a population of approximately 3,355.

1.5.10 Aboriginal heritage

The EPBC Act establishes the National Heritage list, which includes Indigenous places of outstanding heritage value to the nation. In addition to this, the State Aboriginal Cultural Heritage Inquiry System (ACHIS) provides information on Aboriginal Cultural Heritage in Western Australia. The Development Envelope area is located within the lands of the Yued people, represented by the Yued Aboriginal Corporation, and falls under the existing Yued Indigenous Land Use Agreement (ILUA) area. As such, formal engagement to obtain an ILUA will not be required for the Proposal (Aurecon, 2024).

There is currently one known Registered Site, two Lodged Cultural Heritage Places and one Historical Cultural Heritage Place registered within the ACHIS that intersect with the Development Envelope as seen in Table 1-12 (Archae-aus, 2024). Further details on Aboriginal heritage within the Development Envelope based on surveys completed for the Proposal are provided in Section 8.

Table 1-13 Aboriginal cultural heritage sites intersecting the Development Envelope

Place ID	ACH identifier	Name	Place type	Comments
AHC Registered Site				
20008	ACH-00020008	Gingin Brook Waggyl Site	Camp; Creation / Dreaming Narrative; Historical; Hunting Place; Plant Resource; Water Source	Intersects main footprint
ACH Lodged Places				
5214	ACH-00005214	NATGAS 133	Artefacts / Scatter	Intersects main footprint
5484	ACH-00005484	GAS PIPELINE 81	Artefacts / Scatter	Intersects main footprint
ACH Historic places				
18083	ACH-00018083	Moore River Pools (PCE-06)	Hunting Place, Plant Resource, Water Source	Intersects main footprint

Source: Archae-aus (2024)

1.5.11 Native Title

Native Title in Australia refers to the right and interests relating to land or waters held by Aboriginal people under their traditional laws and customs and recognised by the common law. Australian Law recognises that, except where Native Title has been wholly extinguished by the historical grant of freehold, leasehold and other interests, Native Title exists where Aboriginal people have maintained a traditional connection to their land and waters substantially uninterrupted since sovereignty. These rights and interests vary and may include the right to control access.

The Development Envelope lies within the Yued Indigenous Land Use Area (WI2015/009), under the broader Southwest Native Title Settlement (Determination Reference: WCD2021/010) (Archae-aus, 2024).

The Proponent has developed a Heritage Protection Agreement (HPA) with Yued Aboriginal Corporation (Alinta Energy, 2025). The HPA details the agreed process to identify and protect cultural heritage in collaboration with the Yued Aboriginal Corporation (YAC). More information about the Yued HPA can be found in Section 8.

1.5.12 European heritage

Historic places and artefacts are significant not only to the local community and historical groups but may also be of significance at a State or National level. The State Register of Heritage Places is maintained by the Heritage Council of Western Australia for recording places with heritage significance that represent history and development within Western Australia.

There are no national or state listed places with heritage significance within the Development Envelope. A review of the Inherit database identified two historical heritage places within approximately 12 km of the Indicative Disturbance Footprint:

- Regan's Ford – River Crossing and Tennis Court Site (P05823)
- Mogumber Mission (fmr) and Cemetery (P03618)

1.5.13 Land use history

Land use within and surrounding the Development Envelope has primarily been utilised for dry land agriculture, with lesser areas of conservation (Phoenix, 2025b). Other uses visible in surrounding areas includes residential and recreational use. Yandin Wind Farm is located approximately 15 km directly north of this Development Envelope.

Cataby Mineral Sands project is also located approximately 15 km and 25 km north of the Proposal, respectively. Future proposals within the surrounding area include the Yathroo Wind Farm which may be located between the existing Yandin wind farm and this Proposal.

More information on other land use within the area can be found in Sections 6, 7 and 8.

2 Legislative context

2.1 Environmental impact assessment process

2.1.1 Environmental Protection Act 1986 (Part IV)

The EP Act *Part IV (Divisions 1 and 2)* is the principal environmental legislation governing environmental protection and Environmental Impact Assessment (EIA) in Western Australia. A referral is required under Section 38 of the EP Act if a proposal is a significant proposal, meaning if a proposal is to be implemented, it is likely to have a significant impact on the receiving environment.

The EPA must then decide whether to assess the proposal or determine if an assessment of the proposal is not required. This is supported through an EPA response to submission which will be reflective of the proposal's significance, potential impacts, and the proponent's ability to mitigate adverse environmental impacts.

In conjunction with the completed Referral form, this ERD forms the Proposal under section 38(1) and 38B(1) of the EP Act. This document has been prepared in line with:

- Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA, 2024a)
- Instructions: How to prepare an environmental review document (EPA, 2024c).
- Statement of environmental principles, factors, objectives and aims of EIA (EPA, 2023b).
- Instructions on how to prepare *Environmental Protection Act 1986* Part IV environmental management plans (EPA, 2023a).

2.1.2 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (DCCEEW). Under the EPBC Act, approval from the federal Minister for the Environment is required to take a 'controlled action'. A controlled action under the EPBC Act includes where the proposal will have, or is likely to have, a significant impact on a matter of national environmental significance (MNES) or a significant impact on the environment on Commonwealth land.

A person proposing to take an action that the person thinks may be, or is, a controlled action must refer the proposal to the federal Minister for the Environment. The Minister will then decide whether or not the action is a controlled action.

Self-assessment of a proposed action may assist in identifying the potential significance that action may have on MNES, if implemented without mitigation or offsets. Significant impact criteria, defined in *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (DoE, 2013) assists to determine whether the impacts expected from the proposed action are likely to be considered significant.

The self-assessment undertaken on behalf of the Proponent concludes that the proposed action is likely to have some level of impact on MNES. However, the level of a significance is to be reviewed following referral to the federal Minister for the Environment for assessment.

2.1.3 Other state approvals and regulation

Beyond the Proposal's assessment under *Part IV* of the EP Act, certain other state level authorisations may be required prior to the Proposal's implementation. These are summarised in Table 2-1.

This may include construction site preparation activities such as native vegetation clearing, instillation of mobile batch plants, site ablution facilities and establishment of site access points.

Table 2-1 Other approval and regulatory considerations applicable to the Proposal

Decision making authority	Key legislation	Approval required	Ability to mitigate environmental impact	Impact/phase	Environmental factor
Department of Water and Environmental Regulation (DWER)	*Environmental Protection Act 1986* (EP Act) Part V Division 2 Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Part V Native Vegetation Clearing Permit (NVCP)	An application under Part V of the EP Act to enable the clearing of native vegetation will be required. Any native vegetation found not exempt under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004, will be required. A NVCP must be obtained prior to site activities commencing. Mitigation measures will be applied to prevent, abate and mitigate pollution or environmental harm.	**Impacts:** Clearing of native vegetation and fauna habitat **Phase**: Construction Decommissioning	Flora and Vegetation Terrestrial Fauna
DWER	EP Act Part V Division 2	Part V Minor and Preliminary Works Approval Permit (Works approval)	Early site activities may require a works approval to commence minor site preparation works. Concrete Batching will be required. Mitigation measures will be applied to prevent, abate and mitigate pollution or environmental harm.	**Impacts:** Clearing of native vegetation **Phase:** Construction	Flora and Vegetation Green House Gas Emissions
DWER	*Rights in Water and Irrigation Act 1914* (RIWI Act)	Section 11, 17 and 21A Bed and Banks Permit for Disturbance to beds and banks of watercourses	The Proposal has minimised the potential for impact to bed and banks by including directional drilling as opposed to a causeway over Caren Caren Brook. Mitigation measures will be applied to all phases.	**Impacts:** Drilling set up area outside of riparian zones on either side of Caren Caren Brook. **Phase:** Construction Decommissioning	Flora and Vegetation Inland Waters
Department of Water (DW)		Water licence under the Gingin surface water allocation plan (DWER, 2011a) would be required if surface water was to be considered. Gingin groundwater allocation plan (DWER, 2015) is required for water allocation trading or purchase.	Potential additional surface water and/or groundwater use for batch plants. To minimise impact to surface and groundwater allocations negotiations regarding existing allocation licences are continuing. Avoidance of taking of surface water within the Gingin proclaimed area is not a preferred option under this Proposal. Mitigation measures will be applied to all phases.	**Impacts:** Reduced environmental water availability within the catchment and downstream areas. **Phase:** Construction	Inland Waters Social Surroundings Flora and Vegetation Terrestrial Fauna
Department of Biodiversity, Conservation	*Biodiversity Conservation Act* 2016 (BC Act)	Authorisation under Section 40 of the BC Act may be required if	Whilst bird and bat impacts are well documented globally, careful consideration to what species are likely to be present, if they are threatened and flight range preferences have been completed.	**Impacts:** Injury or entrapment of any wildlife.	Terrestrial Fauna Social Surroundings

Decision making authority	Key legislation	Approval required	Ability to mitigate environmental impact	Impact/phase	Environmental factor
and Attractions (DBCA)		there is potential for impact to individuals during the construction phase.	Design of the turbines exceeds the preferred flight height range of the Carnaby's Black Cockatoo and observed bat species. Mitigation measures will be applied due to increased ground activity through the Traffic Management Plan.	**Phase:** Construction Operation Decommissioning	
Department of Planning, Lands and Heritage (DPLH)	*Planning and Development Act 2005* (PD Act)	Development Application (via Part 11B Significant Development Pathway). All elements of the Proposal	A Development Application (DA) under the State Planning Polic 2.0: Environment and Natural Resources, and Guidance Statement 33: Environmental Guidance for Planning and Development. Aspects related to Social Surroundings and other environmental factors are also considered. Lodgement will occur under the Part 11B Significant Development Pathway. Any conditions related to management and mitigation of environmental impacts will be implemented. Mitigation measures will be applied to all phases.	**Impacts:** Land clearing Social amenity **All phases**	Flora and Vegetation Social Surroundings
Department of Health (DoH)	*Health Act 1911* Health (Treatment of sewage and disposal of effluent and liquid waste) Regulations 1974	Application to construct or install an apparatus for the treatment of sewage Temporary accommodation	If progressed the 450 equivalent persons temporary camp facility and worker facilities will require a wastewater treatment system. Licencing will be sort from local Shire of Dandaragan and/or the Department of Health. Mitigation measures will be applied to prevent, abate and mitigate pollution, environmental harm or harm to site personnel.	**Impacts:** Pollution of soil and groundwater **Phase:** Construction	Inland water Terrestrial Environmental Quality Social Surroundings
Department of Energy, Mines, Industry Regulation and Safety	*Dangerous Goods Safety Act 2004* Dangerous Goods Safety (Storage and Handling of Non explosives) Regulations 2007	Dangerous Goods Licence Volumes and storage of combustible liquids (diesel) are to be self-bunded, placed on impervious flooring (AS 1940).	Storage of battery modules prior to installation may require a Dangerous Goods Licence. Separation distances and storage compatibility is to be implemented to minimise potential pollution, environmental harm. AS 1692 Steel tanks for flammable and combustible liquids AS 1940 The storage and handling of flammable and combustible liquids	**Impacts:** Pollution of soil and groundwater **Phase:** Construction Operation	Inland water Terrestrial Environmental Quality Social Surroundings

3 Stakeholder engagement

Alinta Energy takes a transparent, proactive, and outcomes-driven approach to stakeholder engagement that is directly aligned with a project's planning and approvals pathway. Engagement activities are mapped to key project milestones to ensure that communication, consultation, and feedback processes meaningfully inform environmental assessments, planning decisions, and project design refinement.

Alinta Energy works collaboratively with government agencies, Traditional Owners, landowners, and the broader community to understand planning considerations, identify and address potential impacts, and ensure the Proposal aligns with local and regional policy objectives. This approach supports both regulatory decision-making and social acceptance by ensuring stakeholders have timely access to accurate information and genuine opportunities to contribute to the planning process.

Guided by the principles of the International Association for Public Participation (IAP2) (in Australia known as the Engagement Institute), Alinta Energy's engagement approach is founded on openness, responsiveness, and partnership, ensuring stakeholders are informed, consulted, and involved at each stage of a project lifecycle in a way that supports transparent and well-considered planning outcomes.

3.1 Locality and community

The Proposal is 2.65 km north-east of the community of Regan's Ford in the Shire of Dandaragan. The Shire of Dandaragan encompasses an approximate population of 3,355 across four main townsites: Badgingarra, Cervantes, Dandaragan, and Jurien Bay.

The 2021 census data for the Dandaragan indicates the median age for the region is 51 years, which is notably higher than the average age for Australia of 38 years. In terms of occupations, many locals work as managers, labourers, and technicians and trades workers, with a significant share also employed as machinery operators and drivers. The census also indicates a high percentage of the population in the region – 32.4% do not participate in the labour force. This is likely attributable to the older population in the region. The primary industries employing residents include mining, accommodation services, and cattle farming.

While traditional industries have historically dominated the local agricultural sector, the abundant natural resources of the broader region present significant opportunities for renewable energy infrastructure development.

Notable existing renewable projects within the Shire of Dandaragan include:

- Yandin Wind Farm (Alinta Energy and Ratch Australia Investment)
- Badgingarra Wind and Solar Farms (APA Group)
- Emu Downs Wind and Solar Farms (APA Group)

Notable proposed renewables projects within the Shire of Dandaragan include:

- Waddi Wind Farm
- Parron Wind Farm
- Yathroo Wind Farm

Notable industries within the Shire of Dandaragan include:

- Tronox Coolijaroo Mineral Sands Mine
- Iluka Cataby Mineral Sands Mine

Alinta Energy has used the local context and demographic information to help inform the approach to stakeholder engagement, likely areas of interest and possible cumulative impacts with other projects in the region.

3.2 Stakeholder identification

Alinta Energy has a standard process which is followed on its projects to identify stakeholders. The stakeholder identification process includes:

- **Desktop analysis**
  The process begins with a comprehensive desktop assessment to understand the project's regional and social context. This includes:
  - Reviewing the proposed project footprint and surrounding land uses.
  - Mapping property boundaries to identify impacted landholders and near neighbours.
  - Reviewing existing land tenure, infrastructure, and environmental values.
  - Reviewing local and regional planning documents, government policies, and recent development activity in the area.
- **Tiered stakeholder identification**
  Stakeholders are categorised into three tiers based on their level of interest, influence, or potential impact from the project.
  - Tier 1 – Key and impacted stakeholders:
    - **Impacted landholders** (those whose land or property is directly affected).
    - **Government stakeholders**, including relevant State and Commonwealth departments and agencies.
    - Local Members of Parliament and local government representatives (Councillors, CEO, Mayor).
    - **Traditional Owner Groups** with recognised or potential interests in the area.
  - Tier 2 – Community of interest:
    - **Near neighbours** who may experience visual, noise, construction, or other localised impacts.
    - **Community groups, environmental organisations, and local associations** with an interest in the project's potential impacts or benefits (e.g., renewable energy groups, conservation organisations, tourism associations).
  - Tier 3 – Broader Community:
    - Residents and businesses in the wider region.
    - The general public who may have an interest in renewable energy or regional development.
- **Identification through engagement**
  Following the desktop assessment:
  - Engagement commences with **Tier 1 stakeholders**, to inform them of the Proposal, gather initial feedback, and identify any local values, sensitivities or additional stakeholders.
  - Engagement then expands to **Tier 2 stakeholders**, using insights gained from earlier discussions to tailor communication materials.
  - Finally, the **Tier 3 broader community** is engaged through open public channels.

  Throughout engagement, the project team:
  - Seeks input from stakeholders, particularly local government, Traditional Owner groups, and regional representatives, on whether additional individuals or groups should be engaged.
  - Continuously refines the stakeholder list to ensure inclusivity and local relevance.
- **Public Participation Opportunities**
  To enable open participation, the project hosts:
  - Drop-in information sessions and public office hours for the community and residents to drop-in.

- These sessions are widely advertised through local newsletters, local newspaper, community and online.
- These opportunities allow interested parties to self-identify and become part of the ongoing engagement program.

3.3 Stakeholders

Through the stakeholder identification process, the Proposal team have developed a register of stakeholders who will be impacted by, or who have an interest in the proposed development. These stakeholders are detailed in Table 3-1.

The level of engagement and type of engagement required with each stakeholder is determined based on their proximity to the Development Envelope, potential level of impact, and relevance to regulatory, land use or community interests. Because of the remote nature of the Proposal, local businesses are defined as those within an approximate 125 km radius of the Development Envelope, given their possible interest in job and supply chain opportunities.

Table 3-1 Identified stakeholders and community groups

Stakeholder group	Stakeholder identity	Stakeholder primary area of interest
Direct landholders, neighbours and landowners in the surrounding areas	Various	■ Overview of Proposal and access ■ Near neighbour benefits ■ Construction impacts ■ Ongoing impacts and management
Local Community	All members of the community including health care and education	■ Proposal impacts ■ Community benefit fund ■ Economic and job opportunities
Traditional Owners and Aboriginal Corporations	Yued Aboriginal Corporation Southwest Aboriginal Land and Sea Council	■ Cultural Heritage surveys and ongoing field support ■ Employment and contracting opportunities ■ Community benefits sharing ■ Training and development opportunities
Local Businesses (can include businesses within up to approximately 125 km of project site)	Various businesses, sole trader entities and representative bodies	■ Proposal impacts ■ Economic development and job opportunities ■ Community benefits (for those within eligibility range)
Local Government	Shire of Dandaragan	■ Development Application under the PD Act ■ Community benefits sharing ■ Workforce accommodation and facilities to manage influx of workers ■ Proposal layout and transport routes and expected weights ■ Road use, maintenance or upgrade options ■ Local employment opportunities during construction
	Shire of Moora Shire of Gingin	■ Proposal layout, transport routes and expected weights ■ Road use, maintenance or upgrade options ■ Local employment opportunities during construction
State Government	Department of Water and Environmental Regulation (DWER)	■ Ecological surveys and findings ■ Extent of clearing and other impacts ■ Referral under EP Act ■ Surface water and groundwater permitting requirements ■ Noise assessments and limits ■ Emissions and discharges
	Department of Planning, Lands and Heritage (DPLH)	■ Planning approval in accordance with State Planning Framework

Stakeholder group	Stakeholder identity	Stakeholder primary area of interest
		▪ Land tenure ▪ Aboriginal Cultural Heritage ▪ European Heritage
	Main Roads WA (MRWA)	▪ Proposal layout, transport routes and expected weights ▪ It is expected that some over size over mass elements such as transformers potentially weigh up to 190 tonnes each. ▪ Impacts to local transport roads may require assessment or upgrades.
	Department of Biodiversity, Conservation and Attractions (DBCA)	▪ Biodiversity aspects, including Black cockatoos and Banksia Woodland of the Swan Coastal Plain Threatened Ecological Community ▪ Offset options
	Western Power (WP)	▪ Connection to existing Western Power infrastructure at designated location ▪ Commitment of energy supply into the future
	Department of Energy, Mines, Industry Regulation and Safety	▪ Dangerous goods storage licence for the BESS (if required) ▪ Containment and storage of combustible liquid (diesel, if required)
	Department of Health	▪ Worker's accommodation facility and potential for sewage management licence (if required)
	Emergency Services (Police, Fire, Ambulance)	▪ Proposal timing and location ▪ Numbers of persons on site per day (ensure services can capture increase in people within the region) ▪ Communication system impacts (if any) ▪ Emergency access
	Wheatbelt Development Commission	▪ Employment opportunities and economic development ▪ Benefit sharing and maximising local opportunities ▪ Cumulative Proposal impacts to community
	Mid West Ports Authority	▪ Potential use of the Port of Geraldton for receivable elements of Proposal infrastructure
	Development WA/ Australian Marine Complex	▪ Potential use of the Australian Marine Complex for receivable elements of Proposal infrastructure
Commonwealth Government	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	▪ Referral of this Proposal under the EPBC Act ▪ Impacts to MNES ▪ Traditional Owner engagement approach and feedback
	Civil Aviation Safety Authority (CASA)	▪ Proposal impacts ▪ Locations and maximum possible heights of all tall structures ▪ Potential communication system interference (if any) ▪ Flight path clearance
	Bureau of Meteorology (BOM)	▪ Proposal impacts ▪ Locations and maximum possible heights of all tall structures to assess any projected interference from radar
	Department of Defence	▪ Proposal impacts ▪ Locations and maximum possible heights of all tall structures in the case of retaining public safety during planned exercises ▪ Potential communication system interference (if any)
	Air Services Australia	▪ Proposal impacts ▪ Locations and maximum possible heights of all tall structures

Stakeholder group	Stakeholder identity	Stakeholder primary area of interest
Industry, workforce development and training	Industry Capability Network WA Chamber of Commerce and Industry Central Regional TAFE TAFE WA Wheatbelt Business Network Clean Energy Skills National Centre of Excellence University of Western Australia Curtin University	■ Workforce development ■ Apprenticeships, trainees ■ Collaboration opportunities

3.4 Engagement process

The International Association for Public Participation (IAP2) is the internationally recognised organisation for advancing public involvement and participation in government programs and services. The IAP2 spectrum of public participation assists with determining the level of engagement which is achievable with project stakeholders.

Alinta Energy applies the IAP2 spectrum to all its projects to provide transparency to stakeholders around the level of participation that is achievable during each phase of engagement.

Table 3-2 identifies how the communications and engagement approach for the Proposal aligns with the IAP2 Spectrum.

Table 3-2 Alignment with the IAP2 Spectrum

Inform	Consult	Involve	Collaborate	Empower
Provide balanced and objective information to assist understanding of the problem, opportunities and solutions.	Obtain feedback on analysis, alternatives and decisions.	Work directly with stakeholders to ensure their aspirations are understood and considered.	Partner with stakeholders in each aspect of the decision, including the development of alternatives and the identification of the preferred solution.	Place final decision-making in the hands of the stakeholder.
What this means for the Proposal				
Community and stakeholders will be informed of the Proposal scope and benefits and kept up to date with the Proposal's progress. Community and stakeholders will be informed about non-negotiable elements, clearly explaining why these elements are set.	Community and stakeholder feedback will be sought to inform elements of the Proposal. Stakeholders will be updated about how their feedback has been considered in the Proposal's development.	Testing ideas and options with stakeholders and working together on a solution.	Collaboration would happen with key stakeholders to identify solutions for some key impacts of the Proposal. The Proposal will actively collaborate with the community to develop the community benefit sharing program.	Government and regulatory decision makers.

To ensure a consistent approach to engagement is applied across a project lifecycle, Proposal engagement is guided by the Marri Wind Farm Stakeholder Engagement and Communication Plan (SECP) (Appendix T).

The plan details the Proposal's:

- Engagement objectives
- Stakeholders and the proposed level of engagement on the IAP2 spectrum
- Engagement methodology

- Communication and engagement tools and channels
- Complaints management process
- Approach to community benefits sharing.

The SECP is informed by the following guidelines and frameworks to ensure a best practice approach is applied to engagement across the Proposal:

- WA DPLH Guide to Best Practice Planning Engagement in WA
- Australian Energy Infrastructure Commission Host landowner and community engagement recommendations.
- Clean Energy Council Best Practice Charter
- Clean Energy Council Community Engagement Guidelines for the Australian Wind Industry
- Alinta Energy's Environment & Community Policy, Community Engagement & Social Performance Standard and Community Engagement & Social Performance Guidelines

The Plan is reviewed and updated every six months to ensure the engagement approach meets regulator and stakeholder expectations and requirements.

3.5 Engagement approach

Alinta Energy has adopted a phased approach to engagement to ensure the right stakeholders are engaged at the right time. Recognising the number of renewable energy projects in the region, Alinta Energy has sought to minimise engagement fatigue by prioritising early engagement with those most directly impacted, addressing their concerns and building understanding before broadening discussions to other stakeholders and the wider community. This approach ensures engagement activities are purposeful, informed, and aligned with key planning and environmental assessment milestones.

Alinta Energy has also worked with stakeholders to understand their preferred methods of engagement.

Engagement methods for the Proposal include:

- In person meetings
- Briefings
- Presentations
- Drop-in sessions
- Open office hours
- Emails and phone calls
- On Country engagement
- Letters

Throughout engagement, Alinta Energy has also provided regular updates on the Proposal through its Community Newsletter and the Proposal website.

3.5.1 Early engagement phase

In the initial phase, Alinta Energy engaged with key government stakeholders and landowners prior to the Proposal's public announcement. Engagement with government agencies focused on understanding regional priorities, policy objectives, and planning frameworks to ensure the Proposal design, environmental studies, and engagement processes were aligned with government expectations and the Western Australian planning and approvals framework.

Engagement with landowners centred on identifying potential concerns, understanding property-specific considerations, and working collaboratively to secure land access and lease agreements in a way that supported both Proposal feasibility and community confidence.

In parallel, Alinta Energy initiated early engagement with Traditional Owners, reaching out to the YAC in July 2024 to introduce the Proposal and discuss culturally appropriate engagement pathways. The first meeting in September 2024 established the foundation for ongoing collaboration, which has since evolved into an ongoing relationship, which is now in a negotiation phase.

This early phase engagement across stakeholders was critical in raising awareness, identifying local values and areas of cultural, environmental, and social importance, and helping to define the scope of environmental surveys and the Social Impact Assessment (SIA).

3.5.2 Public introduction and values mapping phase

The public announcement of the Proposal in November 2024 marked the beginning of broader community engagement. Initial efforts focused on the approximately 35 neighbouring landowners closest to the Proposal area. This phase aimed to raise awareness of the Proposal, map local values, identify areas of potential sensitivity, and understand community preferences for how and when they wished to be engaged.

Engagement during this period, including face-to-face meetings, workshops, drop-in sessions, phone calls, and email correspondence, helped inform the scope of environmental and social studies, ensuring they reflected community priorities and regional context.

The SIA, prepared in line with Western Australian EPA guidance on the *social surroundings* factor, applied best-practice methodologies such as social baseline profiling, stakeholder engagement, impact significance assessment, and the development of targeted mitigation and enhancement strategies.

The SIA examined key thematic areas including demographics and population change, health and wellbeing, housing and accommodation, socio-economic conditions and human rights, land use and cultural heritage, education and employment, local economy, infrastructure and services, and social cohesion and community values.

3.5.3 Engagement outcomes

Across all engagement activities, community members have provided valuable feedback on the Proposal's design, environmental studies, and potential local impacts. The feedback received is detailed in the below section.

3.6 Key themes of feedback

3.6.1 Proposal details and timelines

Community members sought greater clarity on the Proposal's location, turbine placement, and construction schedule, including how the Proposal will be staged and when environmental and planning approvals will be submitted. Questions focused on what stage the Proposal is currently in and how the approvals process works under state and Commonwealth legislation.

3.6.2 Transmission infrastructure

Residents requested more information about the proposed location of transmission lines, visual impacts, and how routes will be selected. Concerns were raised about environmental impacts and property proximity, with calls for clear communication on how landowners will be consulted and compensated.

3.6.3 Environmental and wildlife impacts

Stakeholders expressed interest in how the Proposal will protect local flora, fauna, and particularly Carnaby's Black Cockatoo, as well as questions about potential impacts to birds, bats, and broader ecosystems. Feedback showed strong community interest in minimising clearing and maintaining the area's natural character.

3.6.4 Noise, visual, and construction impacts

Nearby residents raised concerns about noise, traffic, dust, and visual amenity during construction and operation. Questions also related to road safety, the number of heavy vehicle movements, and how potential disturbance will be managed. These issues are being addressed through targeted environmental and technical studies, including Noise, Traffic, and Visual Impact Assessments.

3.6.5 Fire risk and emergency management

Community members sought reassurance about bushfire risk and emergency procedures. Alinta Energy provided information on bushfire assessments underway and measures to align with local emergency services and regional bushfire management strategies.

3.6.6 Community benefits and Neighbour Program

Feedback indicated strong interest in community benefit sharing and Neighbour Program payments. Community members supported the idea of local benefit funds, with questions on eligibility, structure, and timing of programs. The Proposal team highlighted the rollout of early community grants to local schools, sporting clubs, and community centres, and ongoing consultation to co-design future programs.

3.6.7 Local employment and economic opportunities

Residents were eager to understand how the Proposal could support local jobs, apprenticeships, and supply chains. Questions focused on when procurement and construction opportunities would open, and how local businesses could register their interest. The Proposal team have undertaken an Economic Impact Assessment to help inform the community about local employment and economic opportunities on the Proposal.

3.7 How the Proposal has used feedback

The Proposal has developed a hierarchy of controls which can be used to respond to potential impacts identified in the environmental studies.

The controls provide an avoid, minimise or manage and rehabilitate option, with avoid as the preferred option, except where not technically feasible. Stakeholder feedback has helped inform the control options provided to minimise or manage impacts.

As part of managing the Proposal's potential social impacts, a Social Impact Management Plan (SIMP) has also been developed, informed by community feedback. The SIMP serves as a guidance framework, outlining potential approaches and mitigation options that can be adapted to the specific nature and scale of the Proposal's impacts. The most appropriate measures will be identified and implemented in consultation with relevant stakeholders to ensure they are locally suitable, effective, and aligned with desired outcomes.

Key consultation themes and outcomes are summarised below in Table 3-3..

Table 3-3 Key themes and outcomes identified to date

Theme	Consultation feedback to date	Proposal response to date	Future action
Benefit Sharing	■ Establish a Community Benefit-Sharing Fund, with representation from local stakeholders ■ Ensure funding remains local to the community ■ Consider larger, strategic funding initiates instead of smaller grant programs for long term lasting impacts ■ Ensure community benefit fund amount meets best practice	■ Community benefit fund commitments are in line with best practice guidance ■ Engagement continues, all feedback recorded	■ Prior to construction, commence engagement to co-design the benefit sharing fund
Layout and design	■ Host feedback to change design to farming efficiencies ■ Request to move turbines further away from dwellings and neighbouring land ■ Community concerns regarding negative environmental impacts including birds and wildlife	■ Updated the layout to include a minimum 1.1 m tip height buffer from neighbouring land ■ Changed layout to accommodate host feedback ■ Changed layout based on the outcomes of various environmental assessments ■ Committed to minimum tip height to protect certain birds ■ Information provided to community in Community Update	■ Ensure layout is compliant with environmental and planning approvals
Accommodation	■ Shire and community raised concerns about the number of construction workers and potential negative impact on housing/ accommodation availability	■ Social Impact Assessment completed ■ Economic Impact Assessment completed ■ Working with contractors to understand peak construction workforce ■ Working with stakeholders to understand accommodation availability ■ Included option for on-site workers accommodation in development application	■ Prior to commencing construction and responding to actual regional demands at that time, assess accommodation options and engage with key stakeholders ■ Prioritise local businesses and workforce development
Noise	■ Concern about turbine and construction and operation noise levels near dwellings	■ Noise assessment completed – Proposal meets required limits ■ Noise modelling used to inform turbine layout (35 dB threshold at sensitive receptors) ■ Selected quieter turbines as part of procurement process ■ Turbine layout amended to mitigate noise impacts	■ Ongoing compliance monitoring post-construction ■ Offer voluntary noise audits to potentially affected residences during operations and establish a responsive complaints management system.
Visual Impact	■ Concerns about visual changes and visibility from roads and nearby properties	■ Landscape and Visual Impact Assessment completed ■ Visual render video available on the Proposal website ■ Host landowners and neighbours offered opportunity to do a visual render and augmented reality from their property	■ Confirm screening and visual mitigation measures through planning approvals and final design

Theme	Consultation feedback to date	Proposal response to date	Future action
Shadow Flicker	▪ Concerns about moving shadows affecting dwellings	▪ Shadow Flicker Assessment completed – all dwellings within acceptable limits ▪ Commitment to use 'turbine flicker' timers to pause operation at specific sun positions ▪ Option for micro-siting adjustments to minimise effect	▪ Reassess shadow flicker as part of final turbine selection and confirm mitigation as required
Bushfire Risk	▪ Concerns about bushfire risk from turbines and construction works	▪ Bushfire Impact Assessment undertaken ▪ Design includes separation distances, firebreaks, and static water tanks per AS 2419.1-2021 ▪ Emergency Management Plan to be developed in consultation with local brigades	▪ Finalise Bushfire Management Plan prior to construction ▪ Ongoing consultation with Department of Fire and Emergency Services (DFES) and local fire authorities
Telecommunications	▪ Concerns about potential interference to internet, phone or broadcast signals	▪ Electromagnetic interference (EMI) assessment identified two nearby towers possibly affected ▪ Working with licence holders on mitigation such as new towers or signal boosters	▪ Implement agreed mitigation measures with affected service providers

3.8 Ongoing engagement

3.8.1 Current engagement

Current engagement is focused on communicating the outcomes of the environmental studies and discussing potential mitigation measures with stakeholders. Targeted meetings with local and state government representatives are being held to align the Proposal with planning frameworks, service delivery considerations, and cumulative impact management approaches.

For the broader community, Alinta Energy is sharing easy-to-understand summaries of technical studies and hosting drop-in sessions, producing community newsletters and factsheets, and maintaining regular office hours, along with a dedicated phone line and email contact, to respond to enquiries and feedback.

3.8.2 Future engagement

As the Proposal progresses through the development phase and moves towards the public comment period of the planning process, Alinta Energy will continue to support stakeholders and the community in engaging meaningfully with the approvals process. During the statutory public consultation phase, Alinta Energy's role will focus on helping community members understand the submission process, including where to find relevant information and where to provide feedback to the regulator.

In addition to supporting the statutory public consultation process, future engagement activities will also include:

- Working with Traditional Owners, stakeholders, and the community to identify and implement appropriate mitigation measures.
- Addressing construction and operational concerns raised by stakeholders.
- Investigate partnering with education providers to develop training and employment pathways for local residents and First Nations people.
- Supporting local economic participation by identifying opportunities for regional suppliers and contractors.
- Preparing the community and stakeholders for construction activities following Proposal approval.
- Co-designing a Community Benefits Sharing Program that reflects local priorities and values

3.8.3 Community Benefits Sharing engagement

As part of Alinta Energy's commitment to ensuring positive benefits alongside impacts, three dedicated benefit-sharing programs are planning for the Proposal. These include the:

- Community Benefit Sharing Fund
- First Nations Benefit Sharing Fund
- Neighbour Program

The Community Benefits Sharing Fund will be co-designed with the local community to ensure it responds to local aspirations and need, while the First Nations Benefit Sharing Fund will be co-designed with YAC.

This co-design approach will:

- Facilitate community participation in the design and governance of the fund.
- Ensure benefits are shared with the community
- Deliver benefits that are enduring and meaningful for the community
- Where possible and appropriate support joint regional initiatives to meet community needs and aspirations.

Alinta Energy has already contributed to a number of initiatives to benefit the community. These include:

- $15,000 grant for solar panels and battery backup at the Dandaragan Community Centre cutting energy costs and showcasing sustainable energy.
- $15,000 grant to the Dandaragan Golf Club to help maintain the greens with the purchase of a new mower.
- Around $11,000 grant to the Dandaragan Primary School to install a shade sail and create a mural that promotes and celebrates the school values.

Grant funding will continue during the development stage of the Proposal. The co-designed benefits programs will be developed to begin in time for the start of construction.

3.8.4 Neighbour Program

The Neighbour Program ensures those living closest to the Proposal can share in the direct benefits. The Program will be available to the resident of any dwelling determined to be within 3.5 km of a turbine within the Proposed Development Envelope. Participation in the Neighbour Program will be voluntary.

All stakeholders can contact the Proponent directly, with details outlined in Table 3-4.

Table 3-4 Proponent contact information for stakeholders

Contact method	Public consultation contact details
Email	hello@marriwindfarm.com.au
Phone Number	0428 447 824
Website	www.marriwindfarm.com.au

3.8.4.1 High-level engagement overview

The Proposal's high-level engagement approach, which includes previous, current and future engagement objectives, activities and outputs is detailed in Table 3-5.

3.9 Engagement and consultation register

All records of consultation undertaken to date to support the Proposal have been tabulated and presented within Table 3-6.

Table 3-5 High-level engagement overview

	Phase one: feasibility and concept development	Phase two: development	Phase three: construction	Phase four: operations and maintenance	Phase five: decommissioning
Objectives	▪ Establish processes and procedures to support engagement ▪ Map stakeholders, interests and concerns ▪ Introduce key stakeholders to the Proposal ▪ Secure land access	▪ Build Proposal awareness and understanding ▪ Build trust through proactive engagement and responding to inquiries. ▪ In collaboration with the community identify benefits principles and priorities ▪ Deliver engagement that supports regulatory approvals and community acceptance ▪ Identify workforce development and training initiatives	▪ Deliver timely engagement activities to support construction milestones and activities ▪ Strengthen relationships with landowners and key stakeholders through regular and timely engagement and activities ▪ Minimise impacts during construction activities through active engagement ▪ Highlight Proposal initiatives and programs providing benefits to the community ▪ Implement Community Benefits Sharing program. ▪ Ensure community is informed about Community Benefits Sharing program and how to apply	▪ Address any concerns around impacts in a timely manner ▪ Continue to build strong relationships through regular check-ins with landowners and key stakeholders ▪ Demonstrate positive impact the Proposal has on the community. ▪ Ensure community is informed about Community Benefits Sharing program and how to apply	▪ Ensure stakeholders and landowners are aware of impacts from decommissioning ▪ Address any concerns in a timely manner. ▪ Identify workforce development and training initiatives ▪ Enhance restoration and legacy initiative planning through stakeholder input
Activities	▪ Door knocking ▪ Meetings/briefings with key stakeholders ▪ Letterbox drops ▪ Phone calls ▪ Emails	▪ Drop in sessions ▪ Meetings ▪ Newsletters ▪ Emails ▪ Phone calls ▪ Briefings ▪ Site visits ▪ Workshops ▪ Website updates	▪ Meetings/briefings with key stakeholders ▪ Letterbox drops ▪ Phone calls ▪ Emails ▪ Newsletters ▪ Website updates ▪ Drop-in sessions ▪ Reference Group meetings	▪ Check-ins with key stakeholders ▪ Phone calls ▪ Emails ▪ Newsletters ▪ Website updates	▪ Meetings/briefings with key stakeholders ▪ Letterbox drops ▪ Phone calls ▪ Emails ▪ Newsletters ▪ Website updates ▪ Drop-in sessions ▪ Workshops

Stakeholders	▪ Government bodies and regulators ▪ Council ▪ Directly affected landowners ▪ Traditional Owners ▪ Neighbours	▪ Government bodies and regulators ▪ Council ▪ Directly affected landowners ▪ Traditional Owners ▪ Neighbours ▪ Neighbouring communities ▪ Training providers ▪ Broader community	▪ Government bodies and regulators ▪ Council ▪ Directly affected landowners ▪ Traditional Owners ▪ Neighbours ▪ Neighbouring communities ▪ Training providers	▪ Government bodies and regulators ▪ Council ▪ Directly affected landowners ▪ Traditional Owners ▪ Neighbours ▪ Neighbouring communities	▪ Government bodies and regulators ▪ Council ▪ Directly affected landowners ▪ Traditional Owners ▪ Neighbours ▪ Neighbouring communities ▪ Training providers
Outputs	▪ Key risks and opportunities list ▪ CSEP ▪ Stakeholder map ▪ Landowner access agreements	▪ CBS Framework ▪ Engagement summary to support planning approvals ▪ Traditional Owner Partnership Agreement ▪ Easement and lease option deeds ▪ ICN portal created for Proposal and local supplier list	▪ Communications and Stakeholder Engagement Construction Management Plan	▪ Communication materials as required. ▪ Regular reporting on social value impact for Community Benefits Sharing program	▪ Decommissioning Communicate and Stakeholder Engagement Plan

Table 3-6 Engagement and consultation register

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
Government agencies	Department of Water and Environment Regulation (DWER) – EPA Services, Licensing, Regional Services, Noise Team	20/03/24 30/01/25 10/02/25 08/09/25 15/10/25 15/01/26 09/02/26 01/04/26	Meetings, written correspondence	▪ Proposal overview and progress updates. ▪ Green Energy Approvals Initiative and policy considerations. ▪ Green energy team priorities including native veg, avifauna, noise and visual impact assessments. ▪ Scope of planned ecological surveys. ▪ DWER Noise Team involvement in the approval process. ▪ Noise assessment methodology and acceptance criteria. ▪ Cumulative impact assessment. ▪ RFI for this RSD.	▪ The information was noted. ▪ Alinta Energy will continue to provide updates as the Proposal progresses. ▪ Commentary and guidance on revision RSD.
	Department of Energy, Mines, Industry Regulation (now known as Department of Mines, Petroleum and Exploration) – Energy Policy WA (EPWA)	13/12/24 10/02/25 05/06/25	Meetings, written correspondence	▪ Proposal overview and progress updates. ▪ Alinta Energy approach to community engagement and community benefit sharing. ▪ Grid connection process.	▪ The information was noted. ▪ Alinta Energy will continue to provide updates as the Proposal progresses.
	Department of Jobs, Tourism, Science and Innovation (JTSI) (now known as Department of Energy and Economic Diversification)	14/02/24 30/01/25	Meetings	▪ Proposal overview and progress updates. ▪ Green Energy Approvals Initiative and policy considerations.	▪ The information was noted. ▪ Alinta Energy will continue to provide updates as the Proposal progresses.
	Department of Climate Change, Energy, Environment and Water (DCCEEW)	05/06/25 27/08/25 15/10/25	Meetings	▪ Proposal overview and progress updates ▪ Key focus areas for DCCEEW including black cockatoo utilisation and behaviour including flight heights and foraging, roosting and nesting habitats. ▪ EPBC referral and assessment pathways	▪ Increase to turbine minimum tip height ▪ Sourcing of additional regional black cockatoo flight height data ▪ Engagement of specialist peer review of black cockatoo impact assessment ▪ Development of bird and bat adaptive management plan.
	Department of Planning, Lands and Heritage (DPLH)	19/11/24 07/01/25 13/03/25	Meetings, ongoing correspondence	▪ Proposal overview and progress updates ▪ Approval pathways including SDAU	▪ The information was noted. ▪ Alinta Energy will continue to provide updates as the Proposal progresses.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	Mid West Ports Authority	15/12/25 12/06/25	Meetings, ongoing correspondence	▪ Proposal overview and progress updates ▪ Use of port facilities for importation during Proposal construction ▪ OSOM component sizes, berth options, storage locations ▪ Operating hours, haulage and route planning assessments ▪ Biosecurity and customs management ▪ Possible port upgrades	▪ The information was noted. ▪ Alinta Energy and Mid-West Port Authority to continue liaising on Proposal schedule and port capacity.
	Ventia (Australian Marine Complex	18/12/24 12/06/25	Meetings, ongoing correspondence	▪ Ventia advised Alinta Energy about the logistics of using port facilities during construction of the Proposal. ▪ Alinta Energy and Ventia had further discussions on turbine blade lengths, storge areas on site fand trucks capacity on site.	▪ AMC advised to engage with Main Roads WA and consult Department of Jobs, Tourism Science and Innovation
	Main Roads WA	20/12/24 13/01/25 29/01/25 24/07/25 27/08/25	Meetings, written correspondence	▪ Proposal overview and progress updates ▪ Transportation of infrastructure from ports to the Proposal area. ▪ Heavy Vehicle Services team responsibilities. ▪ Proposed transport routes and scope of transport route assessment. ▪ Letter sent for consultation on EMI impacts.	▪ The information was noted. ▪ Alinta Energy will continue to provide updates as the Proposal progresses. ▪ Alinta Energy to share the Traffic Management Plan with Main Roads WA in due course. ▪ No response to EMI letter to date
	Western Power	Ongoing since September 23	Meetings, written correspondence	▪ Proposal overview and progress updates. ▪ Grid connection process. ▪ Clean Energy Link North program ▪ Critical Projects Framework ▪ Connection point and transmission routes. ▪ Facilitation of Clean Energy Link Moora ▪ Letter sent for consultation on EMI impacts.	▪ Fortnightly meetings are ongoing in relation to grid connection process. ▪ Assessment of potential EMI impacts in progress.
	Department of Energy and Economic Diversification (DEED)	28/07/25	Meeting	▪ Proposal overview and progress updates. ▪ Challenges facing timely wind farm development in WA ▪ Cumulative impacts assessment.	▪ DEED GEMP team to provide a supporting letter and arrange DWER Green Energy team to assign a case manager.
	Department of Fire and Emergency Services (DFES)	27/08/25	Letter	▪ Letter sent for consultation on potential EMI impacts	▪ No response to date.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	Water Corporation	27/08/25	Letter	▪ Letter sent for consultation on potential EMI impacts. ▪ No EMI impacts identified.	▪ No EMI impacts identified. ▪ Reticulated water or sewerage not currently available, connected or planned in the area.
	Australian Industry Participation Authority (AIP)	3/07/25	Meeting	▪ Proposal overview. ▪ AIPP process and SmartForm process.	▪ Alinta Energy to use new SmartForm for submissions as part of AIP process.
	Bureau of Meteorology (BOM)	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts.	▪ Screening completed indicates potential impact on Watheroo weather radar, detailed assessment in progress.
	Geoscience Australia	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ Confirmed no impact.
	Department of Defence	11/07/25	Letter	▪ Copy of the Aviation Impact Assessment report provided for comment	▪ Confirmation of receipt, no further response to date.
	Airservices and Civil Aviation Safety Authority	11/07/25	Letter	▪ Copy of the Aviation Impact Assessment report provided for comment	▪ Confirmed no objections
	Powering WA	01/11/24 to present	Meetings, written correspondence, submissions	▪ Proposal overview as part of Alinta Energy's SWIS development pipeline. ▪ Project Community Benefit Sharing framework. ▪ Powering WA Community Benefits Guideline. ▪ Proposal overview and progress updates. ▪ Wholesale Electricity Market rules to support additional wind projects.	▪ Coordinator of Energy provided letter of support.
	Economic Regulation Authority Western Australia (ERA)	21/2/25 25/2/25-13/08/25 11/3/25	Meeting, written correspondence	▪ Proposal overview and progress updates. ▪ Electricity Generation Licence process, timelines and costs.	▪ The information was noted.
	AEMO	26/08/24 01/11/24	Meetings	▪ Proposal overview as part of Alinta Energy's SWIS development pipeline. ▪ Anticipated capacity entry years.	▪ The information was noted.
	Wheatbelt Development Commission (WDC)	29/05/25 25/08/25	Meetings, written correspondence	▪ Proposal overview and progress updates. ▪ Invited WDC to September community session and sent Proposal updates. ▪ Benefit Sharing, ▪ Accommodation and housing,	▪ Alinta Energy will continue to provide updates as the Proposal progresses. ▪ Alinta Energy commissioned an Economic Impact and Opportunity Assessment to further develop local employment options.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				▪ Employment and local content.	
Ministers	Minister for Wheatbelt Chief of Staff for the Minister for Wheatbelt	30/04/25 22/08/25	Meeting, written correspondence	▪ Provided incoming Minister with an overview of Proposal. ▪ Update on Alinta Energy's projects in the Wheatbelt supporting local jobs and clean energy. ▪ Provided Proposal collateral for reference.	▪ Alinta Energy to facilitate site visit when appropriate.
	Minister for Energy and Decarbonisation; Manufacturing; Skills and TAFE; Pilbara Amber-Jade Sanderson	30/04/25 22/08/2025 11/09/2025	Meetings, written correspondence	▪ Provided incoming Minister with an overview of Proposal. ▪ Transmission buildout to support energy transition. ▪ Support for projects such as Marri Wind Farm that facilitate State's decarbonisation and reliability goals.	▪ No action required.
	Minister for Energy; Environment; Climate Action Reece Whitby Chief of Staff Sherrie Wilson Principal Policy Advisor Amy Tait	20/02/24 22/11/24	Meetings	▪ Alinta Energy indicated we are committed to continue our growth in WA with ambitious plans for the energy sector's transition to a lower-emission future.	▪ No action required.
	WA Ministerial Roundtable: Energy Competitiveness Consultative Group. Clean Energy Council WA Renewable Energy Developers WA Government representatives Coordinator of Energy	06/08/25	Meeting	▪ Measures to facilitate new investment in cost-competitive electricity supply and ensure that WA remains an attractive place for industries to invest.	▪ No action required.
	Minister for Local Government; Disability Services; Volunteering; Youth; Gascoyne - Hon Hannah Beazley	22/08/25	Meeting	▪ Proposal overview ▪ Potential for harmonised local government rates framework for renewable projects.	▪ No action required.
	Deputy Premier; Treasurer; Minister for Transport; Sport and Recreation – Rita Saffioti	22/08/25	Meeting	▪ Transmission buildout to support energy transition.	▪ No action required.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	Minister for Local Government and Minister for Energy	01/09/25	Written Correspondence	▪ Proposal overview and progress updates.	▪ No action required.
Traditional Owners	South West Aboriginal Land and Sea Council (SWALSC)	19/07/24	Written correspondence and phone call	▪ Alinta Energy enquired with SWALSC about the cultural heritage and appropriateness of the Proposal's name.	▪ Alinta Energy was referred to further information about Marri naming. ▪ No further action was required.
	Yued Aboriginal Corporation	24/07/24 to present	Ongoing correspondence, meetings, phone calls	▪ Proposal overview and progress updates. ▪ Discuss YAC expectations for engagement and next steps. ▪ Heritage protection. ▪ Opportunities and benefit sharing. ▪ Provided information about corporate grant opportunities. ▪ Provided information on graduate and internship program intake. ▪ Provided opportunity for YAC to participate in the Social Impact Assessment process, and for further engagement sessions. ▪ Ongoing discussions on environment and the opportunity for Yued Rangers to join the Proposal's environmental surveys.	▪ Continue providing Proposal updates. ▪ Signed Heritage Protection Agreement. ▪ Provided Desktop Cultural Heritage Assessment. ▪ Signed Negotiation Protocol. ▪ Commenced agreement making. ▪ Provided Economic Impact Assessment ▪ Commenced Geotech heritage survey work. ▪ To date Yued Rangers have attended 2 different ecology surveys (approximately 8 days in field) ▪ Alinta to provide final versions of technical reports prior to submission to DWER.
Local Government	Shire of Dandaragan	28/11/23 to present	Meeting	▪ Introduce Proposal from concept stage. ▪ Presented Proposal to Executives and Councillors proving Proposal overview and receive feedback on expectations for the Proposal. ▪ Road use and upgrade expectations. ▪ New Local Planning Policy for Renewables. ▪ Best practice for community benefit sharing. ▪ Consider the cumulative impacts of multiple projects constructing at once. ▪ Accommodation and housing during construction, and long term housing for operational staff.	▪ Alinta Energy has provided ongoing Proposal updates. ▪ Invited to community information session. ▪ Shire was a stakeholder interviewed for the Social Impact Assessment process. ▪ The Proposal team conducted an Economic Impact Assessment to assist greater understanding of workforce and accommodation needs. ▪ Alinta Energy has had meetings with the Shire's planning, emergence management and roads team to discuss specifics on the Proposal.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
					▪ Alinta Energy confirmed community benefit fund meets best practice. ▪ Alinta Energy attended the local park opening event in Dandaragan.
		November 23 to present	Correspondence	▪ Ongoing communication: ▪ 27/11/24: Alinta Energy informing the Shire of Dandaragan about the Marri website, Proposal updates, and media releases. ▪ Invited Shire to community information session ▪ Provided the post engagement report	▪ Information will continue to be provided.
		20/05/25 15/07/25	Meetings and correspondence	▪ Discussion on bushfire and emergency management: ▪ Consulted the Shire of Dandaragan on managing fire risk and emergency response. ▪ Discussed the Proposals proposed approach to assessing bushfire risk, and the Shire's expectations ▪ Requested we consider funding an additional fire vehicle as part of benefit sharing fund.	▪ Alinta Energy will continue to provide updates ▪ The request for funding is in the register for future discussion relating to the community benefit sharing consultation. ▪ Shire was consulted as part of the bushfire assessment. ▪ Continue to engage with emergency management department.
		15/07/25	Meeting	▪ Road discussion ▪ Alinta Energy and the Shire of Dandaragan's Traffic Coordinator discussed harvest traffic patterns throughout the year and near the Proposal area. ▪ The Traffic Coordinator identified roads that may need upgrading to be suitable for Proposal construction vehicle loads.	▪ Input went into the traffic impact assessment. ▪ Discussions to continue as Proposal progress.
	Shire of Gingin	28/08/24 04/06/25	Written correspondence	▪ 28/08/24: Alinta Energy sent the Shire of Gingin information on the Proposal and offered to have meeting to brief the Shire on the Proposal. ▪ 4/06/25: Alinta Energy provided a Proposal update, extended the invitation to community engagement session and offered a Proposal briefing.	▪ No further action required.
	Shire of Moora	09/06/25	Written correspondence	▪ Alinta Energy offered the Shire of Moora a Proposal briefing and invited them to have input into the Social Impact Assessment.	▪ No response to date.
Landholders	Host landowners	August 23 to present	In person meetings, phone	▪ Landholder engagement and Proposal concept	▪ Multiple iterations of Proposal layout and consultation to maximise co-

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
			call, written correspondence	▪ Wind farm and transmission hosting overview ▪ Commercial offers and agreements ▪ Proposal layout and design consultation ▪ Notice of onsite surveys and other activities ▪ Facilitate participation in social impact assessment ▪ Planning for construction, access, biosecurity management.	existence with existing land use while respecting other constraints, including changes such as: – Roads aligned with cropping operations or existing fence lines where possible. – Turbine locations adjusted to suit rectilinear roads where possible. – Ancillary infrastructure located in land areas with lower agricultural value. – Obligations recorded.
	Surrounding neighbours	November 24 to present	In person meetings, phone call, and email	▪ Alinta Energy has reached out to the Proposal's surrounding neighbours to inform properties they are neighbours to the Proposal and provide information about the Proposal. ▪ Alinta Energy have had ongoing correspondence with neighbours to the Proposal over email, phone, and in person meetings. ▪ Provided information on the Neighbour Program. ▪ Provided information about community information sessions in April and September 2025 ▪ Key themes of discussions: ▪ Asking about possible impacts: noise, shadow flicker ▪ Proposal timing ▪ Concerns around devaluation of property ▪ Environmental concerns ▪ Shadow flicker impacted neighbours provided information from assessment.	▪ Alinta Energy's response to date: ▪ Noise monitoring opportunity at relevant houses ▪ Collated feedback and responded to key areas of concerns in public report to provide more information ▪ Continue to provide Proposal information to education neighbours on the process and reduce misinformation ▪ Offer to participate in Social Impact Assessment interview or survey ▪ Offer to do visual render on their property to gain insight into possible visual impact ▪ Alinta Energy has received one objection from a neighbour to date, who does not want the Proposal to proceed. Alinta Energy will provide information on the Proposal in the way the neighbour has requested. ▪ Alinta Energy will further consult potential shadow flicker impacted dwellings once turbine model is selected.
Nearby tenement holders	AGIG Dampier Bunbury Pipeline	07/07/25 25/09/25	Meetings, written correspondence	▪ Alinta Energy introduced the Proposal to AGIG and showed the Proposal's internal road plan.	▪ Proposal layout was adjusted to minimise overlap with gas pipeline infrastructure.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				▪ Discussions around internal roads crossovers with the Dampier to Bunbury Natural Gas Pipeline. ▪ AGIG identified the main risk with pipeline and wind farm interactions and preferred mitigations to these risks. ▪ Letter sent for consultation on EMI impacts	▪ Alinta Energy will provide AGIG further information on the type of infrastructure crossing and construction activities. ▪ AGIG will do internal studies and provide feedback on risk mitigations infrastructure crossings over the pipeline.
	APA Parmelia Gas Pipeline	07/08/25	Meetings, written correspondence	▪ Alinta Energy introduced the Proposal to APA and showed the Proposal's internal road plan. and its proximity to the APA pipelines. ▪ APA provided information and feedback regarding the Proposal and its asset. identified key risks associated with this Proposal and their pipeline and the mitigations Alinta Energy will need to implement.	▪ Alinta Energy to coordinate a Safety Management Study with APA ▪ Proposal layout was adjusted to minimise overlap with gas pipeline infrastructure.
	Telstra	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts and infrastructure located on leased land within the Proposed Development Envelope.	▪ No response to date.
	Iluka Resources	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
Community Groups	Advance Dandaragan	November 24 to present	Emails and meetings	▪ Alinta Energy introduced the Proposal and emailed regular updates ▪ Sent invitations to April 2025 and September 2025 community session ▪ Attended July Advanced Dandaragan meeting to discuss the Proposal and community benefit sharing plan. ▪ Advance Dandaragan expectation for community benefit sharing: ▪ Keep the funding local ▪ Ensure local representatives are on the committee ▪ Start funding during construction, when the impact on community begins ▪ Requested the opportunity to coordinate funding larger/strategic improvements and upgrades in town ▪ Requested all wind farms to be able to pool funding together for improved outcomes for community ▪ Key future Proposal for funding is the upgrades to the recreation precinct	▪ Continue to provide Proposal updates. ▪ Alinta Energy confirmed a portion of the community benefit sharing fund will commence during the construction stage. ▪ Continue to consult about community benefit sharing fund design and implementation.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	Dandaragan Primary School	28/03/25 to present	Emails and meetings	▪ Alinta Energy informed Dandaragan Primary School about an upcoming community information session and initiating the conversation for community benefits regarding the school. ▪ Ongoing discussions about the grant provided to the Dandaragan Primary School	▪ Received grant as part of benefit sharing during development stage ▪ School participated in the Social Impact Assessment process to provide feedback and insights ▪ At the appropriate time Alinta Energy will consult the School on the bus route impacts during construction and seek input to reducing impacts
	Dandaragan Golf Club	April 25 to present	In person, phone call, and email	▪ Dandaragan Golf Club engaged with Alinta Energy regarding their need for funding for a new mower for the club.	▪ Alinta Energy provided sponsorship which allowed the Golf Club to purchase a new mower.
	Dandaragan Heritage and Cultural Centre Inc	April 25 to present	In person, email	▪ Discussion with Dandaragan Heritage and Cultural Centre Inc about funding opportunities and future Community Benefit Sharing.	▪ Provided information on Alinta Energy Grants Fund ▪ Ongoing discussion on the community benefit sharing fund.
	Badgingarra community	01/12/24	In person event	▪ Attended the Badgingarra Christmas Market stall to introduce Alinta Energy to the community and discuss the development pipeline, including Marri Wind Farm.	▪ The Proposal received feedback about procurement challenges on large projects for small businesses ▪ Alinta Energy agreed to engage with the Wheatbelt Business Development Network to engage with small businesses. ▪ Continue to engage with local community and seek their input on matters of interest, impact or opportunities.
	Dandaragan Community Resource Centre (CRC)	November 24 to present	Emails, phone, face to face.	▪ Alinta Energy provides Proposal updates and adverts which the CRC share through their social media, email list and the Redgum Report. ▪ Alinta Energy is hiring a room from the Dandaragan Community Resource Centre for a fortnightly pop-up office.	▪ Alinta Energy's pop-up office is open at the Dandaragan Community Resource Centre once a fortnight for the community to walk in or book a meeting to discuss the Proposal.
	Local Community	April 25 to present	Survey, interviews, emails	▪ A range of community members, stakeholders, landowners and neighbours participated in the social impact assessment process	▪ Feedback and insight was used in the development of the social impact assessment
		10/04/25	Drop-in information session	▪ Alinta Energy hosted a community information session at Dandaragan Club where the Proposal team delivered an open community engagement	▪ Post consultation report summarises the feedback received.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				event to discuss and seek input to, the location, planning and approvals, environment and social aspects of the Proposal set up stations to address/discuss key Proposal information to the community. ▪ Alinta Energy encouraged community feedback on the Proposal.	
		04/09/25	Drop-in information session	▪ Alinta Energy hosted an open community information session at Dandaragan Club where the Proposal team provided updates on Proposal design and layout progress, and the environmental, economic and social studies underway. ▪ Input from previous engagement resulting in more information, updates or changes were shared. ▪ Information stations were set up to address/discuss key Proposal information to the community.	▪ Post consultation report summarises the feedback received.
Industry/ Service Providers	Clean Energy Council WA Renewable Energy Developers	10/10/24	Meeting	▪ Key discussions of the Clean Energy Council's (CEC) plans to enhance its presence in the state and providing stronger industry representation and coordination in WA to smooth pathways for renewable energy developers in the region.	▪ No action required.
	Smart Energy Council & Sustainable Energy Now WA Renewable Energy Developers Western Power AEMO Energy Policy WA WA Government Climate Action Network Australia	03/07/25	Meeting	▪ Industry roundtable to discuss what is needed to ensure new renewable generation can reach FID.	▪ No action required.
	MEGT	29/07/25	Meeting	▪ Introduction between Alinta Energy and MEGT ▪ Discussions on how MEGT works as a business and the opportunities they can provide Alinta Energy on this Proposal.	▪ Alinta Energy agreed to continue to work with MEGT where appropriate regarding skills, training and workforce development.
	Bamford Consulting Ecologists	11/07/25	Meeting	▪ Black Cockatoo flight behaviour and flight height data, adaptive management plan	▪ Increase to turbine minimum tip height

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
					▪ Sourcing of additional regional black cockatoo flight height data ▪ Development of bird and bat adaptive management plan
	WA Police	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	Dunn Aviation	27/08/25 30/09/25	Letter Meeting	▪ Letter sent for consultation on EMI impacts ▪ Meeting purpose to discussion the following: location, operating around the turbines and procedures in place when aerial application is being conducted	▪ Meeting scheduled on to discuss.
	St John Ambulance	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	Starlink Australia Pty Ltd (Starlink)	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	Optus	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	TPG Telecom	27/08/25	Letter/ email	▪ Letter sent for consultation on EMI impacts	▪ Confirmed no near field impacts to TPG Telecom's public mobile telephone coverage. ▪ Confirmed there is no impact to TPG Telecom's transmission network. ▪ Recommended consultation with Optus and Vodafone.
	Vodafone	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	NBN Co	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	BAI Communications	27/08/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	Lawson Grains	25/9/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	AFGRI	25/09/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	Karakin Wind Farm	14/10/25	Letter	▪ Letter sent for consultation on EMI impacts	▪ No response to date.
	ICN WA (Industry Capability Network	01/08/25 23/09/25	Meeting Presentation	▪ Set up a Proposal ICN Gateway webpage to allow local suppliers to register interest. ▪ Alinta Energy presented the Proposal to ICNWA *Setting up for Success* supplier workshop, providing overview of the Proposal and its procurement strategy, work packages, local content and employment opportunities.	▪ Follow-up discussions with local suppliers.

4 Objective and principles of the EP Act

The objective of the EP Act is to protect the environment of Western Australia, achieved through the establishment of a series of principles to enhance delivery of environmental protection. These principles have been considered by the Proponent in respect to the Proposal. These have been summarised in Table 4-1.

Table 4-1 Consideration of principles of the EP Act

Principle (s.4A of EP Act)	Application of the principle
1. The precautionary principle Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, decisions should be guided by: ■ Careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and ■ An assessment of the risk-weighted consequences of various options.	The Proposal is being developed through a detailed iterative and risk based designed assessment process to ensure potential impacts to the receiving environment are minimised or avoided wherever possible (Sections 6 through to 9). The Proponent is using existing environmental data from the region supplemented with site specific baseline and targeted survey results from studies completed, not limited to: ■ Flora and vegetation ■ Terrestrial fauna ■ Aboriginal heritage ■ Traffic impact assessment ■ Visual impact assessment ■ Bushfire risk and management Consultation has commenced and is ongoing with key regulatory stakeholders to identify the appropriate mitigation measures to be implemented to further reduce or avoid the gravity of potential impacts wherever possible. Targeted and further studies are in progress or scheduled for completion as outlined in Sections 6 through to 9.
2. The principle of intergenerational equity. The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The Proposal's design has considered practices that will ensure the principle of intergenerational equity, in terms of environmental health, diversity and productivity, is maintained or enhanced without negative impact to future generations. When decommissioned, the Proposal site will be rehabilitated in line with previous land use, in consultation with the relevant landowners.
3. The principle of the conservation of biological diversity and ecological integrity. Conservation of biological diversity and ecological integrity should be a fundamental consideration.	The conservation of biological diversity and ecological integrity is a fundamental consideration in the assessment of this Proposal. Wherever possible: ■ Non fixed Proposal elements for associated infrastructure (including roads, administration and maintenance buildings) will be located to minimise clearing and disturbance whilst maximising separation distances to sensitive receptors or known environmental values as identified by the baseline and targeted surveys. ■ Where practicable, the possibility of adopting separation distances has been and will be considered to minimise impacts to areas of critical habitat and known environmental values as identified by the baseline and targeted surveys. ■ Identify possible areas that may be categorised as exclusion zones to avoid direct impacts. For example, sites of heritage significance.
4. Principles relating to improved valuation, pricing, and incentive mechanisms ■ Environmental factors should be included in the valuation of assets and services. ■ The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.	Environmental constraint of avoidance and management costs will be considered in the planning and design phases of the Proposal. The Proponent will be responsible for funding the cost of measures to avoid, reduce, mitigate, and manage environmental impacts and where necessary provide offsets for residual impacts as detailed in this referral.

Principle (s.4A of EP Act)	Application of the principle
▪ The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes. ▪ Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.	
5. The principle of waste minimisation All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	Waste will be minimised by adopting the hierarchy of waste controls: avoid, minimise, reuse, recycle, and safe disposal. If required, additional licences or permits will be obtained.

5 Key environmental factors

Environmental factors (as outlined in the EPA's Administrative Procedures) serve as key elements for which the EPA employs to structure an Environmental Impact Assessment, that encompass various environmental values. Environmental factors offer a methodical framework for organising environmental data relevant to an EIA and guide the format of the assessment report.

There are 14 environmental factors which are categorised into five main themes of sea, land, water, air, and people. An initial assessment of each of these environmental factors against the Proposal to confirm applicability has been presented in Table 5-1.

Table 5-1 EPA environmental factors

Themes	Factor	Objectives	Considerations
Sea	Benthic Communities and Habitats	To protect benthic communities and habitats so that biological diversity and ecological integrity are maintained.	Not relevant for this Proposal The proposal is terrestrial and located approximately 36 km from the coast. No impact expected.
	Coastal Processes	To maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected.	Not relevant for this Proposal The proposal is terrestrial and located approximately 36 km from the coast. No impact expected.
	Marine Environmental Quality	To maintain the quality of water, sediment and biota so that environmental values are protected.	Not relevant for this Proposal The proposal is terrestrial and located approximately 36 km from the coast. No impact expected.
	Marine Fauna	To protect marine fauna so that biological diversity and ecological integrity are maintained.	Not relevant for this Proposal The proposal is terrestrial and located approximately 36 km from the coast. No impact expected.
Land	Flora and vegetation	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.	Relevant and Preliminary Key Environmental Factor The Proposal involves potential impacts to flora and vegetation. A summary assessment and proposed mitigation measures is provided in Section 6.
	Landforms	To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected.	Not relevant for this Proposal The Proposal is not anticipated to impact on unique landforms within the Development Envelope or within the vicinity of. No impact expected.
	Subterranean Fauna	To protect subterranean fauna so that biological diversity and ecological integrity are maintained.	Not relevant to this Proposal The Proposal is not anticipated to impact subterranean fauna within the Development Envelope or within the vicinity of. No impact expected.
	Terrestrial Environmental Quality	To maintain the quality of land and soils so that environmental values are protected.	Not relevant to this Proposal The Proposal is not anticipated to impact land and soils located within the Development Envelope or within the vicinity of. No impact expected.
	Terrestrial Fauna	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.	Relevant and Preliminary Key Environmental Factor The Proposal involves potential impacts to terrestrial fauna. A summary assessment and proposed mitigation measures is provided in Section 7.
Water	Inland Waters	To maintain the hydrological regimes and quality of groundwater and surface water	Not relevant to this Proposal The Proposal is not anticipated to significantly impact Inland Waters (surface waters) within the Development Envelope or within the vicinity of.

Themes	Factor	Objectives	Considerations
		so that environmental values are protected.	No impact expected.
Air	Air Quality	To maintain air quality and minimise emissions so that environmental values are protected.	Not relevant to this Proposal The Proposal is not anticipated to impact air quality within the Development Envelope or within the vicinity of. No impact expected.
	Greenhouse Gas Emissions	To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change.	Not relevant to this Proposal The Proposal is not anticipated to contribute greenhouse gas emissions that will trigger the threshold for assessment. No impact expected.
People	Social Surroundings	To protect social surroundings from significant harm.	Relevant and Preliminary Key Environmental Factor The Proposal involves potential impacts to social surroundings. A summary assessment and proposed mitigation measures is provided in Section 8.
	Human Health	To protect human health from significant harm.	Not relevant for this Proposal. The proposal does not involve emission of radiation. Potential impacts to human health, including through contaminated sites, air and water quality are addressed under the relevant environmental factors. No impact expected.

Based on the scope of the Proposal and the existing environment, the Proponent considers that the preliminary key environmental factors and associated objectives to be considered by this referral include:

- Flora and vegetation
- Terrestrial fauna
- Social surroundings

Each preliminary key environmental factor identified above has been individually addressed within Sections 6, 7 and 8 of this Proposal.

All other remaining environmental factors will be considered as other factors and are located within Section 9 as a summary of justification, originally thought to have potential to be impacted, which have then been discounted through further investigations.

Each preliminary key environmental factor associated with the Proposal (as listed above) has been addressed within this supporting ERD in the following format:

- EPA Environmental Factors and Objectives
- Relevant Policy and Guidance – Discussion of applicable policies and guidance relevant to the Proposal, including a summary of how these have been addressed
- Surveys and Studies – Description of surveys and studies conducted to identify and define the key environmental factors
- Receiving Environment – Description of the receiving environment relevant to each factor, based on completed studies and investigations to date
- Potential Environmental Impacts – Identification of preliminary potential impacts (direct, indirect, and cumulative) on the environmental values associated with each factor
- Mitigation – Preliminary application of mitigation strategies aimed at avoiding or minimising impacts
- Assessment and Significance of Residual Impact – Evaluation of the nature and significance of any residual impacts remaining after mitigation
- Environmental Outcomes – Likely environmental outcomes resulting from the Proposal

6 Flora and vegetation

6.1 EPA environmental factor and objective

The flora and vegetation environmental factor under the EPA guidelines defines flora as "*native vascular plants*" and vegetation as "*groupings of different flora patterned across the landscape that occur in response to environmental conditions*" on land (EPA, 2016a).

The EPA's environmental objective for this factor is "*to protect flora and vegetation so that biological diversity and ecological integrity are maintained*" (EPA, 2016a).

6.2 Relevant policy and guidance

Legislation, policies and guidelines relevant to the flora and vegetation environmental factor is provided in Table 6-1.

Table 6-1 Policy and guidance – flora and vegetation

Author, Year	Title	Consideration
Key factor guidance		
(EPA, 2016a)	Environmental Factor Guideline: Flora and Vegetation	Describes the EPA environmental factor Flora and Vegetation and explains the associated objective, EIA considerations for this factor, discussing the environmental values of flora, vegetation and their significance.
Technical guidance		
(EPA, 2016b)	Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment	State-level technical guidance provides accepted flora and vegetation survey methodologies for different regions within Western Australia under EIA.
(EPA, 2021a)	Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA)	Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA). All data gathered from field surveys has been prepared and submitted in accordance with IBSA guidelines.
(DoE, 2013)	Matters of National Environmental Significance: Significant Impact Guidelines 1.1	This guidance was adhered to during the preparation of the EPBC referral to meet current referral standards.
Specific threatened ecological community guidance		
(TSSC, 2016)	Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community	Guidance used to identify and assess vegetation as Banksia Woodlands of the Swan Coastal Plain (a nationally protected (threatened) ecological community (herein referred to as 'Banksia Woodlands TEC').
(DoEE, 2016a)	Banksia Woodlands of the Swan Coastal Plain: a nationally protected ecological community	Guide is designed to assist land managers, owners and occupiers, as well as environmental assessment officers and consultants, to identify, assess and manage the Banksia Woodlands TEC.
(GoWA, 2011)	WA Environmental Offsets Policy	The offset policy and guidelines have been considered in relation to the definition of significant residual impacts and the proposed offset strategy for the Proposal.
(GoWA, 2014)	WA Environmental Offsets Guidelines	The guidelines expand on the offsets policy to ensure that the basis for decision-making on environmental offsets is understood by decision-makers, government officers, industry and the community and consistently applied by decision-makers.

6.3 Studies and survey efforts

A summary of survey methods and effort for the flora and vegetation studies completed to date is provided in Table 6-2. Survey methods for flora and vegetation were developed and implemented in accordance with the policy and guidance outlined in Section 6.2.

6.3.1 Surveys

Surveys undertaken for flora and vegetation are described in Table 6-2 and illustrated in Figure 6-1. Survey reports are provided in Appendix K-N.

Flora and vegetation surveys and assessments have comprised of desktop reviews, reconnaissance, and targeted and supplementary field surveys. The surveys have been used to inform Proposal design and provide suitable information for an environmental impact assessment.

In the context of flora and vegetation, reconnaissance, targeted field surveys areas were based on preliminary design, and supplementary field surveys were carried out in additional areas after the design was optimised. Surveyed areas focused on the windfarm footprint and the transmission footprint.

Total areas surveyed for flora and vegetation include:

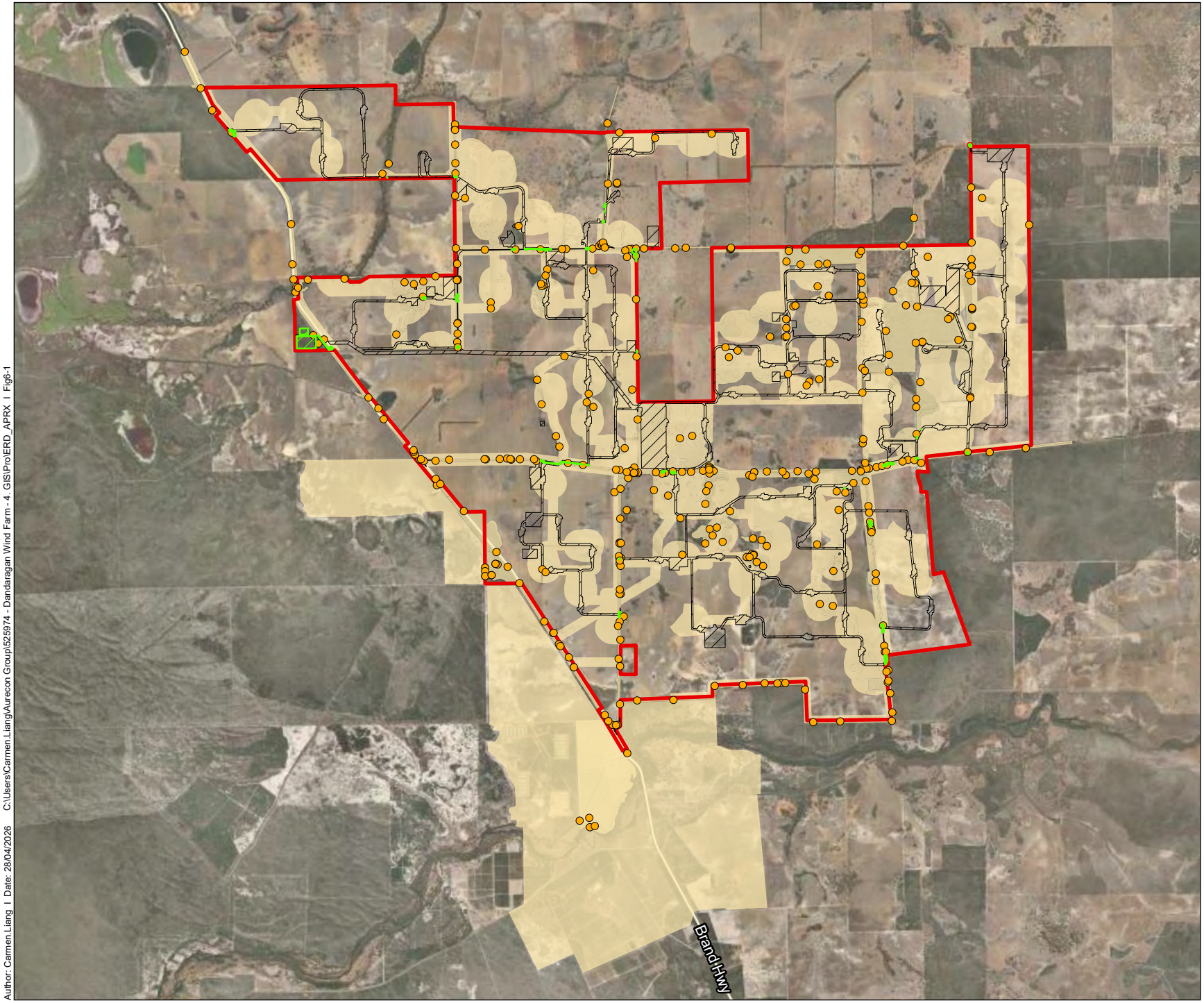
- Fatal flaws desktop assessment and reconnaissance survey - 12,555.00 ha.
- Technical Memorandum: Targeted flora and vegetation survey, including transmission and additional vegetation mapping - 9,392.00 ha.
- Marri Wind Farm Preliminary Survey - To be advised pending report due May 2026

Flora and vegetation surveys and assessments have comprised of desktop reviews, reconnaissance, and targeted and supplementary field surveys. The studies have been used to inform Proposal design and provide suitable information for an environmental impact assessment.

In the context of flora and vegetation, reconnaissance, targeted field surveys areas were based on preliminary design, and supplementary field surveys were carried out in additional areas after the design was optimised. Surveyed areas focused on the windfarm footprint and the transmission footprint.

Table 6-2 Summary of surveys completed for flora and vegetation

Consultant/ year	Report title	Total Survey Extent (ha)	Survey type/ timing	Summary of methodology
Phoenix (2025b)	Fatal flaws desktop assessment and reconnaissance survey for the Marri Wind Farm Project	12,555.50	Desktop assessment and reconnaissance survey 18 – 19 September 2024	■ Desktop assessment ■ Likelihood of occurrence ■ Field survey: – 17 relevés – 41 site descriptions – Systematic foot traverse of remnant vegetation – Vegetation condition – Targeted searches of suspected Threatened and Priority Ecological Communities – Species collected were identified using WA Herbarium resources
Phoenix (2025e).	Technical Memorandum: Targeted flora and vegetation survey for the Marri Wind Farm Project	9,392.00	Targeted flora and vegetation survey February 2025	Targeted flora surveys used the same methodology for data and vegetation assessment including: ■ Field survey meandering transects spaced 10 – 25 m apart, dependent on vegetation density. ■ Data collection for flora: – GPS coordinates and population boundaries – Habitat and floristic community descriptions – Population size estimates – Specimen collection for taxonomic identification at WA Herbarium – In-situ photography with detailed descriptions ■ Vegetation assessment: – Relevés or site descriptions at representative locations – Location, vegetation description, habitat, geology, disturbance history – Vegetation condition using EPA (2016b) scale – Height and foliage cover estimates – Photographs and flora species lists ■ Taxonomic identification: – All specimens collected and pressed for identification – Reference material and WA Herbarium comparisons used – Nomenclature aligned with DBCA's WA Flora Census Names Database
Phoenix (2025d)	Technical Memorandum: Targeted flora and vegetation survey of the Transmission and Wind Farm study areas for the Marri Wind Farm Project		9 – 12 July 2025 (out of season)	
Phoenix (2025d)	Technical memorandum: Additional vegetation mapping of the Transmission and Wind Farm Proposed Development Footprint survey areas for the Marri Wind Farm Project		July (supplementary survey season)	Vegetation Mapping: ■ Local-scale vegetation units were described between: – National Vegetation Information System (NVIS) Level IV (sub-formation) – NVIS Level V (association) hierarchies
RPS (2025)	Marri Wind Farm Preliminary Survey Results	To be advised pending report due May 2026	Detailed and targeted survey 24 – 27 November 2025	■ Focused areas of remnant native vegetation in road reserves, across the agriculture areas and other areas of vegetation. ■ Vegetation mapping and TEC assessments ■ Assessing the 12.5 ha of pine plantation



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Development Envelope

Indicative Disturbance Footprint

Phoenix Survey Area (2025)

RPS Survey Area (2025)

Phoenix Environmental Flora and Vegetation Field Survey Locations

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang | Date: 28/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX | Fig6-1

Marri Wind Farm Environmental Review Document

Figure 6-1 Reconnaissance, Detailed and Targeted Flora and Vegetation Survey Extent

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:110,000

6.3.1.1 Fatal flaws desktop assessment and reconnaissance survey

Aimed to ascertain the confirmed and potential significant floral values within the study area, with emphasis on the presence of State or federal listed Threatened flora and Threatened Ecological Communities (TEC) within the study area.

Desktop Assessment

The desktop assessment searched five major biological databases including the Protected Matters Search Tool (PMST), DBCA Threatened and Priority Flora Database, Dandjoo Biodiversity Data Repository, and IBSA database. Four previous surveys within 30 km of the 12,555.50 ha, included relevé sampling with 17 relevés and 41 site descriptions across the study area, systematic foot traverses of remnant vegetation patches focusing on habitats likely to support significant flora, and targeted searches of suspected Threatened and Priority Ecological Communities to confirm presence and assess condition. Pressed specimens were collected and identified using WA Herbarium resources, with Florabase consulted for range information. Vegetation structure, composition, and condition were recorded using EPA guidelines, applying condition rating scales from ‘Pristine’ to ‘Completely Degraded’, and TEC boundaries were mapped and assessed for patch size and condition thresholds to identify vegetation of high value based on flora diversity and conservation significance.

6.3.1.2 Targeted flora and vegetation surveys

Subsequent to the desktop assessment, Phoenix Environmental Sciences (Phoenix) were engaged to undertake a number of targeted flora and vegetation surveys in February and July 2025 (Phoenix, 2025d; Phoenix, 2025e) following post-design optimisation including transmission infrastructure. Each survey was conducted by field teams consisting of a Senior Botanist and Botanist.

Methodology adopted for the targeted surveys included meandering transects spaced 10 – 25 m apart, dependent on vegetation density and prioritised remnant vegetation with higher condition and potential for significant flora and included intensive focus on roadside vegetation along Brand Highway.The survey team recorded GPS coordinates with population boundaries, habitat and floristic community descriptions, population size estimates, specimen collections for taxonomic identification at the WA Herbarium, and in-situ photographs with details such as flower colour and plant height.

In addition, an assessment of TECs was conducted in accordance with TSSC (2016) guidance for determining the presence of Banksia Woodlands TEC. Locally significant vegetation was assessed using EPA (2016b) condition scale for the South West botanical province, with high plant diversity and ‘Very Good’ to ‘Excellent’ condition recorded. Location, vegetation description, habitat, disturbance history, condition, and photographs were documented for all significant vegetation. All collected specimens were identified using WA Herbarium reference materials and pressed specimen comparisons, with nomenclature following DBCA's WA Flora Census Names Database.

Additional vegetation mapping was completed in August 2025, that integrated GIS-based desktop mapping and field data from all previous surveys. Local-scale vegetation units were described between the NVIS Level IV (sub-formation) and NVIS Level V (association) hierarchies as per EPA (2016b). Vegetation condition mapping aligned with the Vegetation Condition Scale used for the South West and Interzone Botanical Provinces as per EPA (2016b).

In November 2025, following further design optimisation, RPS were engaged to undertake detailed and targeted surveys within specific areas of the DE (RPS, 2025). RPS carried out vegetation mapping and TEC assessments, including:

- 12.5 ha of pine plantation, (the property of two landholders to the west of Brand Highway),
- Area near where current Koodjee Road intersects with the proposed access road, and
- Area at the intersection of Brand Highway and access road to the east (known in the RPS survey as “Nammegarra Road”).

RPS did not survey two small patches at Lawson Grains that were degraded and two patches found to be non-native pines.

Preliminary results of the detailed and targeted flora and vegetation survey conducted by RPS (2025) were used to assess environmental impacts in relation to this environmental factor.

6.3.2 Adequacy of surveys

6.3.2.1 Fatal flaws desktop assessment and reconnaissance survey

The survey was conducted by a team with substantial expertise in the Swan Coastal Plain bioregion, led by a botanist with 19+ years of experience. All personnel held appropriate botanical qualifications and permits. The survey was designed in accordance with the defined scope to identify fatal flaws and was appropriately pitched as a reconnaissance-level assessment for the project stage.

The reconnaissance survey was conducted on 18-19 September 2024 during the primary survey season, with favourable conditions including above-average rainfall in the preceding two months. Flowering plant observations indicated adequate climate conditions for species detection. Four previous surveys in the region provided substantial contextual data on flora assemblages and vegetation types, with desktop sources consistently identifying Myrtaceae, Proteaceae, and Fabaceae as dominant families.

Limitations experienced during the reconnaissance survey, relate to inaccessibility of some portions of the study area, which was attributed to landholder restrictions and active agricultural areas (i.e., the recent application of herbicide to crops meant the area could not be visited). Similarly, some paddock areas were also unsurveyed due to these access constraints (Landholder approval) and prevented previous significant flora records to be revisited/confirmed.

Two specimens were unable to be identified to species level: *Pinus* sp. and *Brassica ?napus*. However, both unidentified specimens are considered to be ‘cultivated species’ and do not represent remnant vegetation components, limiting their relevance to the assessment.

A substantial proportion of significant species (62%) were assessed as ‘possibly occurring’ after the reconnaissance survey. This high proportion reflects the high regional species diversity and diverse habitat types within the study area, as well as the inability to adequately search all potential habitat as described above. As a result, additional targeted searches were identified as being to confirm the occurrence of threatened flora and refine habitat suitability assessments.

6.3.2.2 Targeted flora and vegetation surveys

Areas of remnant vegetation within the Development Envelope, and all other areas, were surveyed by a suitably qualified senior botanist and botanists. This level of survey effort is considered appropriate given the location of the Proposal within the Swan Coastal Plain (SCP) and Dandaragan Plateau, and the presence of intact vegetation in ‘Good’ or better condition.

Additional targeted surveys were undertaken following design optimisation to ensure that sufficient information was obtained for areas likely to be impacted by the Proposal and to support impact assessment. Sampling effort for the detailed surveys was considered adequate based on the number and spatial distribution of sample locations across the Development Envelope.

However, the surveys were subject to several limitations, primarily relating to timing. Some targeted flora surveys were undertaken outside optimal flowering periods, which reduced the detectability of annual species and limited confident identification of certain taxa. In addition, access constraints within parts of the transmission line study area and some remnant vegetation patches, resulted in moderate limitations to survey completeness in those locations. Where taxonomic uncertainty remained, a precautionary approach was applied by assuming potential conservation significance. Accordingly, while the surveys are considered fit for purpose at a planning and referral level, additional seasonally appropriate targeted surveys may be required where clearing is proposed in unsurveyed or partially surveyed areas, or within vegetation of local or regional significance.

Of note, the preliminary report (RPS, 2025) has reclassified an area previously described as ‘Excellent condition TEC’ by (Phoenix, 2025e), to a vegetation type of lesser value. Additionally, the Pine Plantation vegetation type located within the IDF for the substation and associated infrastructure was confirmed to have

been felled and left in place. This area is therefore considered to be disturbed/cleared for the purpose of this environmental assessment. Where this information is relevant in the assessment of impacts, it is noted specifically, however as the RPS final report and dataset has not yet been provided, the exact areas of the changed vegetation type and/or condition could not be utilised. Therefore, for many of the calculations in the following sections, the Phoenix (Phoenix, 2025e; Phoenix, 2025d) dataset was used.

6.4 Receiving environment

The following section presents flora and vegetation values as described in surveys outlined above in Section 6.3.

6.4.1 Flora species recorded

Collectively, targeted flora and vegetation surveys undertaken by Phoenix and RPS throughout 2024 and 2025, successfully identified environmental values within the combined survey areas. Specifically, the targeted flora and vegetation surveys carried out by Phoenix in September 2024, and February 2025 recorded a total of 735 flora records. Additionally, preliminary data from targeted surveys undertaken by RPS in November 2025 indicated 13 records of *Banksia dallanneyi* subsp. *pollosta* (P3) and one record of *Gyrestemon* sp. *Mogumber* (P1) (RPS, *in prep*).

6.4.2 Significant flora recorded

According to EPA guidance, flora and vegetation may be considered significant for a range of reasons (EPA, 2016a). For this Proposal significant flora includes:

- identified as threatened or priority species
- locally endemic or associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems).

Flora and vegetation surveys within and surrounding the Development Envelope did not record any Threatened flora. However, a total of seven potential priority flora species were identified within the Phoenix and RPS survey areas (Phoenix, 2025d; 2025e; RPS, 2025). These consist of:

- Four confirmed Priority flora:
  - *Banksia dallanneyi* subsp. *pollosta* (P3)
  - *Platysace ramosissima* (P3)
  - *Verticordia lindleyi* subsp. *lindleyi* (P4)
  - *Stylidium aceratum* (P3)
- Three potential Priority flora:
  - *Synaphea* sp.
  - *Anigozanthos humilis* (*sens. lat.)*
  - *Gyrestemon* sp. *Mogumber* (P1).

Banksia dallanneyi subsp. pollosta (P3) was widespread within the Development Envelope and often found to co-occur with the common, non-significant, taxon *B. dallanneyi* subsp. *dallaneyi*. This species was recorded within remnant vegetation on road verges, growing amongst populations of *Banksia*, *Corymbia calophylla* woodlands and low Kwongan heathlands. *Platysace ramosissima* (P3) and *Verticordia lindleyi* subsp. *lindleyi* (P4) were observed in the same location (Phoenix, 2025e).

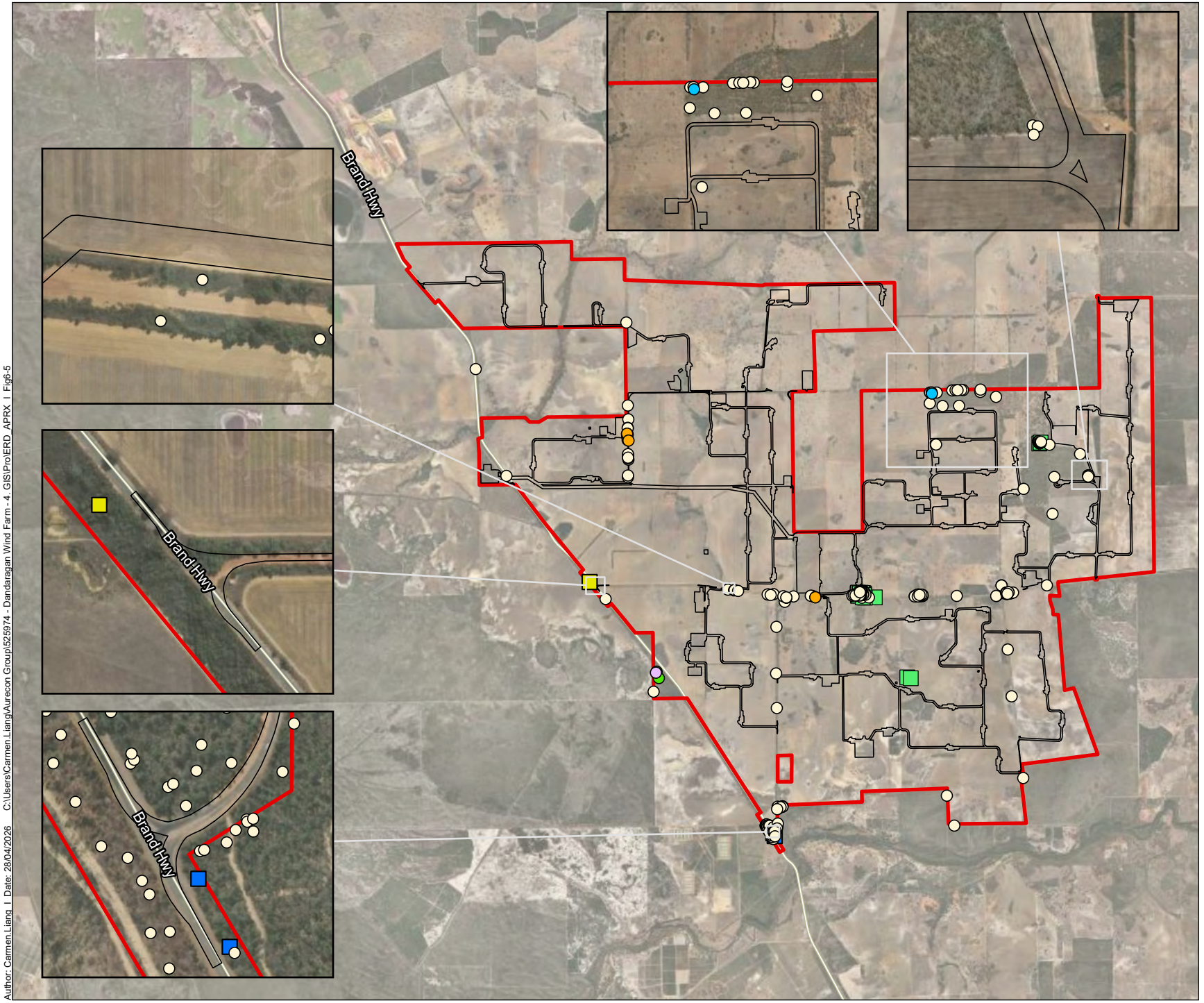
Three potential Priority flora were recorded within the Development Envelope (Figure 6-2). According to Phoenix, potential Priority flora taxa resemble specimens which could not be clearly identified to species or subspecies level in the field, or due to the lack of reproductive characteristics (absent or previous season and of a decayed and incomplete condition) (Phoenix, 2025d).

Details of significant flora recorded during the field surveys (i.e. confirmed) is provided in Table 6-3, whilst the location of all Priority flora within and surrounding the Development Envelope (confirmed and potential) is illustrated in Figure 6-2

Table 6-3 Significant flora recorded within the Development Envelope

Species	Status^	Distribution and ecology	Number of locations (populations)	Number of Individuals
Stylidium aceratum	P3 (DBCA list)	The nearest known record over 15 km away. It appears to have a wide distribution, with records just south of Waroona extending up to Nambung, WA. The 27 historical records on Florabase (WA Herbarium 1998) indicate that at least 1,253 plants occur elsewhere, and highly likely to be underestimated as most records did not specify plant counts. At least three of the records on Florabase appear to be in conservation reserves, therefore this species is relatively well protected (WA Herbarium 1998). This is a new population of this species in the region. This species was identified as a significant species following (Phoenix, 2025e).	1	1*
Banksia dallanneyi subsp. *pollosta***	P3 (DBCA list)	Occurs in the Avon Wheatbelt, Geraldton Sandplains, Jarrah Forest and Swan Coastal Plain bioregions. Habitat descriptions include Banksia and Eucalypt woodlands over mid-low heath, on pale sandy soils. Population sizes range from one to 1,000+ and observations as infrequent to common. Recorded within remanent vegetation on road verges, growing amongst Banksia, and *Corymbia calophylla* woodlands to low kwongan heathlands. Was observed to grow in habitats with deep leaf litter.	16	2,722 (A total of 2,619 plants of the total occur within the mapped boundaries of locally and regionally significant vegetation).
Platysace ramosissima	P3 (DBCA list)	Occurs in the Geraldton Sandplains, Jarrah Forest, Swan Coastal Plain, Warren bioregions. Habitat descriptions include Banksia and Eucalypt woodlands over myrtaceous heath species, on white-yellow sand. Population sizes are typically described as uncommon to scattered. The population occurs within the mapped boundaries of high value vegetation (locally significant). Recorded growing in low heath dominated by myrtaceous and proteaceous species, on white sandy soils.	1	50
Verticordia lindleyi subsp. *lindleyi*	P4 (DBCA list)	Occurs in the Geraldton Sandplains, Jarrah Forest and Swan Coastal Plain bioregions. Habitat descriptions include low myrtaceous and proteaceous dominated heath on pale sandy soils. Population sizes are typically described as uncommon to common. The population occurs within the mapped boundaries of high value vegetation (locally significant). Recorded growing in low heath dominated by myrtaceous and proteaceous species, on white sandy soils.	1	81
Gyrestemon sp. *Mogumber***	P1 (DBCA list)	One potential occurrence of *Gyrestemon sp. Mogumber* (P1) was recorded, though requires further identification.	1	1

Source: Phoenix (2025d; 2025e)
*Identified within the reconnaissance field survey (Phoenix, 2025e)
** RPS Report Pending – preliminary data provided only, subject to change due to final report
^ P1 (Priority 1) = Poorly known species, known from few locations, none on conservation lands. P3 (Priority 3) = Poorly known species, known from several locations. P4 (Priority 4) = Rare, Near Threatened and other species in need of monitoring.



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Development Envelope

Indicative Disturbance Footprint

Significant Flora Records (RPS 2025)

Banksia dallanneyi subsp. pollosta,P3

Significant Flora Records (Phoenix 2025)

Banksia dallanneyi subsp. pollosta,P3 (DBCA list)

Platysace ramosissima,P3 (DBCA list)

Stylidium aceratum,P3 (DBCA list)

Verticordia lindleyi subsp. lindleyi,P4 (DBCA list)

Unresolved Priority Flora

Anigozanthos humilis,Potential Priority species (Phoenix 2025)

Synaphea sp.,Potential Priority species (Phoenix 2025)

Gyrostemon sp. Mogumber,P1 (RPS 2025)

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang | Date: 28/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX | Fig6-5

Marri Wind Farm Environmental Review Document

Figure 6-2 Locations of Priority flora within and surrounding the DE

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:120,000

Table 6-4 Unresolved priority flora within the Development Envelope

Unresolved taxa	Description
Synaphea sp.	Potentially represents either *Synaphea panhesya* (P1) or *Synaphea sparsiflora* (P2) known to occur in the area. Recorded growing amongst *C. calophylla, Banksia spp.*, *Allocasuarina and Xanthorrhoea preissii*.
Anigozanthos humilis (*sens. lat.*)	Encompasses three subspecies; Badgingarra (S.D. Hopper 7114) (P2), *chrysanthus* (P4) and *humilis* (unthreatened), all of which occur within the Development Envelope. Recorded within mapped boundaries of the Banksia Woodlands TEC on the road verge.

Applying the precautionary principle, these two taxa are currently managed as Priority species until formal identification can be confirmed. Targeted spring surveys are planned during optimal flowering periods to verify their identities.

6.4.2.1 Conservation significant flora likelihood of occurrence

A likelihood of occurrence (LoO) assessment for conservation significant flora was undertaken by Phoenix (2025b). The assessment considered: conservation significant flora identified in desktop assessments, availability of suitable habitat, distance of closest record, and currency of records. A LoO for all conservation significant flora within the Development Envelope is provided in Table 6-5).

Except for the four taxa that were recorded (i.e. confirmed) during the field surveys (bolded in Table 6-5), an additional 49 conservation significant species may possibly occur within the Development Envelope (Phoenix, 2025b). Although a further 26 conservation significant flora taxa were identified in the desktop assessment, they were considered 'Unlikely' to occur in the survey area and are therefore not discussed further. Further targeted surveys have been undertaken by RPS to identify and describe the conservation significant flora species likely to be present within the Development Envelope and immediate surrounds. This report is due May 2026.

Table 6-5 Conservation significant flora likelihood of occurrence – possible and recorded

Species	Status^	Likelihood of occurrence
Andersonia gracilis	EN (EPBC Act) VU (BC Act) T (DBCA list)	Possible - Potential habitat within the study area, records within 5 km of study area, within known range of species.
Drakaea elastica	EN (EPBC Act) CR (BC Act) T (DBCA list)	
Hypocalymma x proliferum	P1 (DBCA list)	
Lepyrodia curvescens	P2 (DBCA list)	
Lyginia excelsa	P2 (DBCA list)	
Stylidium milleri	P2 (DBCA list)	
Babingtonia urbana	P3 (DBCA list)	
Banksia dallanneyi subsp. *pollosta*	P3 (DBCA list)	
Beaufortia eriocephala	P3 (DBCA list)	
Calytrix ecalycata subsp. *brevis*	P3 (DBCA list)	
Dampiera tephrea	P3 (DBCA list)	
Haemodorum loratum	P3 (DBCA list)	
Hensmania stoniella	P3 (DBCA list)	
Isotropis cuneifolia subsp. *glabra*	P3 (DBCA list)	
Persoonia rudis	P3 (DBCA list)	
Platysace ramosissima	P3 (DBCA list)	
Isopogon autumnalis	P3 (DBCA List)	

Species	Status^	Likelihood of occurrence
Verticordia lindleyi subsp. *lindleyi*	P4 (DBCA list)	
Anigozanthos viridis subsp. *terraspectans*	VU (EPBC Act) VU (BC Act) T (DBCA list)	
Babingtonia delicata	P1 (DBCA list)	
Hypocalymma lateriticola	P1 (DBCA list)	
Anigozanthos humilis subsp. *Badgingarra* (S.D. Hopper 7114)	P2 (DBCA list)	
Chordifex reseminans	P2 (DBCA list)	
Banksia pteridifolia subsp. *vernalis*	P3 (DBCA list)	
Desmocladus nodatus	P3 (DBCA list)	
Grevillea rudis	P4 (DBCA list)	
Rumex drummondii	P4 (DBCA list)	
Macarthuria keigheryi	EN (EPBC Act) EN (BC Act) T (DBCA list)	Possible - Potential habitat within the study area, study area within known range of species.
Paracaleana dixonii	EN (EPBC Act) VU (BC Act) T (DBCA list)	
Ptychosema pusillum	VU (EPBC Act) VU (BC Act) T (DBCA list)	
Comesperma rhadinocarpum	P3 (DBCA list)	
Desmocladus biformis	P3 (DBCA list)	
Grevillea florida	P3 (DBCA list)	
Phlebocarya pilosissima subsp. *pilosissima*	P3 (DBCA list)	
Schoenus pennisetis	P3 (DBCA list)	
Banksia chamaephyton	P4 (DBCA list)	
Calothamnus brevifolius	P4 (DBCA list)	
Hypolaena robusta	P4 (DBCA list)	
Thelymitra apiculata	P4 (DBCA list)	
Thysanotus glaucus	P4 (DBCA list)	
Banksia mimica	EN (EPBC Act) VU (BC Act) T (DBCA list)	Possible - Potential habitat within the study area.
Stylidium vinosum	P1 (DBCA list)	
Caladenia multiplex	P2 (DBCA list)	
Leucopogon squarrosus subsp. *trigynus*	P2 (DBCA list)	
Dillwynia dillwynioides	P3 (DBCA list)	
Guichenotia alba	P3 (DBCA list)	
Hypocalymma tetrapterum	P3 (DBCA list)	
Jacksonia carduacea	P3 (DBCA list)	
Verticordia paludosa	P4 (DBCA list)	
Thelymitra stellata	EN (EPBC Act) EN (BC Act) T (DBCA list)	Possible - Restricted potential habitat was encountered and searched, however it is possible that species was not visible at time of the survey.

Species	Status^	Likelihood of occurrence
Stylidium aceratum	P3 (DBCA list)	Recorded during survey. Likely additional plants within the remnant vegetation patch it was recorded in.
Banksia kippistiana var. *paenepeccata*	P3 (DBCA list)	Recorded - desktop record within the study area. The location of desktop record within the study area is in a cleared portion used for crop farming.
Styphelia allittii	P3 (DBCA list)	Recorded - desktop record within the study area. The location of desktop record within the study area is in a cleared portion used for crop farming. It was recorded in 1964 and the locality description suggests the location is inaccurate.
Hypocalymma serrulatum	P2 (DBCA list)	Recorded - desktop record within the study area. The location of desktop record within the study area is in a cleared portion used for crop farming. It was recorded in 1967 and the locality description suggests the location is inaccurate.
Anigozanthos humilis subsp. *chrysanthus*	P4 (DBCA list)	Recorded - two desktop records within the study area, however locality descriptions and collection dates, confirm these 2 records are duplicates of the same record. One of the records within the study area is in a cleared portion used for crop farming. It was recorded in 1988 and the locality description suggests the location is inaccurate. The remaining duplicate record appears to be in the correct location, where a targeted search of this species was conducted. A collection of *Anigozanthos humilis* was made at this location and several more at other locations with suitable habitat. However, following the taxonomic identification, all collections identified as the non-Priority *humilis* subspecies, and not the Priority *chrysanthus* subspecies.

^ CR = Critically Endangered (BC Act), EN = Endangered (EPBC Act), VU = Vulnerable (BC Act), T = Threatened (DBCA list), P1 (Priority 1) = Poorly known species, known from few locations, none on conservation lands. P2 (Priority 2) = Poorly known species, known from few locations, some on conservation lands. P3 (Priority 3) = Poorly known species, known from several locations. P4 (Priority 4) = Rare, Near Threatened and other species in need of monitoring.

Source: Phoenix (2025b)

6.4.3 Introduced or invasive flora recorded

A total of eight introduced species identified during the surveys and are known to occur within the Swan Coastal Plain bioregion. When considering the land within (and surrounding) the survey area is predominantly used for agriculture, the presence of these introduced species is considered likely.

Of the eight introduced species, three species are considered crops (Canola, Lupin, and Pine), whilst the remaining five species are considered pasture species. Pasture species include:

- A*vena barbata*
- *Bromus diandrus*
- *Ehrharta calycina*
- *Ehrharta longiflora*
- *Lotus subbiflorus*.

Dieback caused by *Phytophthora cinnamomi* has not been recorded within the Development Envelope or its surrounding areas (DBCA, 2025b). The nearest known occurrence is along the northwest boundary of Moore River National Park, approximately 10 km southwest of the Development Envelope (DBCA, 2025b).

6.4.4 Vegetation

6.4.4.1 Regional vegetation in Development Envelope

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies Australia's landscapes into 89 bioregions and 419 subregions based on climate, geology, landform, native vegetation and species information (DoEE,

2016a). Western Australia contains 26 bioregions and 53 subregions. The Development Envelope is located within the Swan Coastal Plain bioregion and spans two subregions: Perth and Dandaragan Plateau (Table 6-6, Figure 6-3). The Swan Coastal Plain and Dandaragan Plateau are known to support a high diversity of flora and vegetation relative to other areas of the State, including significant flora taxa and vegetation (EPA, 2016b).

Approximately 81% of the Proposal area occurs within the Dandaragan Plateau subregion. The Dandaragan Plateau; an area extensively modified for agriculture over the past 200 years. More than 92% of the Development Envelope has been cleared and used for agricultural production, making agriculture the dominant land use overall.

Table 6-6 IBRA subregions – Development Envelope and statewide extent

IBRA subregion	Description	Statewide extent (ha)	Area in DE (ha)
Perth	Colluvial and aeolian sands, alluvial river flats, coastal limestone. Heath and/or Tuart woodlands on limestone, Banksia and Jarrah/Banksia woodlands on Quaternary marine dunes of various ages, Marri on colluvial, and alluvials. (Mitchell, Williams, & Desmond, 2002)	1,333,901	2,351.10
Dandaragan	Cretaceous marine sediments are mantled by sands and laterites. Characterised by Banksia low woodland, Jarrah - Marri woodland, Marri woodland, and by scrub-heaths on laterite pavement and on gravelly sandplains.	447,862	10, 132.45

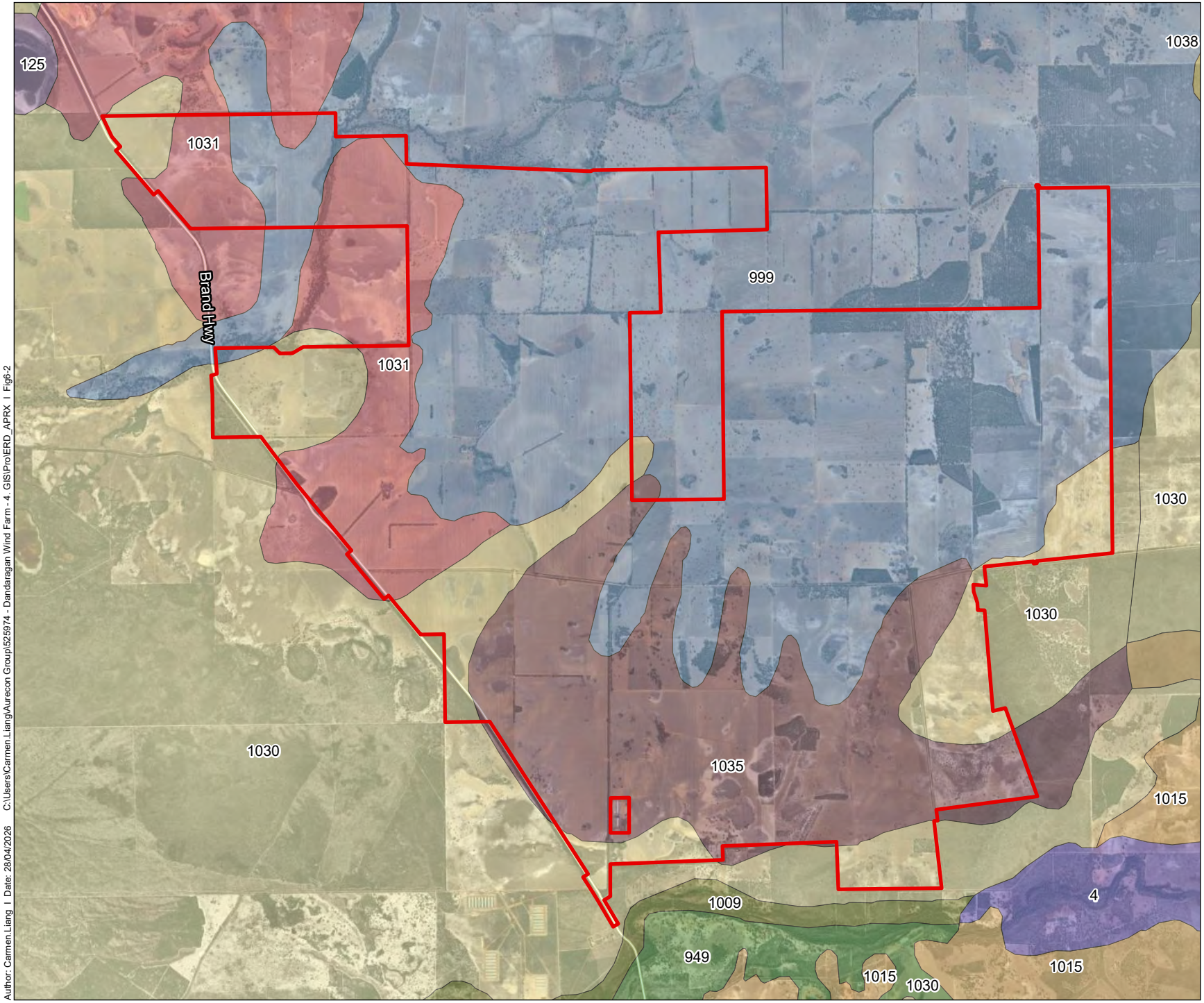
Vegetation associations have been refined and mapped across WA by Shepherd et al. (2002) at a finer scale than IBRA mapping (Beard, 1976), and reflects the original vegetation structure prior to extensive clearing and agricultural use of the Dandaragan Plateau. More information can be found in Section 1.5.1 and Figure 1-7.

When considering cumulative impacts at the Vegetation Association scale, the area of agricultural and cleared land has been removed from calculations, as these vegetation types were not included in the Pre-European context. The distribution of Pre-European Vegetation Associations within the Development Envelope is shown in Figure 6-3.

The dominant vegetation association within the Development Envelope is medium Marri woodland, covering 51.86% of the Development Envelope. Mosaics of open Marri woodland with *Dryandra* heath account for approximately 23.94%, while low Banksia woodland, comprising *Banksia attenuata* and *B. menziesii*, represents around 13.62%. Mosaic shrublands dominated by *Hakea* and *Dryandra* heath make up approximately 10.58% of the Development Envelope. Area of vegetation associations within the Development Envelope is provided in Table 6-7.

Table 6-7 Pre-European vegetation associations within the Development Envelope

Pre-European vegetation association	Pre-European extent (ha)	Current extent (ha)	Remaining statewide	Area within the DE (ha)	% within DE
999, Medium woodland; marri	115,706.59	13,024.44	11.26%	6,474.28	51.86
1030, Low woodland; *Banksia attenuata* and *B. menziesii*	139,012.87	88,949.55	63.99%	1,700.10	13.62
1031, Mosaic: Shrublands; *Hakea* scrub-heath / Shrublands; *Dryandra* heath	269,490.91	88,668.30	32.90%	1,321.00	10.58
1035, Mosaic: Medium open woodland; marri / Shrublands; *Dryandra* heath	5,018.34	492.93	9.82%	2,988.17	23.94
Total				**12,483.55**	**100**



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Development Envelope

Pre-European Vegetation (DPIRD-006)

- 4,Jarrah, marri and wandoo Eucalyptus marginata, Corymbia calophylla, E. wandoo.
- 125,
- 949,Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., Agonis flexuosa, Callitris spp., Allocasuarina spp., Eucalyptus loxophleba.
- 999,Jarrah, marri and wandoo Eucalyptus marginata, Corymbia calophylla, E. wandoo.
- 1009,Jarrah, marri and wandoo Eucalyptus marginata, Corymbia calophylla, E. wandoo.
- 1015,
- 1030,Other acacia, banksia, peppermint, cypress pine, casuarina, York gum Acacia spp., Banksia spp., Agonis flexuosa, Callitris spp., Allocasuarina spp., Eucalyptus loxophleba.
- 1031,
- 1035,Low shrubs of mixed composition.
- 1038,Jarrah, banksia or casuarina Eucalyptus marginata, Banksia spp., Allocasuarina spp.

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 6-3 Vegetation Associations within the DE

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:90,000

6.4.4.2 Local vegetation types

A total of 16 vegetation types were defined and mapped by the combined surveys (Phoenix, 2025e; RPS, 2025) within the Development Envelope. The vegetation types can be typified by three broad groupings:

- Agricultural vegetation – Ag, Ag(Cc)
- Plantations - Pspp
- Native vegetation
  - *Banksia* woodlands - BaXpHcMp
  - *Eucalyptus* / *Corymbia* dominated woodlands – CcJsHh, CcXd, EtJsCs, ErrMr and EaaGs
  - Acacia shrublands - AsSpp
  - Proteaceae/ Myrtacaeae dominated shrublands - XpLs, ChScLb, ChPbMp and BhSpp
  - Dominant rushland/ sedgelands– JspLa and EcoCoMa.

The most common vegetation types were the agricultural groups. Areas mapped as the vegetation type Ag(Cc) contained scattered remnant/ planted trees or small stands of trees which were typically devoid of remnant understorey. Such areas are deemed highly unlikely to be considered as suitable habitat for conservation significant flora species (Phoenix, 2025e). A total of 1,502 isolated trees were identified within the Development Envelope with the Marri the dominant species (Table 6-8).

The most prevalent native vegetation types are Banksia woodlands. The BaXpHcMp vegetation type mapped within the Development Envelope represents a TEC (see Section 6.4.5).

Table 6-8 Scattered remnant trees within Development Envelope

Tree species	Number of trees
Marri (*Corymbia calophylla*)	1,392
Tuart (*Eucalyptus gomphocephala*)	43
River Gum (*Eucalyptus camaldulensis*)	35
Jarrah (*Eucalyptus marginata*)	10
Wandoo (*Eucalyptus wandoo*)	9
Blackbutt (*Eucalyptus piluaris*)	5
Eucalyptus sp.	5
Powderbark Wandoo (*Eucalyptus accedens*)	3
Total	**1,502**

A description of vegetation types, their extent and condition are provided in Table 6-9.

Table 6-9 Vegetation types, condition and extent within the Development Envelope

Vegetation types	Vegetation health classification	Area (ha)	Development Envelope	
			Area (ha)	Proportion (%)
Ag: Agricultural land absent of native vegetation	Completely Degraded	4,440.97	4,440.97	35.57
	Degraded	0.58	0.00	0.00
Ag(Cc): Agricultural land with low to mid isolated trees to open woodland of *Corymbia calophylla* (occasionally *E. todtiana),* over low sparse to closed grassland of non-native crop or pasture species.	Completely Degraded	1,026.40	748.09	5.99
	Degraded	29.277	21.47	0.17
Ag(Cc)/Ag: Complex; mix of units Ag(Cc) and Ag	Degraded	1.977	1.45	0.01

Vegetation types	Vegetation health classification	Area (ha)	Development Envelope	
			Area (ha)	Proportion (%)
BaXpHcMp: Low open woodland to woodland of *Banksia attenuata*, *B. prionotes*, *B. menziesii*, over mid to tall sparse to open shrubland of *Xanthorrhoea preissii*, *Allocasuarina humilis*, *Calothamnus quadrifidus* subsp. *quadrifidus*, over low sparse shrubland to shrubland*	Degraded	0.671	0.49	0.00
	Excellent	487.11	87.12	0.70
	Good	2.378	0.40	0.00
	Not Assessed	15.889	1.74	0.01
	Very Good	87.592	39.53	0.32
BhSpp: Mid to tall shrubland of *Banksia hewardiana, Xanthorrhoea preissii,* over low sparse to closed grassland of non-native crop/pasture/weed species.	Degraded	23.457	17.21	0.14
	Very Good	8.139	5.97	0.05
CcJsHh: Low to mid open woodland to woodland of *Corymbia calophylla* occasionally with *Eucalyptus todtiana*, over mid to tall sparse to open shrubland variably of *Jacksonia sternbergiana, Xanthorrhoea preisii, Macrozamia fraseri*, over variably present low sparse *	Degraded	17.243	12.65	0.10
	Excellent	311.34	221.81	1.78
	Good	40.057	28.77	0.23
	Pristine	2.461	1.80	0.01
	Very Good	43.739	25.30	0.20
CcXd: Low to mid open woodland to woodland of *Corymbia calophylla*, over mid to tall open shrubland to shrubland of *Xanthorrhoea drummondii* and *Banksia carlinoides*.	Degraded	11.689	8.57	0.07
	Excellent	12.356	9.06	0.07
	Good	7.464	5.47	0.04
ChPbMp: Mid shrubland of *Calothamnus hirsutus, Gastrolobium calycinum,* occasional *Allocasuarina humilis*, over low sparse shrubland of *Petrophile brevifolia*, over low sparse sedgeland of *Mesomelaena pseudostygia* with non-native weed species.	Degraded	1.252	0.40	0.00
	Excellent	17.827	7.36	0.06
	Good	0.491	0.00	0.00
	Very Good	34.91	2.65	0.02
ChScLb: Mid open shrubland of *Calothamnus hirsutus*, *Xanthorrhoea preissii*, over low open to closed heathland of *Styphelia conostephioides*, *Leucopogon oliganthus*, *Verticordia densiflora* var. *cespitosa*, over low sparse sedgeland of *Lyginia imberbis*, *Chordifex*	Excellent	3.709	0.00	0.00
	Good	3.743	2.13	0.02
	Very Good	5.744	3.76	0.03
EaaGs: *Eucalyptus arachnea* subsp. *arachnea, E. wandoo* subsp. *wando*o, over low isolated shrubs of *Gastrolobium spinosum, Hakea lissocarpha*, over low sparse grassland of non-native crop/pasture/weed species.	Good	2.283	1.67	0.01
EcoCoMa: Mid isolated trees of *Eucalyptus camaldulensis* subsp. *obtusa*, over low open woodland of *Casuarina obesa*, over sparse to open sedgeland of *Machaerina arthophylla.*	Very Good	1.642	0.09	0.00
ErrMr: Mid open woodland of *Eucalyptus rudis* subsp. *rudis* with occasional *Corymbia calophylla*, over tall sparse shrubland of *Melaleuca rhaphiophylla*, *Acacia* spp., over low sparse to closed grassland of non-native crop or pasture species.	Good	17.869	7.59	0.06
EtJsCs: Low sparse to open woodland of *Eucalyptus todtiana*, occasionaly with scatterred *Corymbia calophylla* and/or *Banksia* spp., over variable low to mid sparse to open shrubland of *Jacksonia sternbergiana, Calothamnus hirsutus, Allocasuarina humilis.*	Degraded	0.65	0.48	0.00
	Excellent	61.218	44.23	0.35
	Good	1.063	0.78	0.01
	Very Good	48.59	20.72	0.17
JspLa:	Degraded	5.723	4.20	0.03

Vegetation types	Vegetation health classification	Area (ha)	Development Envelope	
			Area (ha)	Proportion (%)
Tall rushland of *Juncus* sp., *Typha domingensis*, *Gahnia* sp., over low sparse forbland of *Lobelia anceps*, **Vellereophyton dealbatum*, *Cycnogeton lineare*.	Good	8.357	6.13	0.05
Pspp: Plantings/plantation (non-remnant) composed of mid to tall open woodland to open forest variably of *Pinus* spp. and *Eucalyptus* spp., over low sparse to closed grassland of non-native crop/pasture/weed species.	Completely Degraded	41.702	30.58	0.24
XpLs: Low shrubland of *Xanthorrhoea preisii*, *Calothamnus hirsutus*, over low sparse to open forbland of *Lepidosperma squamatum*, *L. tenue*, *Desmocladus flexuosus*.	Excellent	3.222	2.36	0.02
	Good	1.75	1.28	0.01
Cleared: Areas cleared of native vegetation (inclusive of roads, vehicle tracks).	Completely Degraded	185.757	69.51	0.56
Subtotal	**-**	**-**	5,883.79	47.13
Unsurveyed area	-	-	6,599.76	52.87
Total	-	-	**12,483.55**	**100.00**

6.4.4.3 Vegetation condition

The majority of the surveyed Development Envelope (5219.64 ha, 88.71%) is in Completely Degraded condition, being largely cleared for agriculture with remnant isolated trees.

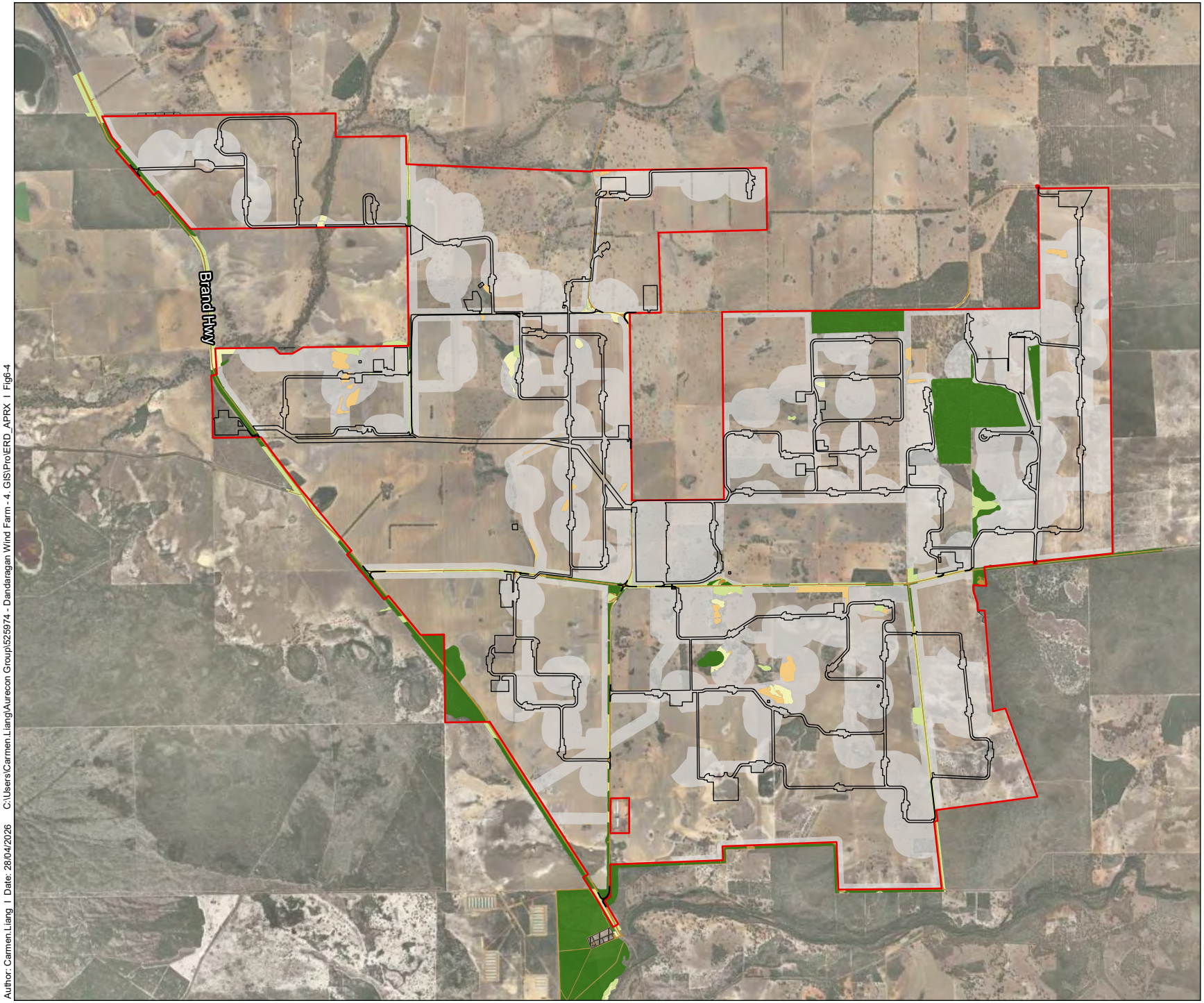
A total of 371.94 (6.32%) of the surveyed Development Envelope is in Excellent condition. This is predominantly the *Eucalyptus/ Corymbia* dominated woodlands, particularly CcJsHh (comprising 221.81 ha) (Table 6-9, Table 6-10). This vegetation type contained a small area (1.80 ha) in Pristine condition within the Development Envelope.

Figure 6-4 illustrates vegetation condition within the Development Envelope.

Table 6-10 Vegetation and condition within surveyed area of the Development Envelope

Vegetation Type	Within Development Envelope (ha)
Completely Degraded/ Cleared	5,219.64
Degraded	66.91*
Good	46.81
Very Good	98.02
Excellent	371.94
Pristine	1.80
Not assessed	1.74
Total area surveyed	**5,883.79**
Not surveyed	6,599.76
Total Area	**12,483.55**

* Includes 12.5 ha of pine plantation which is felled and considered to be in a 'Degraded' state (RPS, 2025).



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Development Envelope

Indicative Disturbance Footprint

Vegetation Condition

Pristine

Excellent

Very Good

Good

Degraded

Completely Degraded

N/A

Not Assessed

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 6-4 Vegetation Condition within the DE

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Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:90,000

6.4.5 Significant vegetation

Both regionally significant vegetation (*Banksia Woodlands of the Swan Coastal Plain ecological community TEC* – P3 DBCA list; EN EPBC Act) and locally significant vegetation (as high value habitat, suspected high value habitat, and vegetation analogous to Banksia Woodlands TEC) were mapped within and surrounding the Development Envelope (the survey area) (Phoenix, 2025e) (Table 6-11, Figure 6-5).

The Banksia Woodlands TEC is listed as Endangered under the EPBC Act and classified as a Priority 3 Priority Ecological Community (PEC) by DBCA. The Banksia Woodlands TEC is conservation significant due to its severely reduced Statewide extent, and that it is known as critical habitat to a wide variety of conservation significant flora. The surveys found additions and corrections to pre-existing DBCA records of the Banksia Woodlands TEC within the survey area (Phoenix, 2025e).

Table 6-11 Summary of significant vegetation within the Development Envelope

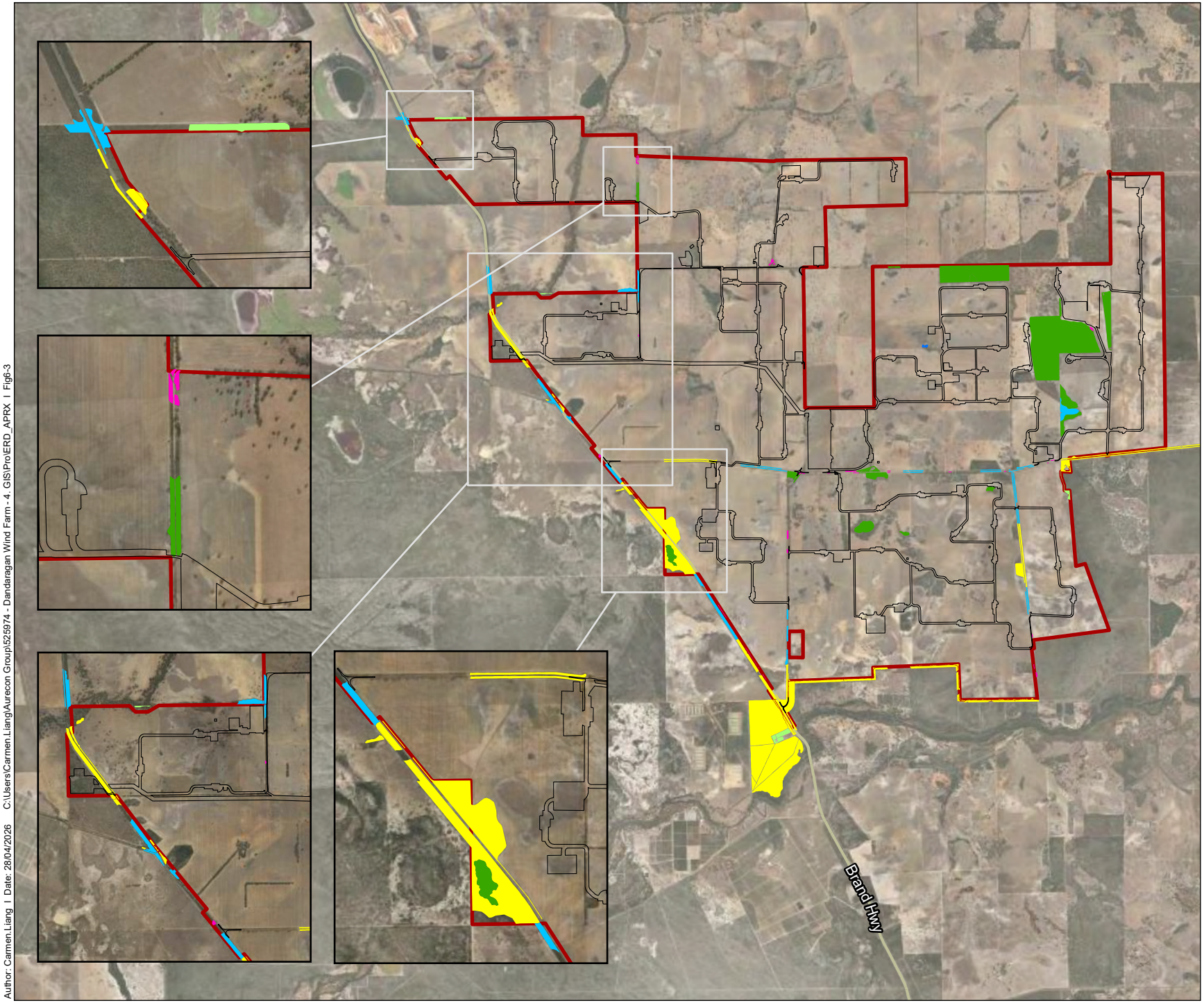
Significance	Total within DE (ha)
Locally significant	
Analogous to *Banksia* Woodlands of the Swan Coastal Plain TEC, but patch size and condition too low for inclusion.	5.94
Vegetation of high value / Potentially vegetation of high value (flora and/or species diversity) (not visited by survey).	282.41
Regionally significant	
Confirmed TEC record/ New record/Pre-existing TEC record assumed correct with high confidence (not visited by survey).	122.93
Total significant vegetation	**411.28**

6.4.5.1 Banksia Woodlands TEC

Within the DE, 97% of the BaXpHcMp *Banksia attenuata/ prionotes/ menziesii* woodland recorded is confirmed to be TEC and found to be in 'Excellent', 'Very Good', or 'Good' condition as provided in Table 6-12 (Phoenix, 2025e; RPS, 2025). The confirmed extent of the *Banksia* Woodlands TEC is under revision by RPS.

Table 6-12 *Banksia* Woodlands TEC within the surveyed area

Vegetation type confirmed TEC	Total within surveyed area (ha)
***Banksia attenuata/prionotes/menziesii* woodland**	**427.24**
Excellent	355.63
Very Good	58.35
Good	1.60
Pre-existing TEC record assumed correct with high confidence (not visited by survey).	11.65



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Development Envelope

Indicative Disturbance Footprint

Significant Vegetation (Phoenix 2025)

Analogous to Banksia Woodlands of the Swan Costal Plain TEC

Confirmed existing TEC record

New recorded instance of TEC

Potentially vegetation of high value

Pre-existing TEC record

Vegetation of high value

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 6-5 Regionally and locally significant vegetation

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Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:120,000

6.4.5.2 Locally significant vegetation

Locally significant vegetation within the survey area consists of:

- Vegetation of high value due to flora habitat and/or species diversity.
- Vegetation analogous to *Banksia* Woodlands TEC, but patch size and condition too low for inclusion as TEC.

High value habitat (including suspected high value habitat) was classified as locally significant vegetation for its capacity for high flora species diversity and potential as habitat for significant flora. Though of insufficient size and/or condition to be regarded TEC, vegetation analogous to *Banksia* Woodlands TEC is also considered locally significant.

Locally significant vegetation was recorded by Phoenix (2025e; 2025d) including:

- *Banksia attenuata/prionotes/menziesii* woodland
- *Corymbia calophylla* and *Eucalyptus todtiana* woodland
- *Corymbia calophylla* woodland
- *Corymiba calophylla* woodland over *Xanthorrhoea* sp. and *Banksia carlinoides* shrubland
- *Eucalyptus todtiana* woodland
- *Eucalyptus todtiana* woodland over *Jacksonia sternbergiana* shrubland
- *Xanthorrhoea priessii* and *Calothamnus hirsutus* shrubland

Table 6-13 illustrates the vegetation type and conservation significance within the area surveyed for the Proposal.

Table 6-13 Vegetation type and conservation significance within the surveyed area

Vegetation type / Significance	Total within surveyed area (ha)
Banksia attenuata/ prionotes/ menziesii woodland	**434.33**
Locally significant	7.34
Regionally significant	-
Priority 3 (WA) / Endangered TEC (EPBC Act)	415.60
***Banksia hewerdiana* shrubland**	**4.80**
Not considered significant	4.80
***Corymbia calophylla* and *Eucalyptus todtiana* woodland**	**3.95**
Locally significant	3.95
***Corymbia calophylla* woodland**	**227.07**
Not considered significant	0.88
Locally significant	226.19
***Corymiba calophylla* woodland over *Xanthorrhoea* sp. *and Banksia carlinoides* shrubland**	**9.06**
Locally significant	9.06
***Eucalyptus todtiana* woodland**	**34.29**
Locally significant	34.29
***Eucalyptus todtiana* woodland over *Jacksonia sternbergiana* shrubland**	**6.49**
Locally significant	6.49
***Xanthorrhoea priessii* and *Calothamnus hirsutus* shrubland**	**2.36**
Locally significant	2.36
Total significant	**716.66**
Total not significant	**5.68**

6.4.6 Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDEs) are ecosystems that rely on sources of groundwater to meet some or all water requirements. Vegetation communities that may depend on shallow groundwater, particularly riparian zones and seasonally waterlogged areas, are referred to as groundwater-dependent vegetation (GDV).

The Water Resources Impact Assessment (WRIA) (Aurecon, 2025d), evaluated potential water-related impacts of the Proposal. Areas within the Development Envelope with potential groundwater dependence were identified. Scattered wetlands and damplands show variable reliance on groundwater, ranging from low to high potential. Caren Caren Brook, which intersects the north-west corner of the Development Envelope, is lined with riparian vegetation and feeds into the nationally important wetland, Lake Guraga. Riparian zones along Caren Caren Brook, and surface waterlogged areas near Turbine 76 were identified as potentially impacted GDV.

The Moore River was identified as likely being groundwater-dependent during summer, functioning as a gaining stream in dry periods (Aurecon, 2025d). The Moore River System is located within the Gingin Groundwater Management Area.

Vegetation types commonly associated with groundwater dependence and may be considered GDV include:

- EcoCoMa - River red gum *(Eucalyptus camaldulensis)* and Swamp sheoak *(Casuarina obesa*) when associated with riparian zones. Sedgelands *(Machaerina arthrophylla)* are understood to rely on shallow groundwater. Approximately 0.09 ha of this vegetation type occurs within the Development Envelope.
- ErrMr - Flooded gum *(Eucalyptus rudis)* and Swamp paperbark *(Melaleuca rhaphiophylla)*, both species associated with floodplains and wetlands. Approximately 7.59 ha occurs within the Development Envelope.
- JspLa - Tall rushland dominated by *Juncus*, *Typha domingensis*, and *Gahnia* spp., wetland species generally dependent on groundwater or surface water. Approximately 10.33 ha occurs within the Development Envelope.

No confirmed GDEs have been identified in the IDF (Phoenix, 2025d; RPS, 2025).

6.5 Potential environmental impacts

This section lists the Proposal activities that may potentially impact on flora and vegetation, including direct, indirect, and cumulative impacts.

Mitigation measures for impacts relating to flora and vegetation are outlined in Section 6.6, whilst an assessment of residual impacts (following implementation of the mitigation measures) is presented in Section 6.7

6.5.1 Potential direct impacts

The potential direct impacts to flora and vegetation from Proposal activities are assessed based on the IDF. The IDF includes the potential clearing areas in addition to a buffer included for micro-sighting that may be required during the construction phase. The IDF is therefore considered the largest proposed area to be cleared, with the actual cleared area expected to be less.

The maximum area of disturbance within the IDF (in which direct impacts are assessed), as a proportion of the Development Envelope is outlined in Table 6-14. A maximum of 7.73% of the Development Envelope would be disturbed as a result of implementation of the Proposal.

Table 6-14 Proposal maximum disturbance areas as proportion of Development Envelope

Development Envelope area (ha)	Indicative Disturbance Footprint (IDF) (ha)	Proportion of the DE Potentially Disturbed (IDF) (%)
12,483.55	964.37	7.73

Direct impacts which may result from the implementation are outlined in Table 6-15.

Table 6-15 Potential direct impacts to flora and vegetation from the Proposal

Proposal activity	Potential direct impact
Clearing of native vegetation	Loss of native flora
	Loss of native vegetation, including significant vegetation types.

6.5.2 Potential indirect impacts

The Proposal activities that might lead to indirect impacts to native flora or alteration of vegetation types are listed in Table 6-16.

Table 6-16 Potential indirect impacts to flora and vegetation from the Proposal

Proposal activity	Potential indirect impact
Establishment of linear infrastructure	▪ Fragmentation of native vegetation separated by areas of clearing. ▪ Edge effects leading to reduced vegetation condition in proximity to cleared areas. ▪ Introduction or spread of weeds due to personnel and equipment entering Proposal area. ▪ Soil contamination due to leaks or spillages of potential contaminants (hydrocarbons, chemicals etc).
Clearing of native vegetation	▪ Reduced vegetation condition in proximity to cleared areas. ▪ Increased dust generation leading to dust deposition on adjacent vegetation. ▪ Erosion leading to sedimentation on adjacent vegetation.
Hot works	Loss of flora and vegetation in the event of a fire.
Groundwater drawdown	Reduction in health or loss of GDE and or GDV

6.5.3 Cumulative impacts

Cumulative environmental impacts are the successive, incremental, and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities (EPA, 2024). The EPA defines reasonably foreseeable future activities as “Third party (or Proponent) activities which are already approved, are in a government approvals process, or are otherwise reasonably likely to proceed or be ongoing”.

This section presents the potential cumulative impacts associated with known past, present and reasonably foreseeable projects in the general vicinity of the Proposal that may impact on flora and vegetation, building on the cumulative assessment compiled by Umwelt (Australia) Pty Ltd for the Neoen Australia Pty Ltd Yathroo Wind Farm Environmental Referral Supporting Document (2026)[1].

A desktop review was undertaken to identify potential projects to be considered in the context of potential cumulative impacts. Within approximately 50 km of the Proposal, there are eight wind energy projects at various stages of Development. There are also four active or established mining operations (Cataby Mineral Sands Mine, Cooljarloo Mineral Sands Project (including Cooljarloo West and Osprey Expansion), and North Kiaka Mine and Boonanarring Mineral Sands Mine).

Details of nearby projects with the potential to affect the Proposals’ cumulative impact on flora and vegetation are provided in Table 6-17.

[1] The Yathroo Wind Farm is proposed for an area immediately north of, and adjacent to this Proposal.

Table 6-17 Projects with potential cumulative impacts

Project	Distance from Proposal	Project description	Status of project	Potential flora and vegetation impacts	Cumulative impacts comment
Wind farms					
Yathroo Wind Farm, Neoen Australia Pty Ltd	Adjacent, north	▪ Up to 65 wind turbines ▪ Battery energy storage system ▪ Associated infrastructure	In development (awaiting approval)	Clearing of no more than 10.28 ha of remnant native vegetation, 5.45 ha of isolated native trees and shrubs, and 7.33 ha of planted vegetation (native and non-native) within the 15,618 ha Project Development Envelope. Clearing extent is conservative and is likely to decrease through the detailed design process.	10.28 + 5.45 ha impact to native vegetation 7.33 ha plantations impact
Waddi Wind Farm, Waddi Wind Farm Pty Ltd	35 km north-northwest	▪ 18 wind turbines ▪ Solar farm ▪ Associated infrastructure ▪ 8 km of overhead 132 kV transmission line	In development	Clearing of 5.5 ha of native vegetation (mainly Banksia Low Open Woodland and Proteaceous Heath) within a largely cleared agricultural landscape. Will result in a minor incremental loss of Good- Excellent condition vegetation. Approximately 0.3 ha of Banksia Woodlands TEC forms part of a larger patch, and most Priority flora records (94%) are retained, therefore, cumulative regional impacts are considered low.	5.5 ha impact to native vegetation Loss of 6% Priority flora records
Yandin Wind Farm, Yandin Wind Farm Pty Ltd	15 km north	▪ 51 wind turbines	Operational	Approximately 4 ha of native vegetation has been cleared.	4 ha impact to native vegetation
Parron Wind Farm, Zephyr Energy Pty Ltd	-	▪ 79 turbines ▪ Associated infrastructure	In development	No native vegetation, TECs, PECs, or threatened flora will be affected, with clearing limited to scattered non-native vegetation on pastoral land. The design avoids intact native vegetation, resulting in only minor loss (0.04 ha) and trimming (0.19 ha) of primary native foraging habitat.	0.04 ha impact to native vegetation
Dinner Hill Wind Farm, OX2 Holdings Pty Ltd	40 km north	▪ Wind turbines	Early development	The site is largely cleared agricultural land with small patches of remnant vegetation.	-

Project	Distance from Proposal	Project description	Status of project	Potential flora and vegetation impacts	Cumulative impacts comment
Emu Downs Wind Farm, APA Group	-	▪ 48 wind turbines ▪ Associated infrastructure	Operational	The site is largely cleared agricultural land with small patches of remnant vegetation.	-
Wandoo Wind Farm, Green Wind Renewables	-	▪ 75 wind turbines	Early development	The site is largely cleared agricultural land with small patches of remnant vegetation.	-
Grevillea Wind Farm, Green Wind Renewables	35 km east	▪ 110 wind turbines	Early development	The site is largely cleared agricultural land with small patches of remnant vegetation.	-
West Hills Wind Farm, BlairFox	-	▪ 10 wind turbines	Operational	No information	-
Karakin Wind Farm, BlairFox	-	▪ 10 wind turbines	Operational	No information	-
Mining					
North Kiaka Mine at Moora By Simcoa Operations Pty Ltd	44 km northeast	▪ Quartzite mine ▪ Crushing and screening	Operational	Clearing of up to 17.12 ha of native vegetation at the North Kiaka Mine and up to 26 ha at the Moora Mine. Includes disturbance of up to 17.65 ha of the Coomberdale chert hills TEC. Significant residual impacts.	43.2 ha impact to native vegetation 17.65 ha impact to TEC
Cooljarloo Mineral Sands Project (including Cooljarloo West and Osprey Expansion) By Tronox Management Pty Ltd	45 km northwest	▪ Large-scale mineral sands mining and processing operation	Operational/ In development	Substantial long-term source of cumulative vegetation loss within the region. Approved disturbance footprint comprises approximately 6,905 ha of native vegetation, including large areas of Banksia Woodlands TEC and habitat for threatened flora species, resulting in significant residual impacts. The proposed Osprey Expansion would add up to approximately 59.14 ha of additional vegetation clearing, including 33.37 ha of Banksia Woodlands TEC.	6,905 ha impact to native vegetation Impact to TEC
Cataby Mineral Sands Project, Iluka Resources Limited	25 km northwest	▪ Open pit mining ▪ Supply of heavy mineral concentrate	Operational	Total approved native vegetation clearing of up to 162.1 ha including completely degraded vegetation, with 6.7 ha of low value Carnaby's black-cockatoo (CC) foraging habitat.	-

Project	Distance from Proposal	Project description	Status of project	Potential flora and vegetation impacts	Cumulative impacts comment
Atlas Project, Image Resources NL	44 km northwest	▪ Mineral sands mine	In development (awaiting approval)	Approved clearing of native vegetation is limited to no more than 272.2 ha within the mine development envelope and 16.2 ha within the external infrastructure development envelope. Includes disturbance of up to 206.4 ha of Banksia Woodlands PEC and approximately 3,000 priority flora species. Significant residual impacts to Banksia Woodlands.	206.4 ha of the Banksia woodlands of the Swan Coastal Plain TEC (Endangered under EPBC Act and BC Act)
Bidaminna Project, Image Resources NL	50 km southwest	▪ Mineral sands mine	In development (awaiting approval)	Disturbance footprint of up to 950 ha within a 1,950 ha Mine Development Envelope, and 50 ha within a 75 ha External Infrastructure Envelope. Native vegetation clearing limits have not been defined. The Mine Development Envelope includes Banksia Woodlands TEC, priority flora species, and remnant native vegetation.	-
Boonanarring Mineral Sands Mine, Image Resources NL	50 km south	▪ Mineral sands mine	Operational	Clearing of up to 50 ha of native vegetation. Vegetation clearing is predominantly within previously cleared agricultural land.	-
Caravel Copper Project, Caravel Minerals Limited	13.5 km east	▪ Open pit copper mine and concentrator	In development (awaiting approval)	Native vegetation clearing limits have not been defined. 85% of the mine study area is previously cleared. Native vegetation disturbance is likely to be considered significant, including some potential *Eucalypt* Woodlands of the Western Australian Wheatbelt and the *Banksia* Woodlands PEC.	Minimal. The project would disturb up to 6,767 ha within a 17,726 ha envelope. Majority (85%) of the area to be disturbed has been previously cleared for agricultural use. A minor proportion of this disturbance may be native vegetation.

6.6 Mitigation

The mitigation hierarchy, as outlined in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023b), has been applied to this Proposal

Whilst the Proposal has sought to avoid and minimise native vegetation clearing during preliminary design, the infrastructure layout will be further refined during the detailed design phase to further minimise clearing of native vegetation.

In addition to mitigations in place during planning, construction and operation, additional legislative controls may be required dependent on the Project's final proposed operational footprint. These controls include Native Vegetation Clearing Permits (NVCP). This Proposal seeks to avoid or minimise impacts to remnant vegetation within the constraints of the Project's development requirements and considers at this stage a maximum native vegetation clearing extent of 4.08 ha plus 2.94 ha scattered trees in agricultural lands.

To address any terrestrial GDEs, the riparian zones along Caren Caren Brook, and surface waterlogged areas near Turbine 76, refinements were made to the proposed infrastructure layout late in 2025, which resulted in avoidance of any direct or indirect environmental impacts to these areas by new road design and below-ground directional drilling.

Mitigation measures proposed are presented in Table 6-18, and represent industry standard and best practice measures to minimise potential impacts to significant flora and vegetation.

Table 6-18 Mitigation measures - flora and vegetation

Potential impact	Avoidance	Minimisation	Rehabilitation
Direct impacts			
Loss of native flora Loss of native vegetation, including significant vegetation types	▪ Maximum clearance of vegetation in the Development Envelope totals 668.46 ha of which 650.66 ha includes cleared agricultural lands. Within the 668.46 ha only 4.08 ha (0.42%) plus 2.94 ha of scattered trees in agricultural lands is classified as native vegetation. ▪ A maximum clearance of 0.168 ha of TEC. ▪ Optimisation of the Development Envelope during design. ▪ Utilise existing disturbed areas and agricultural land where possible to minimise clearing of native vegetation, particularly vegetation in Good condition and where conservation significant vegetation have potential to occur. ▪ Where possible, roadside vegetation will be temporarily trimmed to allow oversized infrastructure transport (rather than completely removed). ▪ Pre-clearance flora and vegetation surveys within the defined operation footprint to ensure identification of any previously unidentified occurrences of Priority flora. ▪ Micro-siting of access roads to avoid any identified Priority flora.	▪ NVCP approval for restriction on maximum extent of clearing permitted. ▪ The Construction Environmental Management Plan (CEMP) will include a vegetation clearing procedure to minimise unnecessary native vegetation clearing. This will include: – Regulatory requirements, management actions or controls to be implemented – Proposal specific land clearing training for personnel to minimise the risk of unplanned, unnecessary, or unauthorised clearing – Clear roles and responsibilities for approving and checking vegetation clearing – Approved areas of native vegetation clearing will be marked out prior to clearing and records of native vegetation clearing will be kept in a register to support compliance audits and reporting – Independent third-party audits and inspections. ▪ A **temporary** impact of approximately 3.65 ha of trimming roadside vegetation above the height of 1.8 m to allow oversized infrastructure transport to minimise the clearing required. The trimming of roadside vegetation within the Development Envelope will only be maintained during the construction phase and be allowed to regrow on completion of oversized infrastructure transport.	▪ Progressive rehabilitation is to occur following the commissioning phase, with the area to be returned to previous land use (agricultural cropping). ▪ Following the end of the construction and commissioning phases, all identified temporary construction areas will be returned to pre-construction land use activities where practical. If, due to the proximity of capital infrastructure, any area is unable to be returned to agricultural production, it will be incorporated into the Proposed Operational Footprint and rehabilitated following decommissioning. ▪ Following eventual decommissioning, all previously operational areas and any amendments which may occur during the operational life of the Proposal, are to be rehabilitated to support the continuance of the previous land use.
Indirect impacts			
Fragmentation of native vegetation	▪ The proposed engineered design through numerous refinements has avoided the need to clear near or within large patches of	▪ Where disturbance cannot be avoided, patches of degraded vegetation have been targeted as preferred option for clearing to reduce the likelihood of further significant native flora fragmentation.	▪ A post- vegetation clearing, an adaptive management and monitoring program will be implemented to monitor future

Potential impact	Avoidance	Minimisation	Rehabilitation
	vegetation in good condition and most cases excellent condition, aiming to reduce edge effect degradation on vegetation, especially priority or significant native vegetation.	▪ The only exception is one location of roadside TEC surrounded by roads and agriculture. This 0.168 ha is limited by external constraints and required for connection to the external power grid. Whilst out of the Proponents control the residual impact overall is greatly less than the original transmission line option A (discontinued).	impact or recovery of ecological values during the operational phase and eventual decommissioning and closure. ▪ Acquisition of approximately 2 ha of like-for-like *Banksia* Woodlands may be required to offset this impact (see Section 10).
Introduction or spread of weeds	Avoid the introduction of weeds with standard CEMP, including weed hygiene practices.	▪ The potential for the import and spread of weeds will be minimised through implementation of the CEMP that will include the following measures: ▪ Procedures for inspection of plant and equipment for weeds or dieback ▪ Avoidance of weed infested areas where practicable and procedures for inspection and cleaning of plant and equipment before leaving a weed infested area ▪ Prior to entering the Proposal area, the origin of fill material will be determined and certified where applicable. Where practicable, the fill should be from a quarry (i.e. not reused from another site) that has a Dieback Management Plan in place.	-
Soil contamination	▪ Eliminate storage of hazardous materials in undesignated areas. ▪ Substitute hazardous materials for non-hazardous materials where possible.	▪ Implement hazardous materials management in accordance standard procedures outlined in CEMP. ▪ Regular servicing of equipment. ▪ Appropriate bunding of potential contamination sources. ▪ Hazardous material approval process. ▪ Workplace inspections to identify potential risks of contamination. ▪ Grid connection reducing bulk fuel storage for power generation.	▪ Land contamination assessment if required. ▪ Soil remediation in situ where possible. ▪ Following eventual decommissioning, all previously operational areas and any amendments which may occur during the operational life of the Proposal, are to be rehabilitated to support the continuance of the previous land use.
Dust generation resulting in dust deposition on vegetation	▪ Avoid unnecessary clearing, where possible.	▪ The generation of dust and potential impacts will be minimised via implementation of the CEMP that will include: ▪ Use of dust suppression techniques to minimise generation of dust (e.g., watering access roads) ▪ Implementation of speed limits on access roads, informed by appropriate signage as required	▪ Progressive rehabilitation where possible to reduce exposed areas.

Potential impact	Avoidance	Minimisation	Rehabilitation
		▪ Undertaking clearing activities in a progressive manner thereby limiting exposed areas.	
Erosion and sedimentation	▪ Avoid unnecessary clearing, where possible.	▪ Erosion and sedimentation will be mitigated and managed through measures in the CEMP including the establishment of temporary erosion and sediment control measures during construction such as silt fences, diversion bunds, rock check dams and sedimentation ponds.	▪ Progressive rehabilitation where possible to reduce exposed areas.
Increased risk of fire.	▪ Hot work permit system which prohibits flame, spark or cutting activities on high or extreme bushfire hazard days.	▪ The potential for fire will be minimised via implementation of the CEMP and Project Bushfire Management Plan. Key measures to be implemented include: ▪ Hot / hazardous works will not be undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic ▪ Fire extinguishers will be in place at high-risk facilities and in site plant and vehicles ▪ The under carriage and radiators of site plant and vehicles shall be free from vegetation.	-
Reduction in health or loss of GDE and/or GDV	No GDE of GDV have been identified in the IDF and therefore impacts will be avoided	-	-

6.7 Assessment and significance of residual impact

The assessment of impacts focuses on potential residual impacts from the Proposal, based on the IDF on significant flora, all vegetation types and vegetation condition, as well as cumulative impacts following mitigation as described in the above section.

The Proposal would result in direct loss of 7.02 ha of native vegetation comprising of:

- a maximum of 4.08 ha native vegetation, and
- a total of 2.94 ha of isolated native trees in agricultural land.

The maximum canopy extents of the isolated native trees in agricultural land (also potential nesting trees) within the project footprint were derived using Landgate WA Now imagery. Canopy boundaries were digitised based on the visible crown extents, providing a conservative estimate of canopy coverage.

The following sections present an assessment of residual direct, indirect and cumulative impacts to significant flora and vegetation within the IDF.

6.7.1 Residual impacts on significant flora

No Threatened flora were recorded during the surveys; however, four Priority flora species and three potential priority flora species were recorded in the Development Envelope (Figure 6-2 and Table 6-19). The Proposal avoids directly impacting the known records of these conservation significant flora. No priority or potential Priority flora occur within the IDF. Consistent with the precautionary principle, the two unresolved Priority flora will be managed as Priority flora, until formal identification can be confirmed.

Targeted surveys have been undertaken by RPS to identify and describe the conservation significant flora species likely to be present within the survey area (Development Envelope and immediate surrounds if required) (report due May 2026). Additional targeted spring surveys are planned for 2026 which will include Priority flora identification.

Potential indirect impacts to significant flora are likely to be avoided through measures outlined in Section 6.6.

Table 6-19 Records of significant flora

Significant flora species	Records in DE	Records in IDF
Stylidium aceratum	1	0
Banksia dallanneyi subsp. *pollosta*	2,722*	0
Platysace ramosissima	50	0
Verticordia lindleyi subsp. *lindleyi*	81	0

** RPS Report Pending – preliminary data provided only, subject to change due to final report*

6.7.2 Residual impacts on vegetation types

The Proposal is not likely to have a significant impact on the representation of vegetation types in the region.

6.7.2.1 Vegetation Associations

Two of the four Vegetation Associations (VA) that occur in the IDF (1030 and 1031) have more than 30% of pre-European extent remaining statewide. The two remaining VAs, being 999 (Medium woodland, marri) and 1035 (Mosaic, Medium open woodland; marri / Shrublands; Dryandra heath), have 11.26% and 9.82% of their pre European extent remaining (Table 6-20).

Over half of the IDF (58.98%) has been classified as Association 999 Medium woodland; Marri, which is Endangered within the Swan Coastal Plain. Association 1035, Mosaic: Medium open woodland; marri /

Shrublands; Dryandra heath is Vulnerable in both subregions and Endangered statewide, with approximately 493 ha remaining statewide. This Association covers approximately 23% of the IDF.

While these four vegetation associations have been subject to regional decline from historical clearing on the Swan Coastal Plain, the Proposal will not materially reduce their extent or distribution within the bioregion (Table 6-20). Although the extent of Association 1035 shows the greatest change following implementation of the Proposal, the areas of this association within the IDF that are considered locally significant (in areas of high flora habitat and/or species diversity) is minimal (Table 6-21).

Table 6-20 Pre-European Vegetation Associations within the IDF

Vegetation Association	999, Medium woodland; Marri	1030, Low woodland; *Banksia attenuata* & *B. menziesii*	1031, Mosaic: Shrublands; Hakea scrub-heath / Shrublands; Dryandra heath	1035, Mosaic: Medium open woodland; marri / Shrublands; Dryandra heath
Pre-European extent (ha)	115,706.59	139,012.86	269,490.91	5,018.34
Current extent statewide (ha)	13,024.44	88,949.55	88,668.30	492.93
Proportion of Pre-European extent remaining statewide (%)	**11.26**	**63.99**	**32.90**	**9.82**
Area within the IDF (ha)	568.78	89.26	82.67	223.65
Proportion of Pre-European extent remaining (%) including Proposal IDF	**10.76**	**63.92**	**32.87**	**5.37**

Table 6-21 Proposal maximum disturbance area of Vegetation Associations in IDF and significance (locally/regionally)

Vegetation category	999, Medium woodland; Marri (ha)	1030, Low woodland; *Banksia attenuata* & *B. menziesii* (ha)	1031, Mosaic: Shrublands; Hakea scrub-heath / Shrublands; Dryandra heath (ha)	1035, Mosaic: Medium open woodland; marri / Shrublands; Dryandra heath (ha)
Cleared *Not significant*	4.46	2.24	3.02	2.35
Agricultural *Not significant vegetation type*	421.74	35.40	52.81	140.69
Plantations *Not significant*	0.33	-	-	1.29
Native vegetation *Not significant due to low flora habitat and/or species diversity*	0.14	1.55	0.44	0.63
Native vegetation *Locally significant in areas of high flora habitat and/or species diversity*	1.13	0.15	0.0006	0.01
Total regionally/ locally significant area	**1.13**	**0.15**	**0.0006**	**0.01**
Area within IDF (ha)	568.78	89.26	82.67	223.65

6.7.2.2 Significant vegetation

Vegetation clearing for the Proposal has been avoided and minimised as far as practicable. Up to 7.02 ha of remnant native vegetation including 4.08 ha of native vegetation and 2.94 ha of isolated native trees is proposed to be cleared in the IDF (total area 964.37 ha). Table 6-22 presents the area of each vegetation type or modified area in the IDF (Figure 6-5).

Additionally, the transportation of the turbines within the Development Envelope may necessitate some vegetation management including minor trimming of overhanging roadside vegetation above the height of 1.80 m. This trimming is temporary and is not expected to be more than 3.65 ha of native vegetation. The trimming of roadside vegetation within the Development Envelope will only be maintained during the construction phase and be allowed to regrow on completion of oversized infrastructure transport.

Table 6-22 Vegetation type and significance within IDF

Vegetation category	Vegetation type	Vegetation condition	Significance (regional/ local)	Area within IDF (ha)
Agricultural	Ag	Completely Degraded	Not significant	572.61
	Ag(Cc)	Completely Degraded	Not significant	77.64
		Degraded		0.06
	Ag(Cc)/Ag	Degraded	Not significant	0.35
Plantations	Pspp	Completely Degraded	Not significant	1.63
Cleared	-	Completely Degraded	Not significant	12.05
Native vegetation	BaXpHcMp	Degraded	Regionally significant (0.168 ha) and locally significant	0.03
		Excellent		0.15 (0.153)
		Very Good		0.01 (0.015)
	BhSpp	Degraded	Not significant	1.18
		Very Good		0.25
	CcJsHh	Degraded	Not significant	0.29
		Good		0.94
		Very Good	Locally significant - areas of high value (flora habitat and/or species diversity)	0.02
		Excellent	Locally significant - areas of high value (flora habitat and/or species diversity)	0.14
	ChPbMp	Degraded	Not significant	0.05
		Excellent		0.05
		Very Good		0.31
	ChScLb	Good	Not significant	0.04
		Very Good		0.11
	EtJsCs	Very Good	Not significant	0.47
		Good		0.02
	JspLa	Degraded	Not significant	0.02
			Total native vegetation	**4.08**
			Not assessed	295.95
			TOTAL	**964.37**

The following vegetation types in the IDF were classified as significant as outlined in Section 6.4.5.

- *Banksia Woodlands of the Swan Coastal Plain ecological community TEC* – P3 DBCA list; EN EPBC Act
- Locally significant vegetation within the survey area consists of vegetation of high value due to flora habitat and/or species diversity and vegetation analogous to Banksia Woodlands TEC, but patch size and condition too low for inclusion as TEC.

The IDF largely avoids mapped Banksia Woodlands TEC, however approximately 0.168 ha (of which 0.153 ha is in 'Excellent' condition and 0.015 ha in 'Very Good' condition) is proposed to be impacted, representing approximately 0.1% of the total surveyed Banksia Woodlands TEC (Figure 6-3).

Maximum disturbance of locally significant vegetation types (BaXpHcMp and CcJsHh) totals 0.35 ha within the IDF, with 0.32 ha in 'Very Good' to 'Excellent' Condition (Table 6-23).

The Proposal has actively demonstrated application of the Precautionary Principle through design refinements to avoid impacts on the TEC and locally significant vegetation. For example, the proposed substation connection point of the Brand Highway has been re-situated to minimise impacts to flora and vegetation (Section 11).

Approximately 0.1% (approximately 0.168 ha) of the Banksia Woodlands TEC surveyed within and immediately surrounding the Development Envelope will be impacted by this Proposal. This represents 0.04% of the 427.42 ha surveyed extent of TEC (Phoenix, 2025b). The impact may be considered potentially significant; therefore, the Proponent has provided for offsetting this clearing (Section 10).

Table 6-23 Maximum extent of clearing locally and regionally significant native vegetation within the IDF

Vegetation types	Vegetation condition	Significance (regional/ local)	Maximum direct disturbance area (ha) within IDF
BaXpHcMp	Degraded	Locally significant (includes 0.16 ha of regionally significant TEC)	0.03
	Excellent		0.153
	Very Good		0.01
CcJsHh	Excellent	Locally significant	0.14
	Very Good		0.02
Total			**0.35**

Based on the information above, the Proposal is not expected to have a significant residual impact on the biological diversity and ecological integrity of the local and regional vegetation.

6.7.2.3 Cumulative impacts to vegetation

The region surrounding the Proposal has been extensively cleared, primarily for agricultural purposes but also for mining activities, with remaining patches of remnant vegetation providing limited but valuable fauna habitat and ecological connectivity. While future renewable and mining projects in the region may result in additional localised vegetation clearing or habitat disturbance, cumulative impacts on flora and vegetation, including Protected fora, locally and regionally significant vegetation are expected to remain low. A qualitative summary of the cumulative direct impact to native vegetation by clearing and land disturbance based on currently available information is provided in Table 6-24, noting an estimated 0.06% increase in impact to the Banksia woodlands TEC is anticipated.

Table 6-24 Summary - cumulative direct impact to native vegetation

Vegetation category	Maximum direct disturbance current Proposal (IDF) (ha)	Land clearing for green energy and mining activities in the region (ha)	Estimated addition to cumulative direct impact by this Proposal (%)
TEC / PEC	0.168	257.42	**0.07**
Native vegetation of any condition	4.08 ha (plus 2.94 ha scattered trees)	8,533.11	**0.08**
Clearing of Protected flora	Nil	3,000 individual flora	**Nil**

For the wind farm projects, vegetation clearing is generally small in scale and impacts to native vegetation and Priority flora are managed through targeted design. Like this Proposal, construction footprints include a buffer to allow for micro-siting, and with pre-clearing flora and vegetation surveys serving as additional assurance that any previously unrecorded sensitive vegetation or flora will be managed. The added buffer into the construction footprint allows for redesign of access roads and other infrastructure to avoid these, if recorded. Cumulative indirect impacts are not anticipated, due to mitigation through design, construction environmental management and ongoing operational controls.

6.8 Environmental outcomes

It is anticipated that implementation of the Proposal, in conjunction with proposed mitigation measures to protect flora and vegetation (i.e. maintain biological diversity and ecological integrity in the region) will achieve environmental outcomes listed in Table 6-25.

Table 6-25 Proposed environmental outcomes - flora and vegetation

Proposed environmental outcomes	Consistent with EPA objective	How environmental outcomes can be measured and assured	Manageable under other Statutory mechanism
Native vegetation clearing will be limited to the native vegetation clearing limit of 4.08 ha and 2.94 ha canopy cover of isolated trees (based on estimated canopy cover), which will not result in significant impacts to flora and vegetation.	Yes	Defined IDF. Permit to Disturb process. CEMP during construction.	Yes, via NVCP under Part V of EP Act.
Clearing of Locally Significant Vegetation is limited to 0.35 ha.	Yes	Defined IDF. Permit to Disturb process. CEMP during construction.	Yes, via NVCP under Part V of EP Act.
Clearing of potential TEC not to exceed 0.168 ha.	Yes	Defined IDF. CEMP during construction.	Yes, via NVCP under Part V of EP Act.

It is anticipated that the Proposal will have no significant impact on flora and vegetation.

The proposed environmental outcomes are consistent with the EPA objective "*to protect flora and vegetation so that biological diversity and ecological integrity are maintained*".

7 Terrestrial fauna

7.1 EPA environmental factor/s and objective/s

The Terrestrial Fauna Environmental Factor under the EPA guidelines defines fauna as, "*animals living on the land or using land (including aquatic systems) for all or part of their lives. Terrestrial fauna includes vertebrate (birds, mammals including bats, reptiles, amphibians, and freshwater fish) and invertebrate (arachnids, crustaceans, insects, molluscs and worms) groups*" (EPA, 2016c).

The objective of the Terrestrial Fauna Environmental Factor is, "*to protect terrestrial fauna so that biological diversity and ecological integrity are maintained*" (EPA, 2016c).

All conservation significant terrestrial fauna species and habitat relevant to the Proposal are addressed in this section, and additional information specific to Matters of National Environmental Significance (MNES) is provided Section 11.

7.2 Relevant policy and guidance

Relevant legislation, policies and guidelines relevant to the terrestrial fauna environmental factor is provided in Table 7-1.

Table 7-1 Policy and guidance relevant to terrestrial fauna

Author, Year	Title	Consideration
Key factor guidance		
(EPA, 2016c)	Environmental Factor Guideline: Terrestrial Fauna	Describes the EPA Environmental Factor Terrestrial Fauna the associated objective and EIA considerations, as well as the environmental values of terrestrial fauna and their significance.
Technical guidance		
(EPA, 2020b)	Technical Guidance: Terrestrial Vertebrate Fauna Surveys for EIA	State-level technical guidance on the accepted fauna survey methodologies for different regions within WA under EIA.
(EPA, 2009)	Technical Guidance: Sampling of Short-Range Endemic Invertebrate Fauna	State-level technical guidance on the accepted short-range endemic fauna sampling techniques for different regions within Western Australia under EIA.
Specific threatened species guidance		
(DAWE, 2022)	EPBC Act Referral Guidelines for 3 threatened black cockatoo species: Carnaby's Black Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Black Cockatoo (vulnerable) *Calyptorhynchus baudinii*, and Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso*	Guidelines on the referral of under the EPBC Act for 3 species of Western Australian black cockatoos listed as threatened. Replaces the previous guidelines from 2012.
(DEWHA, 2010b)	Technical Guidance: Survey guidelines for Australia's threatened birds	Survey guidelines for the methodology considered appropriate in conducting presence/absence surveys for birds listed as threatened under the EPBC Act.
(DEWHA, 2010a)	Survey Guidelines for Australia's threatened bats	Guidelines for detecting bats listed as threatened under the EPBC Act.
(EPA, 2019)	Technical Guidance: Carnaby's Black Cockatoo in EIA in the Perth and Peel Region	Details the issues affecting Carnaby's Black Cockatoo (CC), focusing on the Perth and Peel portions of the Swan Coastal Plain region; outlining known threats and evaluation of risks to inform environmental assessment, management and monitoring.

Author, Year	Title	Consideration
(GoWA, 2011)	WA Environmental Offsets Policy	The offset policy and guidelines have been considered in relation to the definition of significant residual impacts and the proposed offset strategy for the Proposal.
(GoWA, 2014)	WA Environmental Offsets Guidelines	The guidelines expand on the offsets policy to ensure that the basis for decision-making on environmental offsets is understood by decision-makers, government officers, industry and the community and consistently applied by decision-makers.

7.3 Studies and survey efforts

A summary of survey methods and effort for the terrestrial fauna studies completed to date is provided in Table 7-2. Survey methods for terrestrial fauna were developed and implemented in accordance with the policy and guidance outlined in Section 7.2.

7.3.1 Surveys

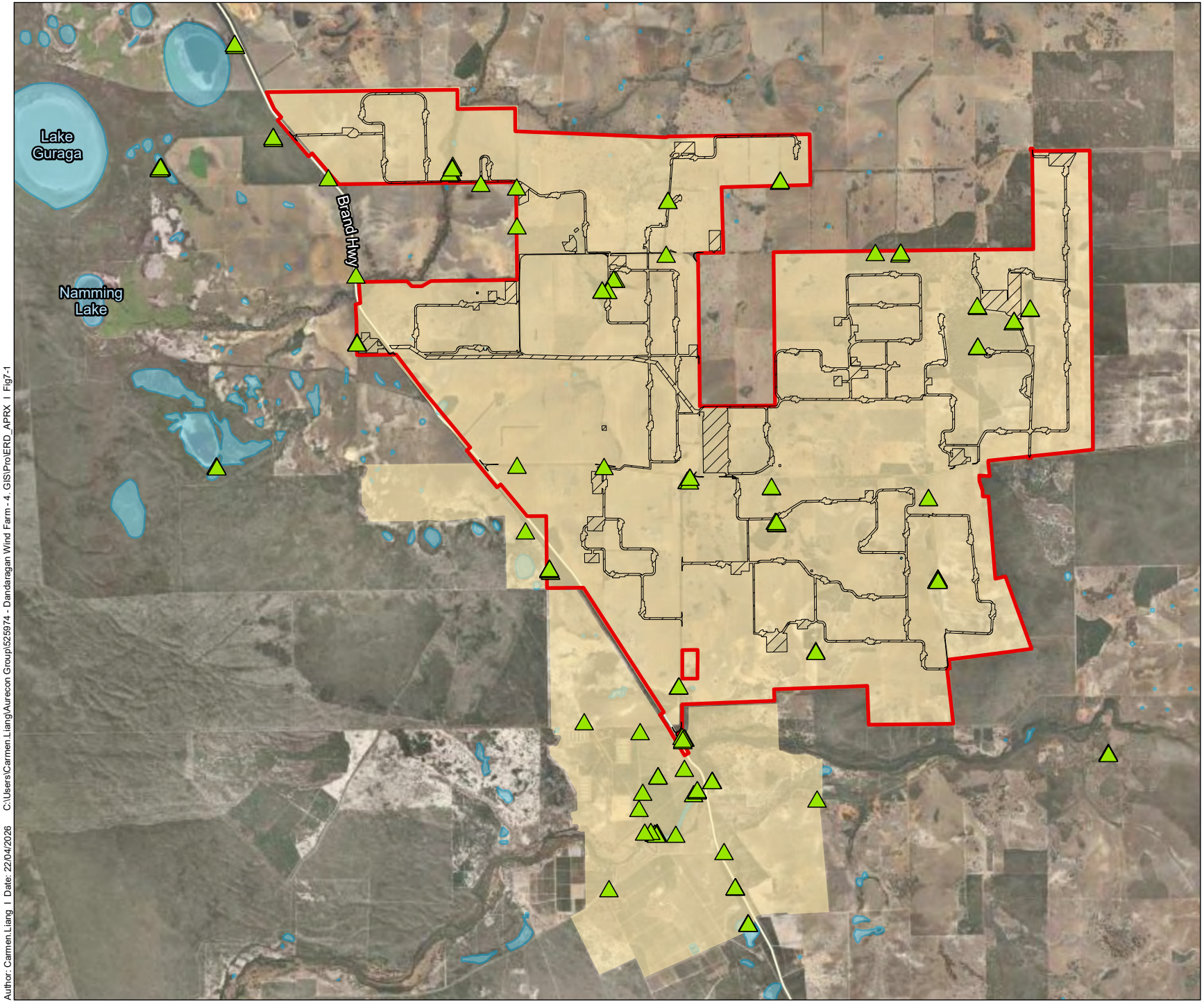
The following survey areas for terrestrial fauna are described in Table 7-2 and illustrated in Figure 7-1 and Figure 7-2. The Basic and Targeted terrestrial fauna and Targeted Black Cockatoo survey area totalled 15,823.00 ha. Bird and Bat utilisation surveys area totalled 12,555.50 ha.

Terrestrial fauna surveys and assessments for this Proposal were undertaken by Phoenix Environmental Sciences (Phoenix) throughout 2024 and 2025. These fauna reports were used to conduct an EIA for this environmental factor.

The reports are provided in Appendix O – R.

Table 7-2 Summary of technical studies for terrestrial fauna

Consultant/year	Report title	Total survey extent (ha)	Survey type/ timing	Summary of methodology
Phoenix (2025a) (Appendix O)	Basic and Targeted terrestrial fauna survey for the Marri Wind Farm Proposal	15,823.00	Basic and Targeted ■ 5-9 Aug 2024 ■ 26-30 Aug 2024 ■ 11-14 Aug 2025	Phoenix completed a Basic and Targeted Terrestrial Fauna Survey for the Marri Wind Farm Proposal, including the Development Envelope and the surrounds of a proposed transmission line. The transmission line connection south of the Development Envelope was subsequently move north within the Development Envelope and the southern route is no longer part of the Proposal ■ The survey involved a desktop review, basic field surveys, and targeted investigations. ■ Desktop studies reviewed existing fauna records (40 km for vertebrates; 100 km for SRE invertebrates) to identify key species, habitats, and guide fieldwork. ■ Field surveys included habitat mapping, targeted searches for significant species, black cockatoo habitat assessments, and SRE invertebrate sampling. ■ The surveys confirmed desktop findings and provided baseline data to support impact assessment.
Phoenix (2025c) (Appendix P)	Targeted black cockatoo survey for the Marri Wind Farm Project		Targeted ■ 11-13 Mar 2025 ■ 24-28 July 2025 ■ 11-14 Aug 2025	Survey undertaken by Phoenix Environmental Sciences to identify potential black cockatoo breeding habitat within the development envelope. ■ Included a desktop review and field-based assessments. ■ Desktop review compiled black cockatoo records within a 40 km buffer to confirm species presence and known breeding or roosting locations. ■ Field surveys systematically identified all accessible potential nesting trees (PNTs) based on DBH thresholds and suitable hollows. ■ Tree species, size, condition, hollow features, and evidence of use were recorded. ■ Opportunistic observations of black cockatoo presence, foraging, and roosting were also collected and supplemented by concurrent fauna surveys.
Phoenix (2026) (Technical Memorandum Appendix Q) (Final report – in prep)	Technical Memorandum – Summary of data collected from phase 1 to 7 of the bird and bat utilisation surveys for the Marri Wind Farm Project	12,555.50	Seven trips completed over five seasons in 2024 and 2025, with an addition trip to be completed May 2026. See Table 7-3 for further details.	■ A minimum of 21 sites were surveyed each season (12 Bird and Bat (BBUS) sites and nine MNES sites). ■ BBUS sites used bird point counts, ultrasonic bat call recordings, and acoustic bird call recordings. ■ MNES sites included at least one bird point count per season. ■ Habitat assessments were conducted across the study area to map broad fauna habitats. ■ Opportunistic fauna observations were recorded across the investigation area and surrounding region in all seasons.
	Ongoing - Bird and Bat utilisation surveys Final Report for the Proposal (Due mid 2026)	N/A	Planned for May 2026	



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- Development Envelope
- Indicative Disturbance Footprint
- Phoenix Survey Area
- Waterbodies (LGATE-016)
- Survey Sites (Basic and Targeted)

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang I Date: 22/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX I Fig7-1

Marri Wind Farm Environmental Review Document

Figure 7-1 Terrestrial fauna and Short Range Endemic Survey Extent

Version: 1
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Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:110,000

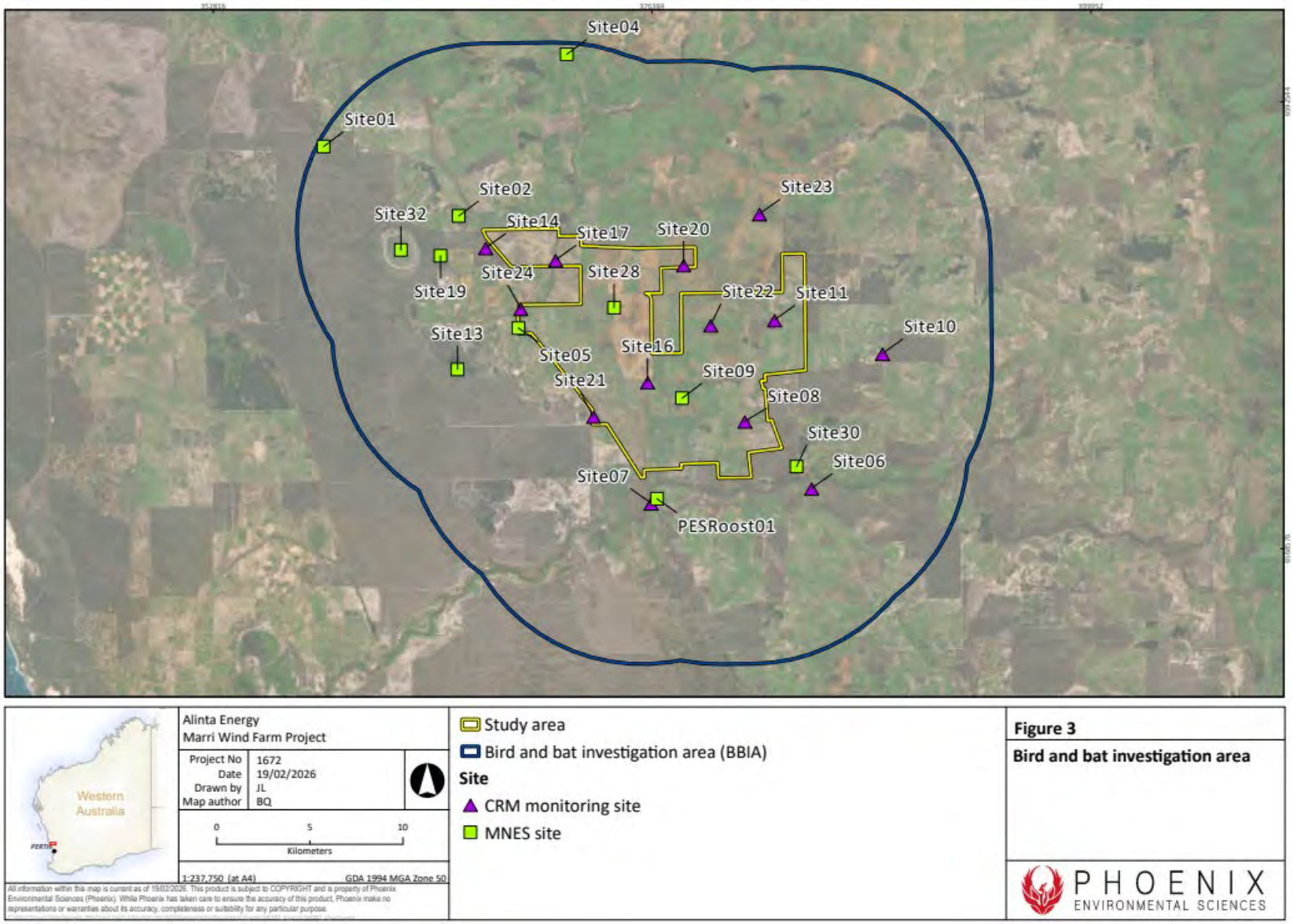


Figure 7-2 BBUS survey extent

7.3.1.1 Basic and targeted terrestrial fauna

Phoenix undertook a Basic and Targeted Terrestrial Fauna Survey (Phoenix, 2025a) for the Marri Wind Farm Proposal, including the wind farm Development Envelope what was initially proposed as a transmission easement. This easement no longer forms part of the Proposal. The survey program comprised a desktop assessment, a basic field survey, and targeted field investigations.

The desktop review collated existing fauna records within a 40 km buffer for vertebrate fauna and a 100 km buffer for short range endemic (SRE) invertebrates, drawing on state and Commonwealth databases, previous survey reports, and relevant literature.

Field surveys were conducted over three trips in 5-9 August 2024, 26-30 August 2024, and 11-14 August 2025 and were timed to maximise detectability of vertebrate fauna and SRE invertebrates. Survey methods involved:

- Habitat mapping,
- Opportunistic fauna observations,
- Targeted searches for Threatened and Priority species,
- Black cockatoo habitat assessments (including foraging habitat and potential nesting trees), and
- Systematic sampling for SRE invertebrates within habitats considered to have SRE potential.

Fauna habitats were mapped and described across the survey area, with targeted survey effort focused on habitats most relevant to conservation-significant species. For SRE invertebrates, sampling targeted leaf litter, soil, and microhabitats within native vegetation, with specimens identified by specialist taxonomists and classified according to SRE status using accepted criteria. The surveys were designed to verify desktop findings, confirm the presence or likelihood of significant species, and provide sufficient data to support impact assessment.

7.3.1.2 Targeted black cockatoo survey

Phoenix undertook a Targeted Black Cockatoo Survey (Phoenix, 2025c) to identify and characterise potential breeding habitat within the Development Envelope. The survey methodology comprised a desktop review and field-based assessments.

Field surveys were conducted across three survey periods (11–13 March, 24–28 July, and 11–14 August 2025) and targeted the proposed turbine footprint, expansion areas, and transmission line footprint. Survey effort focused on systematically identifying all potential nesting trees (PNTs) within accessible areas of the Development Envelope. PNTs were defined based on diameter at breast height thresholds (≥300 mm for Wandoo and ≥500 mm for other eucalypts) and the presence of hollows with characteristics potentially suitable for black cockatoo breeding. For each PNT, tree species, size, condition, hollow presence and characteristics, and evidence of use such as chew marks were recorded. Opportunistic observations of black cockatoos, foraging evidence, and roosting behaviour were also recorded.

7.3.1.3 Bird and bat utilisation surveys

A bird and bat utilisation survey (BBUS) (Phoenix, 2026) has been underway since August 2024. Seven survey events have been undertaken (Phoenix, *in prep*), and an eighth survey is scheduled for May 2026 (Table 7-3). Over the seven survey events, a minimum of 21 sites were sampled each season both within the Development Envelope and at key locations surrounding the Development Envelope (including 12 BBUS and nine MNES monitoring sites). In addition, opportunistic sitings were recorded at other locations. A total of 27 sites / sitings were located within or directly adjacent to the Development Envelope.

The following methods were employed at each BBUS monitoring site per season:

- Point counts for birds
- Ultrasonic bat call recordings
- Acoustic bird call recordings

The survey area covered approximately 12,555.50 ha, with a 10 km buffer applied to define a broader Bird and Bat Investigation Area (BBIA) to support regional context assessment.

Table 7-3 Survey dates of BBUS

Phase	Survey Type	Season	Dates
1	Utilisation survey trip 1a	Winter	5 – 9 August 2024
	Utilisation survey trip 1b	Winter	26 - 30 August 2024
2	Utilisation survey trip 2	Summer	9 – 13 December 2024
3	Utilisation survey trip 3	Summer	2 – 6 February 2025
4	Utilisation survey trip 4	Autumn	5 – 9 May 2025
5	Utilisation survey trip 5	Winter	4 – 8 August 2025
6	Utilisation survey trip 6	Spring	10 – 17 November 2025
7	Utilisation survey trip 7	Summer	12 – 16 January 2026
8	Utilisation survey trip 8	Autumn	Ongoing – Planned for May 2026 (Date TBC)

Survey design evolved after Phase 1 to align with a before-after control-impact (BACI) survey design. Monitoring sites were designed based on four broad habitat types and were referred to as the Collision Risk Modelling (CRM) monitoring sites (Figure 7-2). These include:

- Drainage line
- Open woodland
- Shrubland
- Cleared land

The CRM monitoring sites were further revised to include two reference sites within the survey area and at least one reference site outside the survey area but within the BBIA. Additional sites were monitored each season to target MNES species, located within habitats supporting migratory shorebirds and black cockatoos (identified as likely to be impacted). Habitat assessments were undertaken throughout the survey area to define and delineate the extent of broad fauna habitats present in the BBIA. Opportunistic sightings were made throughout the BBIA and surrounding region across all seasons

The BBUS program is not yet complete, and final conclusions will be informed by the completion of the remaining survey phase and subsequent data analysis. A Technical Memorandum has been produced with a summary of data collected to date and can be found in Appendix Q.

7.3.2 Adequacy of surveys

Surveys were undertaken in accordance relevant policy and guidance as outlined in Table 7-1, by suitably qualified and experienced ecologists. The fauna studies were consistent with the objectives of the EPA guidelines (Table 7-1) with basic level vertebrate fauna surveys with targeted sampling components.

Some areas within the Development Envelope were excluded from project development and survey activities due to their proximity to landowner residences. These 'exclusion areas' will not host any wind farm infrastructure and as such were excluded from survey effort as discussed below.'

7.3.2.1 Basic and targeted terrestrial fauna

The combination of comprehensive desktop review and multi-disciplinary field surveys provided a robust understanding of fauna habitats, species presence, and conservation values across a largely modified agricultural landscape. Survey effort was sufficient to characterise the fauna assemblage, identify Threatened and Priority species present, and assess the likelihood of additional significant species occurring within the survey area.

Surveys were undertaken across appropriate seasons and aligned with EPA expectations for basic and targeted terrestrial fauna surveys. Targeted assessments for key taxa, including black cockatoos and SRE invertebrates, were appropriately focussed on higher-value habitats and features such as remnant native vegetation, drainage lines, and potential nesting trees.

Limitations include:

- Access restrictions prevented survey of some exclusion areas, particularly within parts of the transmission footprint, limiting direct field verification in these locations.
- The survey area is highly modified and native vegetation is fragmented, which constrained the availability of high-quality fauna habitat and reduced detectability for some species.

7.3.2.2 Targeted black cockatoo survey

Multi season field effort enabled comprehensive identification and characterisation of PNTs across the highly modified agricultural landscape. The survey successfully documented the distribution, abundance, and characteristics of PNTs and identified trees containing hollows potentially suitable for breeding.

The survey also identified key contextual values such as foraging habitat, movement corridors, and proximity to known and newly identified night roosts along the Moore River, supporting a robust understanding of black cockatoo use of the broader landscape.

Limitations identified include:

- Surveys were undertaken outside the black cockatoo breeding season, meaning active breeding could not be confirmed and hollow depth could not be assessed using non-intrusive methods. Consequently, hollows classified as “possibly suitable” could not be confirmed as suitable or occupied. Follow up investigations using pole cameras during the breeding season are proposed to address this limitation.
- Access restrictions also limited survey completeness. Some properties within the turbine and proposed transmission footprints, and all private properties within the transmission line footprint, were inaccessible. Additionally, cropping constrained access through several paddocks, meaning not all potential nesting trees within the survey area could be surveyed.

Despite these constraints, the limitations do not materially compromise the suitability of the results for environmental assessment. The precautionary approach has been adopted, treating all PNTs as having potential future breeding value and recommending avoidance where practicable.

7.3.2.3 Bird and bat utilisation surveys

The survey program is considered robust and appropriate for informing wind farm impact assessment. Surveys have been undertaken across all seasons, allowing for the capture of seasonal differences in bird and bat activity, including migration, breeding, and non-breeding periods. The use of multiple complementary survey techniques (visual, ultrasonic, and acoustic) provides a strong empirical basis for assessing habitat utilisation and collision risk.

Survey effort is substantial, including over 72 hours of bird point counts, 290 nights of bat ultrasonic recording, and 268 nights of acoustic bird recording. The inclusion of targeted MNES monitoring, particularly for threatened black cockatoo species and migratory shorebirds, aligns with EPBC Act pathways and Commonwealth wind farm guidance. The BACI-style design further strengthens the dataset by supporting comparisons between impact and reference sites.

Several limitations are acknowledged, including:

- Acoustic bird call data had not been fully analysed at the time of reporting, meaning the total bird species list may increase once analysis is complete.
- Final turbine parameters, including the rotor swept area, were not available during reporting. As a result, flight height observations can only be interpreted in general terms and not directly assessed against confirmed turbine dimensions.

- Access constraints to some private properties limited the ability to undertake direct monitoring at all known black cockatoo roost sites, requiring reliance on indirect observations in some instances.
- Flight height data were not collected for species that were not observed in flight, including some migratory shorebirds and a priority waterbird species.
- Initial monitoring locations were influenced by a draft turbine layout, and any substantive changes to the project footprint may necessitate additional targeted surveys.

The BBUS program is not yet complete, and final conclusions will be informed by the completion of the remaining survey phase and subsequent data analysis. Collision risk assessment will form part of the final BBUS report which will also incorporate data from the planed May 2026 survey.'

7.4 Receiving environment

The following section presents terrestrial fauna values as described in surveys outlined in Section 7.3

7.4.1 Regional fauna habitat and land systems

A total of five land systems (Table 1-11 and Table 1-12) have been identified within the Development Envelope (Phoenix, 2025a). These land systems consist of the Bassendean, Capitella, Dandaragan, Moore River and Rowes Systems. The most prominent land system within the Development Envelope is the Dandaragan System which is defined as *"subdued dissected lateritic plateau, undulating low hills, and rises with narrow alluvial plains. Variable deep sands and sandy gravels plus minor earths, duplexes, and clays. Marri woodlands and shrublands*" (Phoenix, 2025a). Eight geological formations are located across the Development Envelope. These formations underpin the geological features summarised in Section 1, Table 1-11 and Figure 1-8 (Surface Geology of Australia 1:1,000,000 scale data base for Western Australia (Stewart et al, 2008)).

7.4.2 Fauna habitats

Phoenix (2025a) identified fauna habitats across an area of 15,823.00 ha and identified six broad fauna habitat types within the Development Envelope and potential transmission line footprint (Figure 7-3), excluding cleared areas containing infrastructure. The majority (93.08%) of the Development Envelope and potential transmission area footprint consists of cleared areas (including isolated paddock trees) followed by Open Jarrah-Marri woodland (3.72%), Banksia heath and woodland (1.63%), drainage line and riparian (<1%), pine plantations (<1%) and wetlands (<1%). The final (<1%) is unsurveyed areas within the updated Development Envelope. Banksia heath and woodland, open Jarrah-Marri woodland, drainage line and riparian habitat types were restricted to pockets within larger disturbed/cleared and agriculture areas and surface water courses, connected by remnant roadside vegetation.

Table 7-4 summarises the broad fauna habitat types in the Development Envelope and considers their suitability for conservation significant terrestrial fauna.

Habitat condition across the Development Envelope varied considerably, from Completely Degraded to Excellent condition.

According to Phoenix (2025a) foraging, roosting, and breeding activities of conservation-significant black cockatoos (Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoo) are supported by the habitat provided by:

- Banksia heath and woodland
- Open Jarrah-Marri woodland

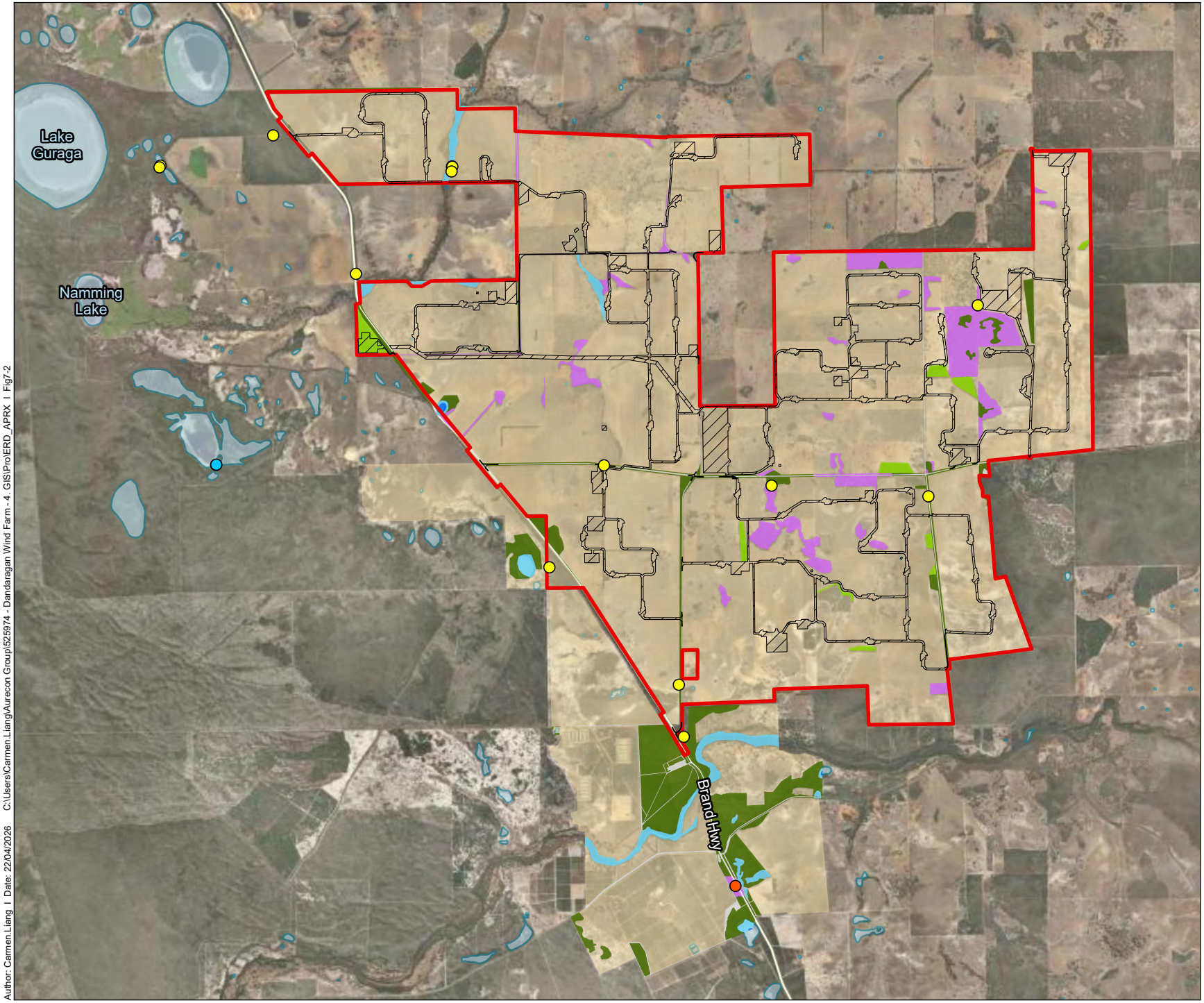
Furthermore, vegetation corridors provide connections between areas of remaining habitat which benefit resident fauna through provision of protection from predators, habitat and food sources. Vegetated corridors occurring within the Development Envelope include roadside verges, drainage lines associated with roadside verges, and riparian zones (Phoenix, 2025a).

Phoenix (2025a) determined that minimal interconnectivity occurs within the agricultural paddocks which are largely cleared and have only isolated mature individuals or a small number of trees. Isolated trees are limited to providing refuge points during fauna transversing open areas. Fauna species have adapted to the modified environment within paddocks used for agricultural purposes as these areas provide foraging habitat.

Table 7-4 Fauna habitat extent within the Development Envelope

Fauna habitat type	Description of habitat type	Suitability for Conservation Significant Terrestrial Fauna	Extent within DE (ha)	Extent within DE (%)
Cleared – agriculture and infrastructure	Areas predominantly cleared for agricultural use, roads, or urban developments.	Remnant isolated trees found scattered in agricultural areas may providing foraging habitat and potential roosting/breeding habitat for black cockatoos. Farm dams scattered in agricultural areas provide drinking habitat. Black cockatoos are known to forage on the seeds of introduced species including canola, which was present as a crop in the study area.	11,559.72	92.60
Cleared – infrastructure			59.70	0.48
Open Jarrah-Marri woodland	Open *Marri / Corymbia calophylla* woodland over mixed trees and shrubs including *eucalypt* saplings, All*ocasuarina, Xanthorrhoea, Banksia, Acacia, peas*, and *Hakea*.	Provides foraging habitat and potential roosting/breeding habitat for black cockatoos.	464.00	3.72
Banksia heath and woodland	*Banksia* shrubland including *Acacia*, *Xanthorrhoea*, and woolly bush with scattered trees of E*ucalypts*, *Nuytsia* and *Allocasuarina*.	Foraging habitat for black cockatoo species.	203.93	1.63
Pine plantations	Pine plantations lacking understory.	Pine plantations provide foraging and roosting habitat for black cockatoo species.	102.96	< 1
Drainage line and riparian	Drainage line and riparian zones of wetlands composed of Marri and/or Melaleuca lacking understory.	Eucalyptus and Marri trees provide foraging habitat and potential roosting/breeding habitat for black cockatoos.	55.48	< 1
Wetlands	Permanently and seasonally inundated areas.	Provides drinking habitat for black cockatoos.	2.44	< 1
Un Surveyed Areas	Areas located outside the Study Area however within the Development Envelope. This area is predominantly roads and not included within the IDF.	N/A	35.33	< 1
Total			**12,483.55**	**100**

Source: Phoenix (2025a; 2025c)



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- Development Envelope
- Indicative Disturbance Footprint
- Waterbodies (LGATE-016)

Significant Fauna Record

- Blue-billed Duck
- Carnaby's Black Cockatoo
- Forest Red Tailed Black Cockatoo

Fauna Habitat

- Banksia heath and woodland
- Drainage line & riparian zone
- Open Jarrah-Marri woodland
- Pine plantation
- Wetland
- Cleared - agriculture
- Cleared - infastructure

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang | Date: 22/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX | Fig7-2

Marri Wind Farm Environmental Review Document

Figure 7-3 Terrestrial Fauna Habitat Types

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:110,000

7.4.3 Habitats for significant species

7.4.3.1 Migratory shorebird habitat

The most important sites for migratory shorebirds in Western Australia are located along the northwest coast. Eighty Mile Beach and Roebuck Bay are internationally significant for 16 and 18 species respectively and regularly support some of the highest shorebird numbers recorded in the country (Umwelt, 2026).

In the south-west of Western Australia, regionally important habitat occurs at Peel-Harvey Estuary, Wilson Inlet, and Albany Harbour, with shorebirds also using coastal lakes and estuaries as seasonal water levels recede. The closest of these to the Development Envelope is Peel-Harvey, which is 180 km to the south (Umwelt, 2026).

Lancelin is the closest nationally important site for migratory shorebirds and is located 30 km west of the Development Envelope. In the area surrounding the Development Envelope, wetlands to the west are located within the Lesueur sandplain and are likely to provide more suitable habitat. Closer to the Development Envelope (approximately 5 km), Lake Guraga and Namming Lake (Figure 7-1) also offer suitable habitat for migratory shorebirds (Umwelt, 2026).

Phoenix (2025a) conducted a likelihood of occurrence assessment for the 55 migratory bird species identified during database searches and field surveys. This assessed the likelihood of each of the wetlands within the Development Envelope to support one or more of the migratory shorebird taxa likely to occur within the Development Envelope.

A total of 21 migratory shorebirds (Endangered or Migratory Species listed under the EPBC Act and/ or the Listed Migratory Species under the BC Act) (hereafter referred to as EN/Mig, EPBC Act and/or Mig (BC Act)) were recorded or considered possibly occurring within the drainage lines and/or wetlands. Fork-tailed Swift (*Apus pacificus*) may possibly occur in all habitat types within the Development Envelope, however none were recorded within the Development Envelope (Phoenix, 2025a). It is possible that wetlands in the Development Envelope and the surrounds may be used opportunistically by small numbers of Migratory birds during their time in Australia (Phoenix, 2025a).

7.4.3.2 Blue-billed Duck habitat

Blue-billed Duck is almost wholly aquatic (Phoenix, 2025a). It occurs in the south-west of Western Australia and is associated with permanent and seasonal freshwater water bodies including lakes and swamps on the Swan Coastal Plain. However, more suitable habitat for the Blue-billed Duck occurs outside of the Development Envelope to the west (Figure 7-3). These areas include Lake Guraga and Namming Lake on the Lesueur Sandplain (Umwelt, 2026).

In summary, the Development Envelope *does not* contain any permanent waterbodies considered to be suitable for Blue-billed Duck breeding; however, may opportunistically use the limited wetland habitats available within the Development Envelope to forage or flyover in search of more suitable wetlands to the west of the Development Envelope (Phoenix, 2025c).

No individuals of this species were recorded within the Development Envelope (Phoenix, 2025c).

7.4.3.3 Black cockatoo habitat

The potential value of habitat types for black cockatoo foraging, roosting and breeding was assessed across the Development Envelope (Phoenix, 2025c) Habitats within the IDF were further assessed by Phoenix for suitability to support black cockatoos as outlined below.

Foraging habitat

Foraging values for each fauna habitat type were assessed at a high level for Carnaby's Black Cockatoo ((Zanda latirostris) (CC) and Forest Red-Tailed Black Cockatoo (FRTBC) (Calyptorhynchus banksii naso) based Bamford's habitat quality score (HSQ) (Bamford, 2021) methodology and includes: on site condition,

site context and species stocking rate. Vegetation within each fauna habitat type was assessed and assigned a foraging value of None, Low, Moderate, High or Very Good to Excellent (Table 7-5).

As shown in Table 7-5, approximately 91.5% of the total surveyed area was assessed as providing low to no foraging value for CC as it consisted mainly of agricultural canola crop (which is a short-term seasonal food source) and sparsely scattered Marri (Phoenix, 2025c). High quality foraging habitat was restricted to Banksia heath and woodland habitat located across 5.3% of the surveyed area for CC (and low for FRTBC).

Pine plantations, were assessed as having moderate foraging value to CC (and Low to FRTBC) and drainage line and riparian habitat types were assessed to be moderate for both CC and FRTBC. Although the majority of the surveyed area received a low habitat foraging value score, it is likely that both CC and FRTBC will traverse lower scoring habitats to access higher value foraging areas within the survey area and in the surrounding region.

Table 7-5 Carnaby Black Cockatoo and Forest Red-Tailed Black Cockatoo foraging habitats within the fauna survey area

Fauna habitat type	Extent of study area	Habitat Foraging Quality (i.e., Value) for CC	Habitat Foraging Quality (i.e., Value) for FRTBC
Open Jarrah-Marri woodland	1.2%	Moderate	Moderate
Banksia heath and woodland	5.3%	High	Low
Pine plantations	0.7%	Moderate	Low
Drainage line and riparian	1.3%	Moderate	Moderate
Wetlands	<0.1%	Low	Low
Cleared – agriculture and infrastructure	Agriculture - 90.8% Infrastructure - 0.7%	Low	Low
Unmapped Areas	-	N/A	N/A

* Areas based on fauna survey area of 15,823.00 ha which incorporates south of the Development Envelope including Moore River.

Source: Phoenix (2025a)

High value foraging areas for Black Cockatoo species within the surrounding region, include the extensive Banksia woodland and heathland habitat to the west of the survey area, the wooded watercourses along Moore River and potentially the pine plantations scattered around the survey area, noting a recent survey undertaken by RPS recorded clearing of approximately 12.5 ha of the identified pine plantation habitat (RPS, 2025). See Section 6.4 for more information.

Roosting habitat

Tree species within the surveyed area that are known to provide roosting habitat for Black Cockatoos include *Eucalyptus* spp., *Corymbia calophylla* and *Pinus* spp. (CC only) and are located within the IDF.

Although there are no known roosting sites within the Development Envelope, three night roost sites were identified up to 3 km south, outside the Development Envelope (Phoenix, 2025c). Locations of these sites are provided in Figure 7-4.

Breeding habitat

A total of 1,686 PNTs were recorded during the surveys with a total of 1,579 located within the Development Envelope (Table 7-6, Figure 7-4) (Phoenix, 2025c). PNTs recorded within the Development Envelope included Marri (*Corymbia calophylla*) (1,488 PNTs), Tuart (*Eucalyptus gomphocephala*) (43 PNTs), River Gums (*Eucalyptus camaldulensis*) (35 PNTs), Jarrah (*Eucalyptus marginata*) (18 PNTs), Wandoo (*Eucalyptus wandoo*) (11 PNTs), Blackbutt (*Eucalyptus todtiana*) (5 PNTs), Unknown eucalypt (*Eucalyptus sp.)* (4 PNTs) and Powderbark Wandoo (*Eucalyptus accedens*) (3 PNTs).

Initial surveys were predominantly undertaken outside the breeding season. Of the 1,686 PNTs identified within the survey, 116 were found to contain one or more hollows; however, 58 of these did not meet the

criteria required to host breeding black cockatoos i.e. hollow openings were not of suitable diameter, orientation, and/or of suitable depth. A total of 21 hollows were considered possibly suitable and 37 were considered suitable for black cockatoo breeding. Of the 58 trees with suitable or possibly suitable hollows, one was occupied by Carnaby's Cockatoo and nine were occupied by other species such as the European Honeybee, Galah, Boobook or Corella. Hollows occupied by other species could potentially host black cockatoos if vacated. Of the remaining PNTs meeting the required size and orientation, 16 showed evidence of recent chew marks, 20 showed evidence of old chew marks and the remaining 12 had no evidence of use (Phoenix, 2025c). This breeding tree is located 2.7 km southeast of the survey area near other known breeding trees (Phoenix, 2026) (Figure 7-4). The BBUS is continuing and expected to conclude mid-2026.

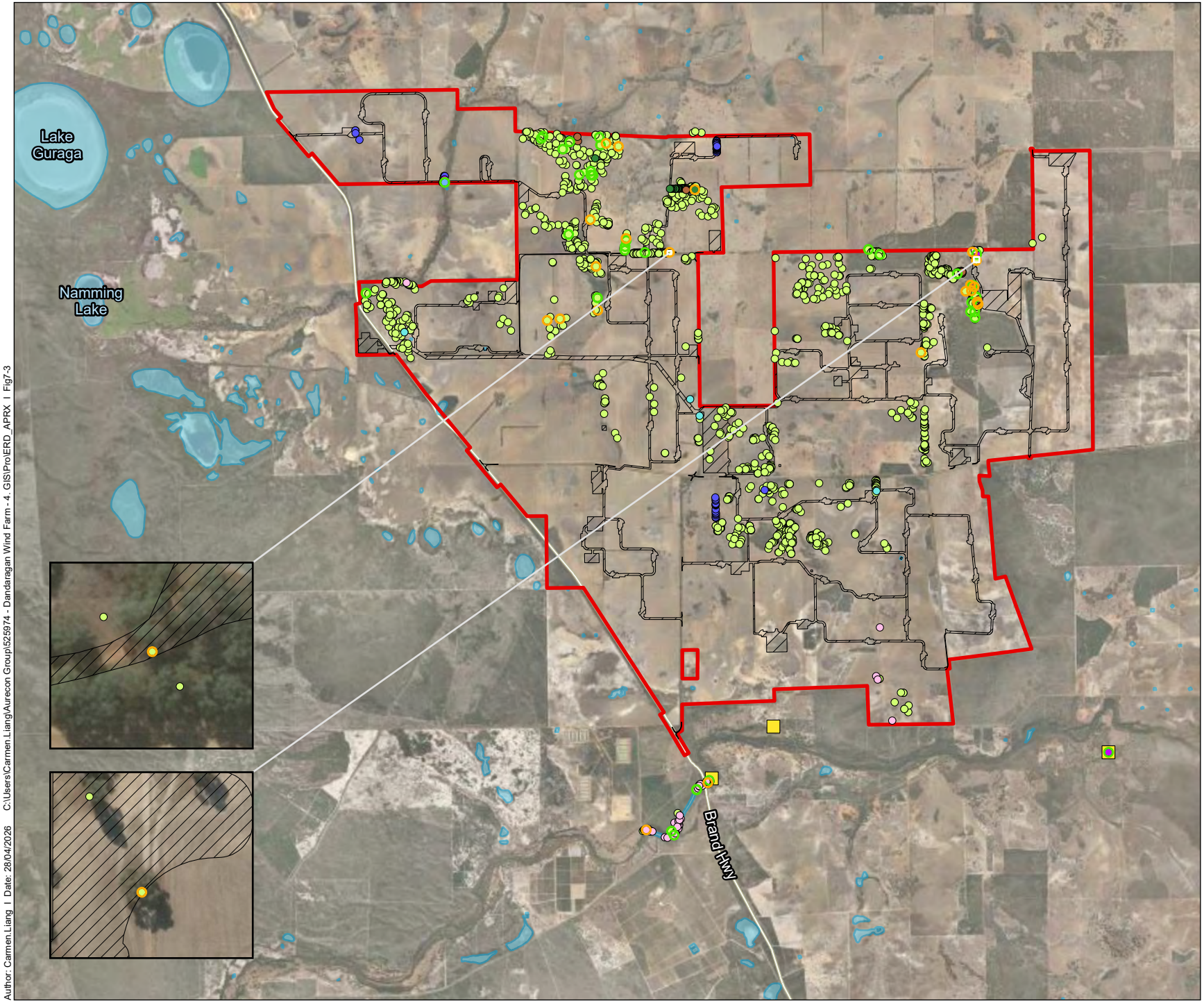
The location of Black Cockatoo PNTs within and in the vicinity of the Development Envelope are shown in Figure 7-4.

Of the 1,579 PNT identified in the Development Envelope, suitability of the hollows for nesting was assessed with a total of 19 identified as being possible hollow suitability and 29 having possible hollow suitability.

Table 7-6 Black cockatoo PNT within the Development Envelope

Tree species	Foraging Type	Total PNT within Survey Area	PNTs with hollows identified within Survey Area	Hollow Suitability (total survey area)			Number of PNTs within DE
				Unsuitable	Possible	Suitable	
Coastal Blackbutt (*Eucalyptus todtiana*)	Old Foraging	5	0	0	0	0	5
Unknown eucalypt (*Eucalyptus* sp.)	-	83	6	0	2	4	6
Jarrah (*Eucalyptus marginata*)	-	18	5	2	2	1	17
Marri (*Corymbia calophylla)*	Intermediate, active and old Foraging	1,488	101	55	17	29	1,460
Powderbark Wandoo (*Eucalyptus accedens*)	-	3	1	0	0	1	3
River Gum (*Eucalyptus camaldulensis*)	-	35	0	0	0	0	35
Tuart (*Eucalyptus gomphocephala*)	Old and recent foraging	43	0	0	0	0	43
Wandoo (*Eucalyptus wandoo*)	-	11	3	1	0	2	10
Total	**-**	**1,686**	**116**	**58**	**21**	**37**	**1,579**

Source: Phoenix (2025c)



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Development Envelope

Indicative Disturbance Footprint

Waterbodies (LGATE-016)

Known Roosting Sites

Suitability of Potential Nesting Tree

Possible

Suitable

Potential Nesting Tree Species

Blackbutt

Eucalyptus sp.

Jarrah (Eucalyptus marginata)

Marri (Corymbia calophylla)

Powderbark Wandoo (Eucalyptus accedens)

River Gum (Eucalyptus camaldulensis)

Tuart (Eucalyptus gomphocephala)

Wandoo (Eucalyptus wandoo)

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang | Date: 28/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Proj\ERD_APRX | Fig7-3

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Figure 7-4 Black Cockatoo PNT and Known Roosting Sites

Version: 1 | Coordinate System: GDA2020 MGA Zone 50

Job No.: 525974 | A4 Scale: 1:110,000

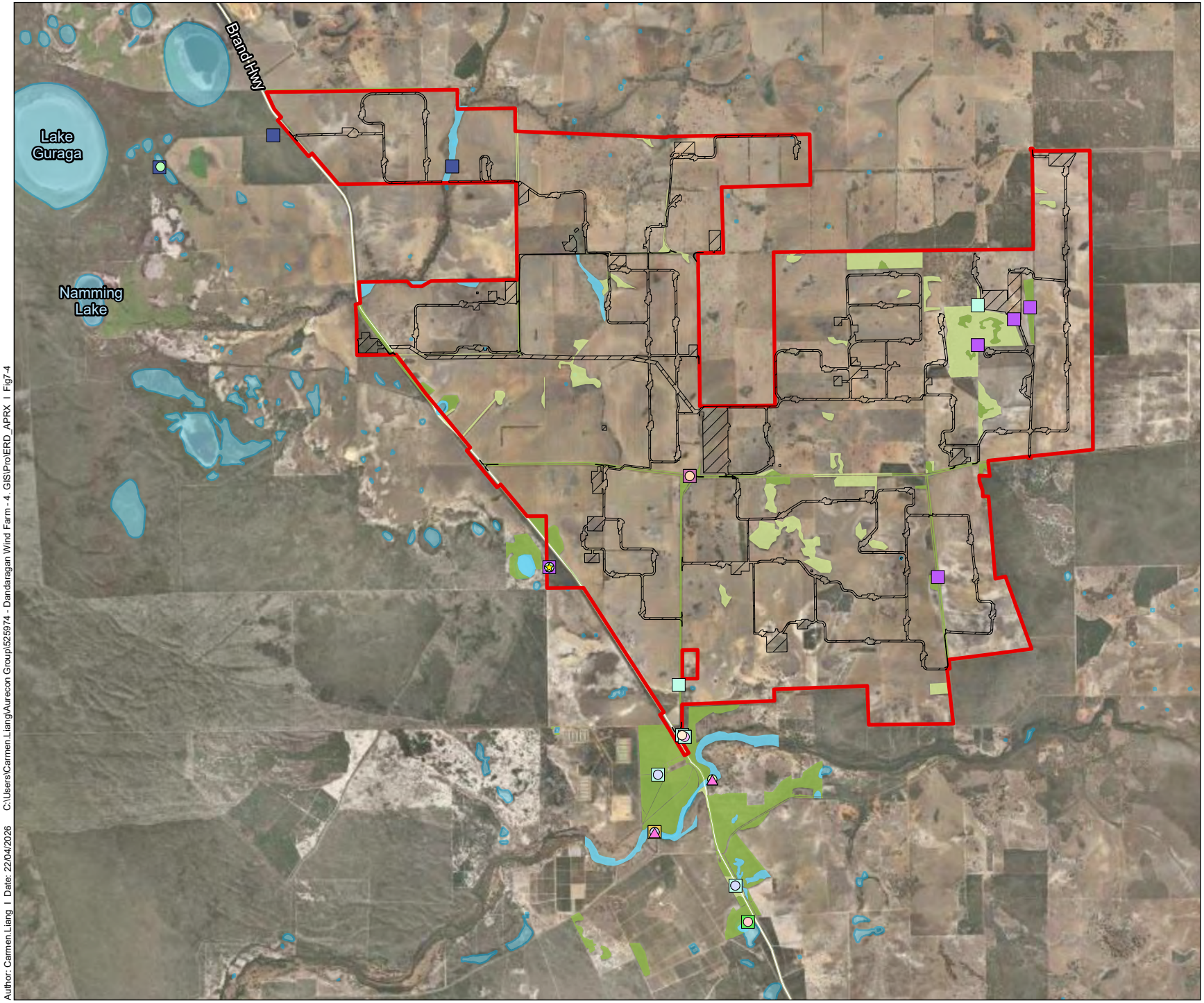
7.4.3.4 Short range endemic invertebrate fauna habitat

Three SRE habitat types were identified within the Development Envelope, including Banksia heath and woodland, Open Jarrah-Marri woodland and Drainage line and riparian, as summarised in Table 7-7and Figure 7-5. Although the drainage line habitat type is generally considered to be of high value to SREs, this is not the case within the Development Envelope. The drainage lines in the Development Envelope run through extensive agricultural areas, resulting in degraded vegetation condition with the understory mostly removed and overrun by weeds, and water affected by an influx of nutrient runoff. As such, drainage line habitat within the Development Envelope is considered to have a low potential to support SREs (Phoenix, 2025c).

Banksia heath and woodland and Open Jarrah-Marri woodland habitats are found widely across the Dandaragan Plateau subregion, particularly to the west and east of the Development Envelope. These habitat types are considered to have low potential to support SREs, however may still support SREs in suitable microhabitats if present (i.e., woodlands with extensive leaf litter and an abundance of fallen logs). The condition of these habitats varied from excellent to degraded, depending on the accessibility of livestock and degree of historic clearing for agricultural purposes (Phoenix, 2025c).

Table 7-7 Short-range endemic species habitats within the Development Envelope

Habitat Type	Description	Potential to Support SRE
Banksia heath and woodland	May support SREs in suitable microhabitats such as fallen logs and leaf litter.	Low
Open Jarrah- Marri woodland	May support SREs in suitable microhabitats such as fallen logs and leaf litter.	Low
Drainage line and riparian	Drainage line habitat cut through an extensive agricultural area; thus, the resulting vegetation condition was degraded with the understory mostly removed and overrun by weeds.	Low
Cleared – agriculture and infrastructure	Cleared areas provide no habitat for SREs.	None
Pine plantations	Cleared areas provide no habitat for SREs.	None
Wetlands	Inundated areas provide no habitat for SREs.	None



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- Development Envelope
- Indicative Disturbance Footprint
- Waterbodies (LGATE-016)

SRE Habitat

- Banksia heath and woodland
- Drainage line & riparian zone
- Open Jarrah-Marri woodland

SRE Species

Possible
- Mecistocephalidae `Phoenix0385`

Potential
- Armadillidae `Phoenix0390`
- Austrochthonius 'Ma01'
- Ballarra `Phoenix0387`
- Buddelundia `Phoenix0388`
- Hanoniscus monodi
- Iulomorphidae `Phoenix0384`
- Laevophiloscia `Phoenix0389`
- Platyarthridae '4'
- Sepedonophilus `Phoenix0383`
- Spherillo `Phoenix0386`
- Styloniscus '1'
- Urodacus 'bullsbrook'

Uncertain
- Armadillidae sp. indet.

Widespread
- Antichiropus 'DIP079'
- Antichiropus whistleri
- Cercophonius granulosus
- Geophilomorpha sp. indet.
- Henicopidae `sp. voucher NZ796_2023`
- Laevophiloscia '2'
- Lychas 'austroccidentalis'
- Ommatoiulus moreleti

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Kilometres

Author: Carmen.Liang | Date: 22/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX | Fig7-4

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Figure 7-5 Short Range Endemic Habitats and Recorded Taxa

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:110,000

7.4.4 Vertebrate fauna assembly and species diversity

A total of 66 terrestrial vertebrate species comprising seven amphibians, four reptiles, 41 birds, and 14 mammal species have been recorded in the Development Envelope. Of these, six species were recorded during the field surveys that were not previously identified within desktop assessment (Phoenix, 2025a). Evidence of four introduced pests (Fox (*Vulpes vulpes*), Cat (*Felis catus*), rabbit (*Oryctolagus cuniculus*) and Dog (*Canis familiaris*)) were recorded within the Development Envelope.

7.4.4.1 Terrestrial Vertebrate Fauna Recorded

A total of 99 terrestrial vertebrate species representing 48 families was recorded during the Basic and Targeted field surveys (Phoenix, 2025a) including eight amphibian, seven reptile, 67 bird and 17 mammal species, as summarised in Table 7-8). The assemblage recorded during the survey included 90 native species and nine introduced species. Evidence of three introduced pest species (Red Fox, Cat and Dog) were also recorded during the survey at several sites (Phoenix, 2025a).

Six species were recorded during the field survey that were not identified in the desktop review: Goat (*Capra hircus*), European Cattle (*Bos taurus*), South-western Long-necked Turtle (*Chelodina oblonga*), White-striped Free-tailed Bat (*Austronomus australis*), South-western Free-tailed Bat (*Mormopterus kitcheneri*) and Chocolate Wattled Bat (*Chalinolobus morio*) (Phoenix, 2025a). An additional tree bat species were identified in the ongoing BBUS (Phoenix, 2026) including the South-western Free-tailed Bat (*Ozimops kitcheneri*), Gould's Wattled Bat (*Chalinolobus gouldii*), and Southern Forest Bat (*Vespadelus regulus).* None of the species recorded are conservation significant. Further details will be available on finalisation of the BBUS.

Table 7-8 Terrestrial vertebrate species recorded – desktop assessment and field surveys

Group	No. species Identified in desktop review	No. species recorded in survey (Targeted)	No. of species recorded in survey (BBUS)
Amphibians	12	8	0
Reptiles	65	7	0
Birds	258 (includes 6 introduced)	67 (includes 1 introduced)	126
Mammals	35 (includes. 7 introduced)	17 (includes 8 introduced)	6
Total	**370**	**99**	**132**

Source: Phoenix (2025b; 2025c; 2026)

7.4.4.2 Significant Vertebrate Fauna Recorded

A total of 85 conservation significant vertebrates listed under the EPBC Act, BC Act or as Priority fauna by DBCA were identified in the desktop search (within 40 km of the Development Envelope) (Phoenix, 2025c).

A summary of the assessment of the likelihood or occurrence of conservation significant terrestrial fauna species within the Development Envelope is provided in Table 7-9, Table 7-10 and Table 7-11and depicted in Figure 7-6, Figure 7-7 and Figure 7-8. A total of 11 conservation significant terrestrial fauna species were considered likely to occur within the Development Envelope. The likelihood of occurrence of the remaining significant species identified in the desktop review determined 50 may possibly occur, 26 are unlikely to occur and five are recorded within the survey area by (Phoenix, 2025a)

The only significant species recorded within the Development Envelope was Carnaby's Black Cockatoo (*Zanda latirostris*).

The Forest Red-tailed Black Cockatoo (FRTBC) (*Calyptorhynchus banksii naso*) and Blue-billed Duck (*Oxyura australis*) were recorded within 5 km of the Development Envelope. Two clusters of confirmed FRTBC breeding trees are located within 5 m of the Development Envelope: one to the south along Moore River and the other in Bundarra Nature Reserve (Phoenix, 2025c).

White-striped Free-tailed Bat (*Austronomus australis*), South-western Free-tailed Bat (*Mormopterus kitcheneri*) and Chocolate Wattled Bat (*Chalinolobus morio*) were recorded during the field survey (Phoenix, 2025a).

Table 7-9 Significant fauna (birds) recorded or likely to occur within the Development Envelope

Species	Conservation status	Habitat preference	Likelihood of occurrence	Suitable habitat within the Development Envelope
Carnaby's Black Cockatoo (CC) (*Zanda latirostris*)	Endangered (EPBC and BC Act)	Carnaby's Black Cockatoo occurs in uncleared or remnant native *eucalypt* woodlands of south-west WA. During the breeding season, it primarily occurs in *eucalypt* woodlands with suitable hollow bearing trees in the Wheatbelt. In the non-breeding season, occurs on coastal plains. Foraging habitat includes native vegetation surrounding breeding areas during the breeding season, and *Banksia* heath and woodlands in the non-breeding season (DAWE, 2022).	**Recorded** Suitable habitat is present. It is possible breeding or roosting may occur within the Development Envelope. A total of 1,064 individuals have been directly recorded across 43 sightings, with 801 of these individuals observed within or within 1 km of the basic and targeted survey area. The species has also been heard calling on 18 occasions, and foraging evidence (including chewed Jarrah and Marri fruits) has been recorded throughout the survey area. A total of 1,333 individuals were identified over the seven BBUS surveys within the BBIA.	■ Jarah-Marri Woodland ■ Pine plantation ■ Banksia heath woodland ■ Drainage line ■ cleared
Forest Red-tailed Black Cockatoo (FRTBC) (*Calyptorhynchus banksii* subsp. *naso)*	Vulnerable (EPBC Act and BC Act)	Occurs in the dense Jarrah, Karri, and Marri forests, primarily within the hilly interior, as well as across a variety of other forest and woodland types. It may also appear as an occasional visitor in the southern suburbs of Perth, where it is known to forage on Cape Lilac (Phoenix, 2025a)	**Likely** Within current known range, occurs aerially over all habitats, recorded twice within 25 km of the area studied in 2020 (Phoenix, 2025a) (including the Development Envelope).	Suitable breeding habitat is present within the Development Envelope (wooded watercourses). Four individuals were observed in the vicinity of the Development Envelope. The species has been heard calling on 4 occasions, and foraging evidence (e.g., chewed Jarrah and Marri fruits) has been documented throughout the wider area surveyed (Phoenix, 2025a).
Peregrine Falcon (*Falco peregrinus*)	OS (Other specially protected Fauna) (BC Act)	The species favours habitats with cliffs and wooded watercourses. It typically nests on cliff ledges, granite outcrops, quarries, as well as in trees with old nests built by ravens or Wedge-tailed Eagles (Phoenix, 2025a)	**Likely** Within current known range, occurs aerially over all habitats, recorded twice within 25 km of the survey area in 2020. Additionally, suitable breeding habitat is located in the vicinity of the Development Envelope (wooded watercourses).	■ Jarah-Marri Woodland ■ Pine plantation ■ Banksia heath woodland ■ Drainage line ■ Wetlands ■ cleared

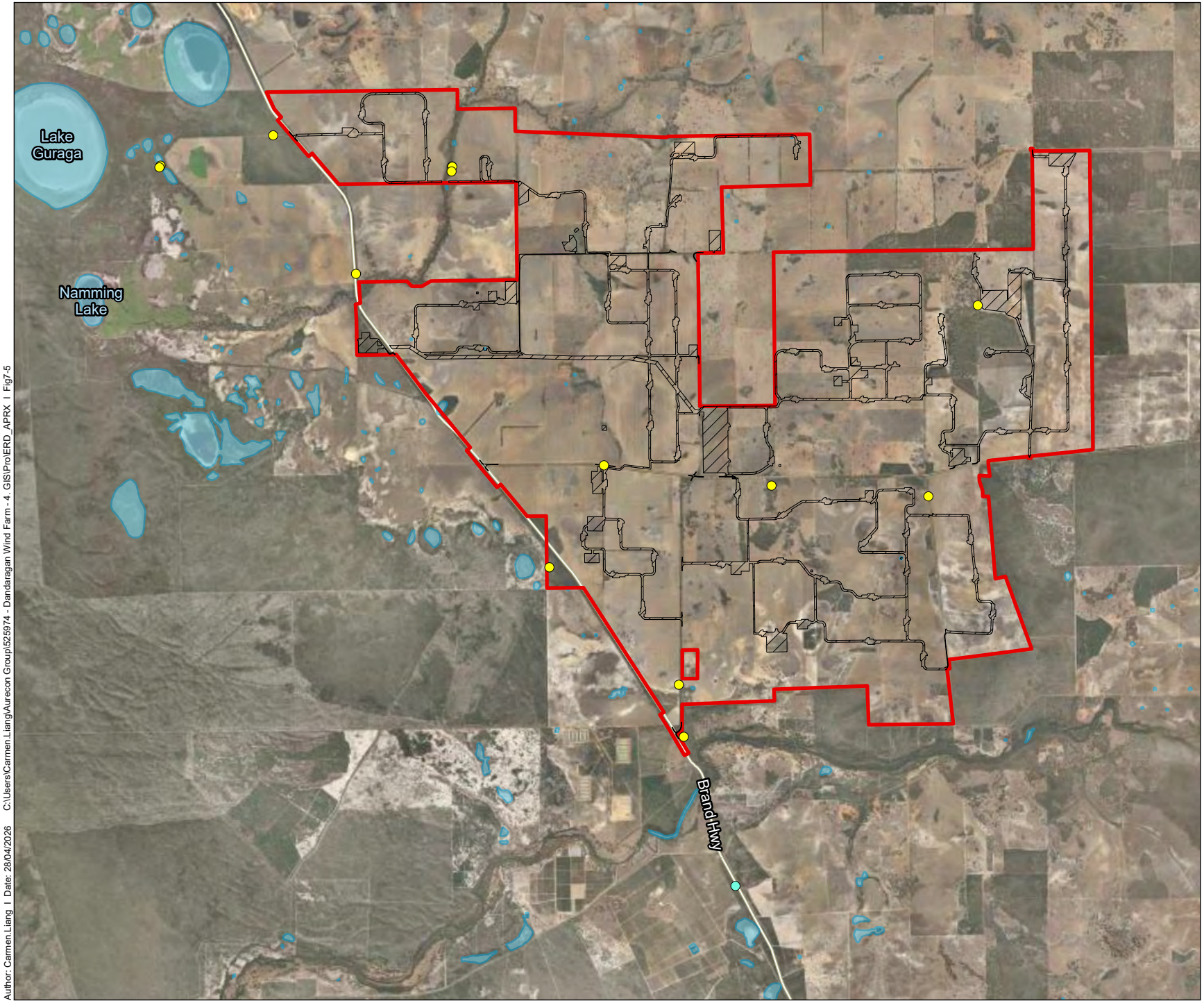
Species	Conservation status	Habitat preference	Likelihood of occurrence	Suitable habitat within the Development Envelope
Blue-billed Duck (*Oxyura australis*)	P4 (DBCA)	Blue-billed Duck is almost wholly aquatic, forming large flocks in winter and autumn on large, open freshwater dams, and lakes surrounded by dense vegetation. The species is endemic to temperate regions of Australia and typically occupies inland wetlands (fresh or saline) with extensive bordering vegetation. It also readily utilises artificial wetland habitats, such as sewage ponds (Phoenix, 2025a)	**Likely** Blue-billed Duck was recorded on two occasions at one site located approximately 5 km west of the Development Envelope. The occurrence of Blue-billed Duck is consistent with its known distribution. Although the Development Envelope does not include any large deep waterbodies suitable for breeding, it is possible that the species may visit the smaller wetlands within the area to forage, or flyover in search of more suitable wetlands (Phoenix, 2025a).	■ Wetland
Red-necked Stint (*Calidris ruficollis*)	MI (EPBC & BC Acts)	Red-necked Stints also prefer coastal areas but may be found in flooded paddocks.	**Recorded (Historical)** Recorded within the Basic and Targeted Fauna survey area in 1978 (Phoenix, 2025a).	Migratory shorebirds may opportunistically use wetland habitat in the Development Envelope to forage, or flyover in search of more suitable wetlands such as those to the west of the Development Envelope.
Wood Sandpiper (*Tringa glareola*)	MI (EPBC Act & BC Acts)	Wood Sandpipers prefer well-vegetated shallow freshwater wetlands such as swamps, billabongs, lakes, and other waterbodies (Phoenix, 2025a).	**Recorded (Historical)** Previously recorded within the Basic and Targeted fauna survey area in 1977 and in 2003 (Phoenix, 2025a).	Migratory shorebirds may opportunistically use wetland habitat in the Development Envelope to forage, or flyover in search of more suitable wetlands such as those to the west of the Development Envelope.
Common Greenshank (*Tringa nebularia*).	EN/MI (EPBC & BC Acts) MI (BC Act)	Generally found in coastal habitat but are also known to occur on inland lakes, dams, or other waterbodies.	**Recorded (Historical)** Preciously recorded within the Basic and Targeted Fauna survey area in wetland habitat in 2003 and 1977 (Phoenix, 2025a). May also occur in drainage line habitat.	Migratory shorebirds may opportunistically use wetland habitat in the Development Envelope to forage, or flyover in search of more suitable wetlands such as those to the west of the Development Envelope.
Curlew Sandpiper (*Calidris ferruginea*)	CR/MI (EPBC Act) CR (BC Act)	The Curlew Sandpiper generally found in coastal habitat but are also known to occur on inland lakes, dams, or other waterbodies.	**Recorded (Historical)** Recorded within the Basic and Targeted Fauna survey area in 1978 (Phoenix, 2025a).	May opportunistically use wetland habitat in the Development Envelope to forage, or flyover in search of more suitable wetlands such as those to the west of the Development Envelope.

Table 7-10 Significant fauna (mammals) recorded or likely to occur within the Development Envelope

Species	Conservation status	Habitat preference	Likelihood of occurrence	Suitable habitat within the Development Envelope
Western Brush Wallaby (*Notamacropus irma)*	P4 (DBCA)	Occurs in open forest and woodland areas with low grasses and dense shrub thickets. It also occurs in some areas of Mallee and heathland. It prefers open grassy habitats and is generally absent in Karri forests where the understorey is dense (Phoenix, 2025c).	**Recorded (historical)** Recorded within the Basic and Targeted Fauna survey survey area in 1982 and within 10 km of the survey area in 1989, 1978, and 1956. Also recorded 20 km from the survey area in 2015. The Western Bush Wallaby has been observed regularly around the Cooljarloo Mine (located approximately 26.4 km northwest) (Phoenix, 2025a).	Whilst the availability of suitable habitat (crown cover and low grasses) within the Development Envelope is low due to the continued use for agricultural cropping, the Development Envelope may be used by transient individuals or occasional foraging visitors. However, it is considered unlikely the species would reside within the Development Envelope due to the presence of predator species (European Fox and Domestic Dog) (Phoenix, 2025a).
Chuditch (*Dasyurus geoffroii*)	VU (EPBC and BC Acts)	The Chuditch is now restricted to the south-west of WA, occupying only about 5% of its former distribution. Before European settlement, the species occurred across roughly 70% of mainland Australia. Today, it is primarily associated with Jarrah forests and woodlands in the southwest, as well as heath and Mallee habitats along the south coast. The species uses horizontal hollow logs and underground burrows as refuges and den sites (Phoenix, 2025a)	**Recorded (historical)** Recorded within the Basic and Targeted Fauna survey area in 2001 (Phoenix, 2025a). The desktop review revealed sparse and infrequent historical records in the area. One record exists from 1987, located approximately 600 m north of the Development Envelope, and one record in 2001 relating to a carcass that was located approximately 1 km south of the Development Envelope.	The Development Envelope is located at the northern extent of the Chuditch known distribution. No evidence or sightings were recorded during field surveys. The scarcity of recorded observations may be attributed to limited survey efforts or coupled with the difficulty in detecting Chuditch, which are naturally cryptic and occur in low numbers (Phoenix, 2025a). Chuditch may utilise the Development Envelope as occasional foraging visitors or to disperse but are unlikely to reside in the Development Envelope as it is not considered significant habitat (Phoenix, 2025a).

Table 7-11 Significant fauna (reptiles) recorded or likely to occur within the Development Envelope

Species	Conservation status	Habitat preference	Likelihood of occurrence	Suitable habitat Within the Development Envelope
Black-striped Snake *(Neelaps calonotos)*	P3 (DBCA)	The Black-striped Snake prefers heathland habitats near the coast, as well as Banksia woodlands further inland (Phoenix, 2025a)	**Likely** Survey area within current known range of species, suitable habitat within survey area.	The Black-striped Snake is restricted to the sandy coastal strip of the Swan Coastal Plain between Mandurah and Cataby, with some records existing inland at Gingin, Bullsbrook and Caversham. This species primarily occurs on dunes and sandplains vegetated with heaths and Banksia woodlands (Phoenix, 2025a). The species was not recorded within the study area; however, due to the occurrence of records in the desktop area and the presence of soft calcareous sand and *Banksia* sp. in open woodland and shrubland habitats in the study area, it is considered likely to occur.



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Development Envelope

Indicative Disturbance Footprint

Waterbodies (LGATE-016)

Conservation Significant Fauna

Red-tailed Black Cockatoo - *Calyptorhynchus banksii naso*

Carnaby's Black Cockatoo - *Zanda latirostris*

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 7-6 Locations of Conservation Significant Terrestrial Fauna

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Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:110,000

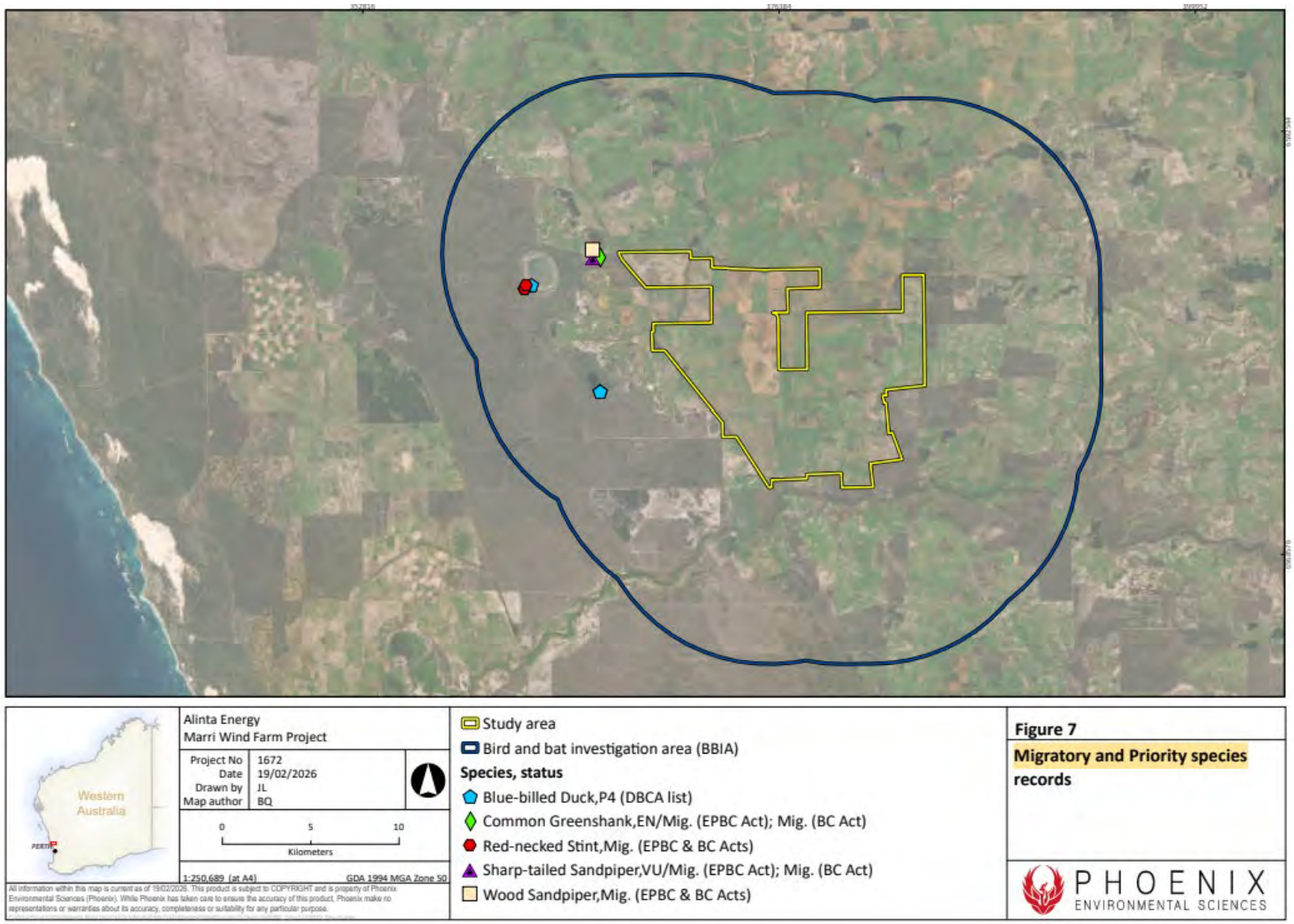


Figure 7-7 Location of conservation significant species from preliminary BBUS (Phoenix, 2026)

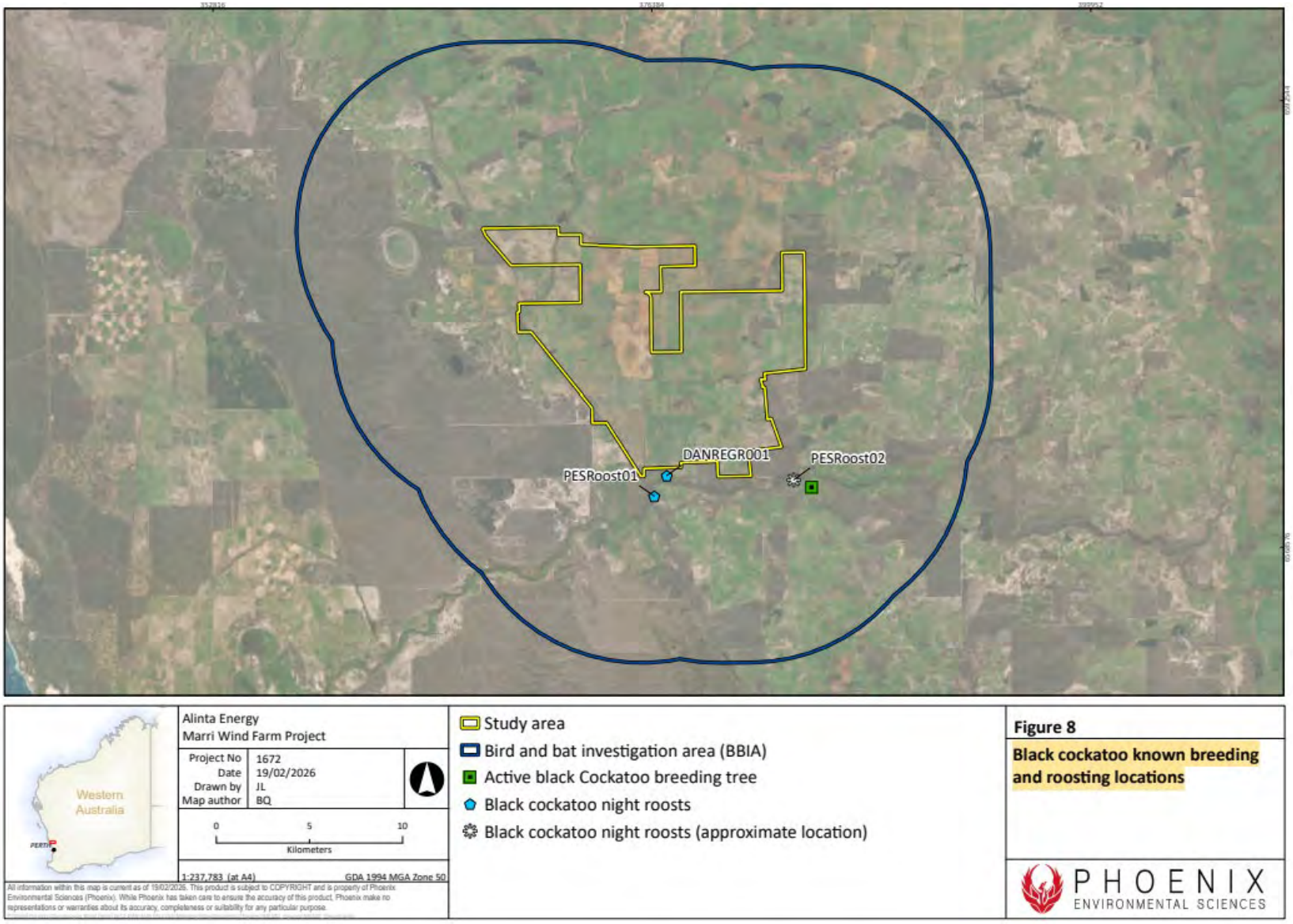


Figure 7-8 Black cockatoo known breeding and roosting locations from preliminary BBUS (Phoenix, 2026)

Summary of BBUS Findings

An interim technical memo prepared by Phoenix (2026) provides a summary of BBUS survey findings to date based on seven survey events. The summary indicates a total of 126 bird species have been recorded to date within the BBIA, pending analysis of acoustic bird call recording data. Of these, seven species were identified as conservation significant (Table 7-12). A total of 1,333 CC, 48 FRTBC, one Common Greenshank, 40 Red-necked Stint, five Sharp-tailed Sandpiper, 10 Wood Sandpiper and six Blue-billed Duck have been directly sighted or heard calling to date.

Of these records, 783 individuals of CC and 11 FRTBCs occurred within or directly adjacent to the Development Envelope; however, none of the other conservation significant species were recorded within the Development Envelope.

Low numbers of migratory shorebirds and one priority duck species have also been recorded in the BBIA, though none have been observed inside the Development Envelope. These species are strongly associated with wetlands of which are located approximately 5 km west of the Development Envelope.

Table 7-12 Conservation significant species recorded within the BBIA - BBUS

Common Name	Scientific same	EPBC Act status	WA status	Phase[1]							Total
				1	2	3	4	5	6	7	
CC	*Zanda latirostris*	EN	EN	220	235	114	52	461	217	34	1,333
FRTBC	*Calyptorhynchus banksia naso*	VU	VU	–	–	3	34	11	–	–	48
Common Greenshank	*Tringa nebularia*	EN/Mig.	Mig.	–	–	–	–	–	–	1	1
Red-necked Stint	*Calidris ruficollis*	Mig.	Mig.	–	–	–	–	39	1	–	40
Sharp-tailed Sandpiper	*Calidris acuminata*	VU/Mig.	Mig.	–	–	–	–	–	5	–	5
Wood Sandpiper	*Tringa glareola*	Mig.	Mig.	–	–	–	–	–	–	10	10
Blue-billed Duck	*Oxyura australis*	–	P4	–	4	–	–	–	–	2	6
Total											1,443

[1]Total number of individuals directly sighted and/or heard calling per phase

Further detail will be provided within the final BBUS following the last survey in May 2026. Locations of conservation significant terrestrial fauna within the BBUS is shown in Figure 7-7.

Black cockatoo flight height recorded

Out of a total 31 flight records, CC (Table 7-13) six CC and FRTBC (Table 7-14) flight records were counted within or immediately adjacent to the Development Envelope corresponding to the BBIA as part of the CRM (Phoenix, 2026)

Across all black cockatoo flight records collected within the BBIA and the adjoining Yathroo Wind Farm, only a single flight record occurred above the proposed minimum turbine blade tip height of 66 m for the MWF. This isolated record (recorded at approximately 100 m agl) is considered anomalous given established knowledge of black cockatoo flight behaviour in the area. Finalisation of the BBUS report is currently underway at the time this ERD was prepared, which is expected to further support this understanding.

Table 7-13 Marri BBUS flight height observations for CC

	Mean (m)	Mode (m)	Min (m)	Max (m)	Range (m)	Count
Inside Development Envelope	15.3	15	10	20	10	6
Outside Development Envelope	24.2	10	5	100	95	25
Total	**22.5**	**10**	**5**	**100**	**95**	**31**

Table 7-14 Marri BBUS flight height observations for FRTBC

	Mean (m)	Mode (m)	Min (m)	Max (m)	Range (m)	Count
Inside Development Envelope	32.5		5	60	55	2
Outside Development Envelope	22.5	10	10	60	50	4
Total	**25.8**	**10**	**5**	**60**	**55**	**6**

7.4.4.3 Short range endemic invertebrate fauna recorded

A total of 22 invertebrate fauna taxa were collected from the Development Envelope and the immediate vicinity including isopods, millipedes, centipedes, scorpion, pseudoscorpion and harvestman spider. No confirmed SREs were collected, however 13 taxa were considered potential SREs, two taxa were of uncertain SRE taxa, and seven were considered to be widespread (Figure 7-6) (Phoenix, 2025a).

Of the collected 22 SRE taxa, nine were considered new species as they had not been recorded previously (Phoenix, 2025a), including:

- Armadillidae `Phoenix0390
- *Austrochthonius* 'Ma01'
- *Ballarra* `Phoenix0387`
- *Buddelundia* `Phoenix0388`
- Iulomorphidae ‘Phoenix0384’
- *Laevophiloscia* `Phoenix0389`
- Mecistocephalidae ‘Phoenix0385’
- *Sepedonophilus* `Phoenix0383`
- *Spherillo* ‘Phoenix0298’.

The occurrence of new species is likely due to lack of survey within the survey area and surrounds. Despite occurrences of new species, it is considered unlikely that these species are restricted solely to the areas within the Development Envelope as similar habitats occur extensively throughout the local and regional area (Phoenix, 2025a).

The occurrence of new species is likely due to lack of survey within the survey area and surrounds. Despite occurrences of new species, it is considered unlikely that these species are restricted solely to the areas within the Development Envelope as similar habitats occur extensively throughout the local and regional area (Phoenix, 2025a).

7.5 Potential Environmental Impacts

This section lists the Proposal activities that may potentially impact on terrestrial fauna, including direct, indirect, and cumulative impacts. Mitigation measures for impacts relating to terrestrial fauna are outlined in Section 7.6, whilst an assessment of residual impacts (following implementation of the mitigation measures) is presented in Section 7.7.

7.5.1 Potential direct impacts

Anticipated potential direct impacts to terrestrial fauna resulting from the Proposal activities, are assessed based on the IDF. The IDF is positioned entirely inside the Development Envelope and includes all disturbance. It is considered the largest proposed area of land disturbance, with actual cleared land disturbance expected to be less.

Direct impacts on terrestrial fauna which may potentially result from the implementation of the Proposal include:

Table 7-15 Potential direct impacts to terrestrial fauna from the Proposal

Potential direct impact	Details of potential impact
Loss of fauna habitat	Displacement of fauna due to the clearing of native vegetation and earthworks, leading to an overall reduction in fauna diversity and/or loss of local populations within IDF area Fragmentation of localised populations due to clearing, potentially leading to reduced gene flow Reduced availability of important habitat and features (e.g. tree hollows or foraging habitat) for species which rely on the availability of nesting, breeding, foraging, and shelter habitat for survival.
Loss or injury to fauna individuals	Fauna potentially impacted due to wind turbine operation such as by turbine strike, barotrauma or collision with transmission infrastructure

These direct impacts are discussed in more detail below.

7.5.1.1 Loss of fauna habitat

Clearing of native vegetation during construction has the potential to directly affect fauna values. Impacts may include the displacement of individual animals, which can result in a decline in local species richness or, for less mobile species, the loss of local populations. Vegetation removal may also lead to habitat fragmentation, reducing landscape connectivity and limiting movement and genetic exchange between fauna populations. In addition, clearing will reduce the availability of key habitat resources, including foraging areas, nesting sites, shelter, and breeding habitat.

7.5.1.2 Loss or injury to fauna

Turbine collision

Wind energy infrastructure presents well-documented risks to avifauna and bats, primarily through collision with moving turbine blades, and stationary components such as towers, nacelles, guy wires, power lines and meteorological masts. These impacts can result in direct mortality or severe injury, contributing to broader disturbance effects on local and migratory bird populations (Bamford, in prep).

Injury to bird and bat species from wind turbines can occur from direct collision with turbine infrastructure (moving blades) or from barotrauma. Barotrauma occurs when changes in air pressure expand or compress gas contained within an individual's body. It is understood that bats tend to be more susceptible to barotrauma than birds resulting from different respiratory anatomy (Bamford, 2025). Recent ecological studies suggest that barotrauma has less of an impact on bat mortality than direct collision trauma (Lentini *et al.*, 2025, cited in Bamford (2025)).The placement of the IDF in predominantly disturbed agricultural landscapes has been prioritised to avoid areas of high value fauna habitat where risk of turbine strike is

greatest. The lack of suitable wetlands within the DE, and consideration of the potential occurrence of migratory shorebirds.

Direct impacts to avifauna associated with the Proposal include the potential for collision with wind turbine blades during flight. Black cockatoos may be at risk of turbine collision where flight paths intersect with turbine rotor swept areas, particularly during commuting, foraging, or dispersal movements. Collision risk is influenced by factors including turbine height and blade speed, topography, habitat distribution, species flight behaviour, and local movement patterns.

At the time of this assessment, site specific collision risk data for black cockatoos is limited. Finalisation of the BBUS is currently underway (due May 2026) which will provide additional information on black cockatoo usage of the Development Envelope, including a collision risk assessment Direct impact from collisions with wind turbines may occur to birds, including migratory birds, and bat species. Significant species or species likely to occur that fly within rotor swept area (RSA) and therefore with a likelihood of collision include:

- Curlew Sandpiper (*Calidris ferruginea*)
- Red-necked Stint (*Calidris ruficollis*)
- Blue-billed Duck (*Oxyura australis*)
- Wood Sandpiper (*Tringa glareola*)
- Peregrine Falcon (*Falco peregrinus)*
- Common Greenshank (*Tringa nebularia)*
- Carnaby's Black Cockatoo (*Zanda latirostris*)
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso).*

It is expected that the finalised BBUS and Preliminary Bird and Bat Management Plan (BBAMP) will identify any necessary mitigation measures in relation to turbine collision.

Barotrauma

Barotrauma is a phenomenon in which rapid air pressure changes from rotating turbine blades are hypothesised to cause tissue damage to air-containing structures, most notably the lungs of bats. It has also been hypothesised that barotrauma can result in non-lethal injuries, such as hearing impairments and other internal injuries that may result in bats succumbing to their injuries a distance from the turbine.

Due to the unique respiratory anatomy of birds, they are considered less susceptible to rapid air pressure changes that cause barotrauma than that of bats. Research conducted in North America on the relative risk of barotrauma compared with direct collisions has resulted in mixed findings, regarding the proportion of deaths that have been attributed to each factor. Though it appears the majority of fatalities are due to collisions, barotrauma to the lungs and possibly other organs accounted for 46% of bats killed at turbines with 92% of the barotrauma in those bats displaying as haemorrhaging in the thoracic and/or abdominal cavities. As such, barotrauma was determined unlikely to be a leading cause of death, supporting the alternative hypothesis that collisions are more likely to be the predominant pathway for bat mortalities from operating turbines (Umwelt, 2026).

Due to the difficulty in diagnosing barotrauma unless the carcass is examined immediately after death, it is possible that cases attributed to barotrauma have been confused with traumatic injury associated with direct collisions. There is currently no published information on barotrauma in Australia (Umwelt, 2026).

7.5.2 Potential indirect impacts

The Proposal activities and threats that might lead to indirect impacts to terrestrial fauna are listed in Table 7-16.

Table 7-16 Potential indirect impacts to terrestrial fauna from the Proposal

Proposal activity	Potential indirect impact
Establishment of linear infrastructure	■ Interruptions to fauna behaviours (migrating, foraging, hunting, breeding, nesting etc.). ■ Increased exposure to predators at clearing edges due to loss of cover.

Proposal activity	Potential indirect impact
	■ Unauthorised clearing leading to direct impact to habitat for significant fauna. ■ Small terrestrial fauna may be trapped in excavations and die, particularly if exposed during the heat of the day or flooded.
Vehicle movements on roads	■ Loss of terrestrial fauna individuals through direct impact with vehicles.
Vibration, noise and light impacts; barrier effects.	■ Degradation or reduced suitability of fauna habitat. ■ Displacement of fauna away from Proposal area due to increased human activity or operational light, noise or vibration into potentially unsuitable habitat. ■ Degradation or reduced suitability of fauna habitat. ■ Alteration or restriction of regional movement.
Hot works	■ Loss of fauna habitat or individuals in the event of a fire.

7.5.3 Cumulative impacts

Cumulative environmental impacts are the successive, incremental, and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities (EPA, 2024). The EPA defines reasonably foreseeable future activities as “Third party (or Proponent) activities which are already approved, are in a government approvals process, or are otherwise reasonably likely to proceed or be ongoing”.

This section presents the potential cumulative impacts associated with known past, present and reasonably foreseeable projects in the general vicinity of the Proposal that may impact on terrestrial fauna, building on the cumulative assessment compiled by Umwelt (Australia) Pty Ltd for the Neoen Australia Pty Ltds’ Yathroo Wind Farm project (Environmental Referral Supporting Document) (Umwelt, 2026). The Yathroo Wind Farm is proposed for an area immediately north of, and adjacent to this Proposal.

A desktop review was undertaken to identify potential projects to be considered in the context of potential cumulative impacts. Within approximately 50 km of the Proposal, there are eight wind energy projects at various stages of assessment and development. There are also four active or established mining operations (Cataby Mineral Sands Mine, Cooljarloo Mineral Sands Project - including Cooljarloo West and Osprey Expansion, North Kiaka Mine and Boonanarring Mineral Sands Mine). Details of the potential proposals identified are provided in Table 7-17.

The region surrounding the Proposal has been extensively cleared, primarily for agricultural purposes but also for mining activities, with remaining patches of remnant vegetation providing limited but valuable fauna habitat and ecological connectivity. While future renewable and mining projects in the region may result in additional localised vegetation clearing or habitat disturbance, cumulative impacts on terrestrial fauna including significant species are expected to remain low.

In terms of wind farm projects, vegetation clearing is generally small in scale and impacts to native vegetation and quality fauna habitat can be managed through targeted design. Similar to this Proposal, construction footprints of wind farms often include a buffer to allow for micro-siting, and with pre-clearing flora, vegetation and habitat surveys serving as additional assurance that any previously unrecorded sensitive vegetation, including quality habitat, will be managed. The added buffer into the construction footprint allows for redesign of access roads and other infrastructure to avoid these, if recorded.

Table 7-17 Projects with potential cumulative impacts

Project	Distance from Proposal	Project description	Status of project	Potential terrestrial fauna impacts	Cumulative impacts comment
Wind farms					
Yathroo Wind Farm, Neoen Australia Pty Ltd	Adjacent, north	Up to 65 wind turbines Battery energy storage system Associated infrastructure	In development (awaiting approval)	Although the Proposal will result in the removal of suitable foraging and potential breeding habitat for some fauna species, residual impacts are unlikely to be significant. No Rank 1 or 2 black-cockatoo trees will be disturbed by the Proposal, and disturbance of Rank 3 trees will be minimised. High quality foraging value vegetation for black-cockatoos has been avoided.	10.28 + 5.45 ha impact to native vegetation 7.33 ha plantations impact
Waddi Wind Farm, Waddi Wind Farm Pty Ltd	35 km north-northwest	18 wind turbines Solar farm Associated infrastructure 8 km of overhead 132 kV transmission line	In development	Clearing of 5.5 ha will result in the permanent loss of 5.2 ha of high-quality foraging habitat and a small number of potential nesting (3 Marri) and roosting trees (35 total) for Carnaby's black cockatoo. Although the clearing is considered significant under EPBC referral thresholds, 94% of foraging habitat, 98% of nesting trees, and 96% of roosting trees will be retained within and adjacent to the project. Given the large extent of nearby remnant vegetation (9,913 ha) in DBCA managed reserves and the fragmented, agricultural landscape, cumulative regional impacts to terrestrial fauna are expected to be low to moderate and localised.	5.5 ha impact to native vegetation Loss of 35 PNT's
Yandin Wind Farm, Yandin Wind Farm Pty Ltd	15 km north	51 wind turbines	Operational	The project occurs within a similar landscape and habitat context, where comparable fauna species are expected to be present. Clearing of habitat trees showing evidence of use by Carnaby's Black-Cockatoo (CC) were not permitted. A slight increase in bird collision risk may occur due to the additional turbines; however, impacts are expected to be consistent with those observed for similar species in nearby wind farm developments.	4 ha impact to native vegetation
Grevillea Wind Farm, Green Wind Renewables	35 km east	110 wind turbines	Early development	The site is largely cleared agricultural land with small patches of remnant vegetation. The extent of fauna habitat removal has not been specified. However, due to the predominately cleared land, habitat loss is expected to be minimal. The maximum tip height 170 m may increase cumulative bird and bat collision risk, particularly for migratory or conservation-significant species moving through the Dandaragan region. The turbine height is limited by aviation and visual impact constraints.	-

Project	Distance from Proposal	Project description	Status of project	Potential terrestrial fauna impacts	Cumulative impacts comment
Mining					
Cooljarloo Mineral Sands Project (including Cooljarloo West and Osprey Expansion), Tronox Management Pty Ltd	45 km northwest	Large-scale mineral sands mining and processing operation	Operational/ In development	The extensive historical and approved clearing footprint has resulted in cumulative loss and fragmentation of fauna habitat, including CC foraging habitat at a regional scale. Residual impacts to conservation significant fauna habitat have been identified under Ministerial Statement 1158 (MS 1158) and are managed through offsets, staged rehabilitation, and fauna management measures. Additional fauna habitat loss associated with the proposed Osprey Expansion is under EPA assessment.	6,905 ha impact to native vegetation Impact to TEC
Cataby Mineral Sands Project, Iluka Resources Limited	25 km northwest	Open pit mining Supply of heavy mineral concentrate	Operational	Approved impacts include disturbance to low-value CC foraging habitat within the Development Envelope. Additional impacts approved under the 2021 amendment are mitigated through the existing CC Management Plan, including a requirement to implement an additional 10 ha of rehabilitation.	-
Bidaminna Project, Image Resources NL	50 km southwest	Mineral sands mine	In development (awaiting approval)	Indicative clearing of native vegetation may result in habitat loss and fragmentation for terrestrial fauna, including potential impacts to CC foraging habitat and other conservation significant species. Terrestrial fauna has been identified as a preliminary key environmental factor. The scale, significance, and cumulative nature of fauna impacts will be determined through detailed fauna surveys and impact assessment	-
Boonanarring Mineral Sands Mine, Image Resources NL	50 km south	Mineral sands mine	Operational	Potential impacts to fauna are associated with habitat disturbance within the approved disturbance footprint. CC was identified as potentially occurring within the area. However, no breeding activity was recorded, and impacts are managed through avoidance, buffer requirements, and groundwater and vegetation monitoring conditions under Ministerial Statement 981.	-

7.6 Mitigation

The mitigation hierarchy, as outlined in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023b), has been applied to this Proposal.

Whilst the Proposal has sought to avoid and minimise native vegetation clearing, and clearing of habitat that may provide foraging, roosting and/or breeding habitat for significant species during preliminary design, the infrastructure layout will be further refined during the detailed design phase to further minimise clearing of 5.01 ha fauna habitat.

In addition to mitigations in place during planning, construction and operation; additional legislative controls may be required dependent on the Project's final proposed construction footprint. These controls include native vegetation clearing permit (NVCP) and approvals/permitting under the BC Act for the management of significant fauna during construction.

Mitigation measures proposed are presented in Table 7-18, and represent industry standard and best practice measures to minimise potential impacts to terrestrial fauna.

Table 7-18 Mitigation measures - terrestrial fauna

Potential impact	Avoidance	Minimisation	Rehabilitation
Direct impacts			
Loss of fauna habitat	■ Optimisation of the IDF during design, avoiding terrestrial fauna, SRE, protected, or critical habitat zones, including internationally protected migratory species, wherever possible ■ Utilise existing disturbed areas and agricultural land where possible to minimise clearing of quality terrestrial fauna habitat where conservation significant fauna may occur including: ■ A total of 5.02 ha of moderate to high foraging habitat for CC and 3.36 ha of moderate foraging habitat for FRTBC will be impacted within the IDF including: – 5.02 ha (0.52 %) High to moderate quality foraging habitat (CC) – 3.36 ha (0.35%) Moderate quality foraging habitat (FRTBC). – The remaining 957 ha (over 99% - 2.23 ha of IDF not accessed) within the IDF is Low quality habitat for CC and 1.65 ha (0.17%) for FRTBC. – Avoidance of 1,516 black-cockatoo PNT's (approximately 96%). Two trees have been identified to have possible hollows within the IDF, however there were no suitable hollows identified. These PNTs will be avoided where possible during construction as they are located on the edge of the IDF.	■ Pre-clearing translocation of fauna ■ Through detailed design, minimise the number of PNTs impacted. ■ Minimise clearing of vegetation with moderate to high foraging value. ■ Micro-siting of access roads and infrastructure after final design to avoid any identified high-quality habitat, to reduce this as much as practicable. – The current IDF intersects 5.02 ha of vegetation with moderate to high foraging value. ■ Minimise the bisecting of larger patches of vegetation in order to maintain landscape connectivity. ■ NVCP approval for restriction on maximum extent of clearing permitted. ■ The CEMP will include a vegetation clearing procedure to minimise unnecessary quality fauna habitat clearing. This will include: – Regulatory requirements, management actions or controls to be implemented. – Vehicle procedures to minimise the risk of vehicle strike to fauna. This will include enforcing a maximum speed limit based on safety, environmental and operational considerations. Fauna vehicle strikes will be recorded, including relevant details of the incident where available, to adaptively manage vehicle use to minimise fauna strikes. – Maintenance of the site in a general tidy and clean condition during construction. – Fauna welfare procedures, including operational and compliance reporting procedures for injured and/or dead wildlife. – Training/information requirements for all personnel working on the Proposal, including but not limited to inductions, daily toolbox talks and/or site walk overs which discuss the management measures or risks of a particular location. – Where threatened or migratory species are encountered during construction, any activities in proximity (<10 m) to their location will cease until they are no longer present. Handling of such fauna is not permitted unless a Section 40 approval has been granted from DBCA. – Construction and operation personnel training on the potential presence for fauna. – Procedures for inspection of excavations prior to closing, and relocation of any vertebrate fauna. The inclusion of points of egress in any excavation areas that are left open for more than one night. ■ Minimising noise, dust and light impacts through measures such as restriction of construction hours to daylight periods where possible, consideration of plant and	■ Progressive rehabilitation is to occur following the commissioning phase, with the area to be returned to previous land use (agricultural cropping). ■ Following the end of the construction and commissioning phases, all identified temporary construction areas will be returned to pre-construction land use activities where practical. If due to the proximity of capital infrastructure any area unable to be returned to agricultural production, will be incorporated into the Proposed Operational Footprint and rehabilitated following decommissioning. ■ Following eventual decommissioning, all previously operational areas and any amendments which may occur during the operational life of the Proposal, are to be rehabilitated to support the continuance of the previous land use.

Potential impact	Avoidance	Minimisation	Rehabilitation
	■ Avoidance of placing turbines within 3.5 km of wetlands where migratory shorebirds may occur. ■ Pre-clearance flora and vegetation surveys within the defined construction footprint to ensure identification of any previously unidentified occurrences of high-quality habitat. ■ Micro-siting of access roads and infrastructure to avoid any identified high-quality habitat.	equipment types, dust suppression and consideration of the type and use of lighting (e.g., shielded lights on buildings, directing lighting away from habitat).	
Loss or Injury to fauna individuals	-	■ Adoption of a minimum turbine blade tip height of 66 m AGL, which is above the recorded and typical flight height of Black-Cockatoos, which reduces the potential for Black-Cockatoo collision with turbines.	-
Equipment and/or vehicle strike Entrapment	■ Optimisation of the IDF during design, avoiding terrestrial fauna, SRE, protected, or critical habitat zones, including internationally protected migratory species, wherever possible. ■ Utilise existing disturbed areas and agricultural land where possible to minimise clearing of quality terrestrial fauna habitat where conservation significant fauna may.	■ Minimising clearing and machinery movements. ■ Progressive clearing to provide an opportunity for fauna to move out of the clearing area. ■ Minimising time of open excavations and trenches. – Fauna egress points will be provided in trenches and excavations, where required. A Bird and Bat Adaptive Management Plan (BBAMP) with trigger based, adaptive management will be developed and implemented (Appendix R) ■ The CEMP will include management of fauna encountered, including: – Operators of vehicles trained to ensure protection and management of conservation significant fauna and their associated habitats are protected. – Cease works to manage native fauna encountered. – Fauna spotters/suitably qualified fauna handlers present during clearing works. – Speed restrictions imposed. – Waste management to ensure containment of waste (in particular, food waste) is inaccessible to wildlife (native or introduced). ■ No feeding of native or feral animals.	-
Indirect impacts			
Increased risk of fire	■ Hot work permit system which prohibits flame, spark or cutting activities on high or extreme bushfire hazard days.	■ CEMP, Bushfire Management Plan and Bushfire Emergency Response Plan to be implemented. Key measures include: – Hot / hazardous works will not be undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic.	-

Potential impact	Avoidance	Minimisation	Rehabilitation
		– Correct storage of flammable or combustible liquids and solids. – Fire extinguishers will be in place at high-risk facilities and in site plant and vehicles. – The under carriage and radiators of site plant and vehicles shall be free from vegetation. ■ A Bird and Bat Adaptive Management Plan (BBAMP) with trigger based, adaptive management will be developed and implemented. ■ A carrion removal program will be implemented to minimise the attraction of scavenging fauna. ■ Areas cleared for temporary infrastructure will be confined to previously disturbed areas. These areas will be rehabilitated to their pre-disturbance conditions when no longer required.	
Vibration, noise and light impacts; barrier effects	-	■ Minimise vibration, noise and light impacts, including restricting works to daylight hours where practicable and selecting appropriate plant and equipment.	-

7.7 Assessment and significance of residual impact

Assessment of impacts focuses on potential residual impacts from the Proposal on significant terrestrial fauna, as well as cumulative impacts following mitigation as described in Section 7.6.

The direct residual impacts have been assessed based on the IDF.

Implementation of the Proposal would result in direct loss of:

- A total of 5.02 ha of moderate to high foraging habitat for CC and 3.36 ha of moderate foraging habitat for FRTBC will be impacted within the IDF including:
  - 5.02 ha (0.52 %) High to moderate quality foraging habitat (CC)
  - 3.36 ha (0.35%) Moderate quality foraging habitat (FRTBC).
- 63 individual isolated Cockatoo PNTs, including 62 trees with evidence of recent, intermediate, active and old foraging.
  - 1,516 (approximately 96%) PNT remain undisturbed within the broader Development Envelope.
  - Two trees were identified to have possible hollows within the IDF, however there were no suitable hollows identified within the IDF. These trees will be avoided where possible during construction as they are located on the edge of the IDF.

The following sections present an assessment of residual proposed, potential and cumulative impacts to significant terrestrial fauna within the IDF.

7.7.1 Residual impacts on terrestrial habitats

The Proposal has sought to preferentially utilise cleared agricultural areas (in degraded to completely degraded condition) as it provides the least fauna habitat value. Residual impacts to terrestrial fauna habitats are based on the IDF and outlined in Table 7-19. The total area of the IDF, representing the maximum potential extent of direct disturbance, is 964.37 ha. Of this 964.37 ha, over 97.5% consists of disturbed and low-quality agricultural land, predominantly absent of native vegetation with some scattered native trees* (approximately 2.94 ha of scattered trees (0.4%) within the IDF). The area of pine plantations have previously been felled and therefore are considered disturbed and low-quality habitat. Wetland habitat will be completely avoided. A total of 2.23 ha (0.23%) of area in the IDF has not been surveyed however predominantly consists of pre-disturbed areas such as roads.

Potential nesting trees

Sixty-three (63) PNTs were recorded within the IDF, of these 57 were in areas cleared for agriculture or in areas cleared for infrastructure and six in Open Jarrah-Marri woodland. Although 63 individual trees are located within the IDF, 1,516 (approximately 96%) trees remain undisturbed within the broader Development Envelope. Two trees were identified to have possible hollows within the IDF, however there were no suitable hollows identified within the IDF. These trees will be avoided where possible during construction as they are located on the edge of the IDF.

Table 7-19 Predicted impacts on terrestrial fauna habitat types

Vegetation category / habitat type	Habitat type	Foraging habitat quality score (CC and FRTBC)	Number of PNT's identified in IDF	Extent within DE (ha)	Extent within DE (%)	Extent within IDF (ha)	Extent within IDF (%)
Native Vegetation	Banksia heath and woodland	High (CC), Low (FRTBC)	-	203.93	1.63	1.65	0.17

Vegetation category / habitat type	Habitat type	Foraging habitat quality score (CC and FRTBC)	Number of PNT's identified in IDF	Extent within DE (ha)	Extent within DE (%)	Extent within IDF (ha)	Extent within IDF (%)
	Open Jarrah-Marri woodland	Moderate	6	464.00	3.72	3.35	0.35
Drainage line and riparian	Drainage line and riparian	Moderate	-	55.48	0.44	0.1	< 0.01 %
Plantations	Pine Plantations	Low	-	102.96	0.82	16.19	1.68
Wetlands	Wetlands	Low	-	2.44	<1	0	0
Agricultural	Cleared - Agriculture	Low	57	11619.41	93.08	940.93	97.57
	Scattered Trees*	Low	-	-	-	(4.44)	(0.46)
Unsurveyed Areas	Predominantly Roads	-	-	35.33	0.28	2.23	0.23
Total			**63**		**100**	**964.37**	**100**

*Scattered trees are calculated at an approximate from canopy cover and are included in the total calculation of cleared - agriculture.

Table 7-20 Tree species for black cockatoo foraging and PNT residual impact

Tree species	Foraging type	Number of PNTs within DEe	Number of PNTs within IDF
Coastal Blackbutt (*Eucalyptus todtiana*)	Old Foraging	5	1
Unknown eucalypt (*Eucalyptus* sp.)	-	6	0
Jarrah (*Eucalyptus marginata*)	-	17	0
Marri (*Corymbia calophylla)*	Intermediate, active and old Foraging	1,460	58
Powderbark Wandoo (*Eucalyptus accedens*)	-	3	0
River Gum (*Eucalyptus camaldulensis*)	-	35	1
Tuart (*Eucalyptus gomphocephala*)	Old and recent foraging	43	3
Wandoo (*Eucalyptus wandoo*)	-	10	0
Total		**1,579**	**63**

7.7.2 Residual impacts on conservation significant terrestrial fauna

Terrestrial fauna and the habitats upon which they depend may be directly and indirectly impacted by the Proposal. An assessment of residual impacts for each conservation significant terrestrial fauna species with Moderate or higher likelihood of occurrence in the Development Envelope has been undertaken.

Direct impacts to fauna (bird and bat) individuals from the Proposal includes injury or death caused by turbine strike, barotrauma or collision with transmission infrastructure. The lack of suitable wetlands within the Development Envelope, and consideration of the potential occurrence of migratory shorebirds, allows for the determination of no significant residual impacts on these migratory species.

7.7.2.1 Black cockatoos

Direct mortality

Evidence from nearby wind farms indicates that black-cockatoos are unlikely to be directly impacted by turbine collision due to adoption of minimum blade tip height of above 59 m AGL (current proposal minimum blade tip height of 66 m AGL) (Umwelt, 2026). Recent data suggests that the black cockatoos generally fly below RSA (Bamford, *in prep*). Bird and Bat Utilisation Surveys (BBUS) within the Development Envelope commenced in August 2024 and are due for completion in mid-2026.

The Preliminary Bird and Bat Adaptive Management Plan (PBBAMP) encompasses all activities of the MWF Proposal that may result in interactions with conservation significant bird and bat species that fly within RSA and considers proposed mitigation strategies and monitoring protocols to manage those impacts within acceptable thresholds (Bamford, 2025).

A preliminary risk assessment is provided in the PBBAMP which identifies fauna mortality, disturbance and behavioural disruption as key ecological risks associated with the Proposal (Bamford, 2025). Species identified as most at risk include the two black cockatoo species, birds of prey and the White-striped Freetail Bat (*Austronomus australis*). Although not recorded within the surveys undertaken to date, it is noted that Gould's Wattled Bat (*Chalinolobus gouldii*) may also be at risk as it is likely to occur within the DE, is widespread and has been recorded in surrounding windfarms (Bamford, 2025).

Specific mitigation measures have been proposed for bird and bat species within the PBBAMP to manage the risk of turbine collision and barotrauma from operation of the Proposal, and are reflected in Table 7-18 With these proposed measures and through an adaptive management approach, as outlined in the PBBAMP, the operation of the turbines is not expected to significantly impact populations of bird and bat species.

Foraging habitat

A total of 5.02 (0.52%) ha within the IDF of moderate to high quality foraging habitat will be impacted for CC and 3.36 ha (0.35%) of moderate quality foraging habitat for FRTBC. The area and quality of foraging habitat proposed to be impacted in the IDF is low due to avoidance of impacts through Proposal design. Total residual impact to foraging habitat with low to high foraging habitat quality for CC and FRTBC is outlined in Table 7-20. The remaining 957 ha (over 99%; NB: 2.23 ha of IDF not accessed) within the IDF is Low quality habitat for CC and 1.65 ha (0.17%) for FRTBC.

Based on the above, the Proposal is not likely to have a significant residual impact on black cockatoo foraging habitat types.

7.7.3 Residual indirect impacts on other terrestrial fauna

A summary of the residual indirect impacts of the Proposal is provided in Table 7-21.

Table 7-21 Assessment of residual indirect Impacts on terrestrial fauna

Threat	Assessment
Fragmentation and reduced connectivity between fauna habitats	Low risk of changes to fauna behaviours including migrating, foraging, hunting, breeding and nesting. Low risk to bird species of increased exposure to predators at road edges due to loss of cover. Low risk of unauthorised clearing due to implementation of NVCP controls and CEMP during construction. Reptile species may be at risk of increased exposure to predators at road edges due to loss of cover. Mammal species may be at risk due to fragmentation of habitat.
Vehicle strike	Low risk to bird, reptile and mammal species, no additional risk than that posed on existing roadways.

Threat	Assessment
Vibration, noise and light	No risk to bird species due to large activity range, and abundance of suitable habitat in the vicinity of the Proposal to support their populations. Risk is present for reptiles and mammal species, including to foraging and breeding due, and disruption to nocturnal animal behaviours, including migrating away from Proposal areas into unsuitable habitat.
Barrier effects	Risk to bird species due to potential displacement. Low risk to reptiles and mammal species due to degraded habitat condition.
Increased fire risk	Bird, reptile and mammal species are at risk from increased fire risk.
Invasive pest species	Low risk of vegetation clearing may create corridors that enable feral predators to move more freely through the landscape. Low risk of clearing displacing native fauna, increasing their likelihood of traversing exposed areas, increasing predation. Low risk of food and water availability increasing for feral animals during construction due to poor waste management. Low risk of increase in small feral mammals, such as rabbits, may attract raptors to the DE, increasing the potential risk of turbine strike.
Weeds	Risk of disturbance associated with construction may facilitate the spread of weeds by exposing remnant vegetation to additional disturbance (edge effects).
Dust	Low risk of dust impacting on vegetation condition.
Fauna entrapment	entrapment in trenches and excavations is a risk to reptiles and mammals due to the inability to escape and succumbing to injury or due to exposure from heat of the day or flooding

The residual indirect impacts are considered *not* significant, due to appropriate mitigations and the preparation and implementation of applicable management plans.

7.7.4 Cumulative impacts

Significant fauna species that occur or are likely to occur within the Development Envelope may be affected by cumulative impacts from existing or foreseeable projects. Retaining high quality fauna habitat where possible will minimise the impact on significant fauna species in the subregion. It is not possible to quantify the cumulative extent of habitat loss that satisfies the specific habitat requirements for each species, due to the lack of detailed fauna habitat mapping for the entire subregion. Given the large majority of the IDF is located on highly modified agricultural land and considering the specific avoidance and mitigation measures outlined in Section 7.6.1 and 7.6.2, the cumulative impacts of the Proposal to terrestrial fauna, SRE species and migratory species are considered low.

7.8 Environmental outcomes

Implementation of the Proposal will achieve the environmental outcomes listed in Table 7-22 to protect significant terrestrial fauna environmental values.

Table 7-22 Proposed environmental outcomes – terrestrial fauna

Proposed environmental outcomes	Consistent with EPA objective	How environmental outcomes can be measured and assured	Manageable under other statutory mechanism
Clearing of 5.02 ha of excellent to moderate quality terrestrial fauna habitat (includes 3.36 ha of very good to excellent quality habitat of Black Cockatoo habitat (CC/FRTBC) and 63 PNT)	Yes	Defined IDF.CEMP during construction.	Yes, via NVCP under Part V of EP Act.
No significant impacts to bird and bat populations due to wind farm operations	Yes	Final BBAMP will define the monitoring, management and investigative triggers to be implemented.	Yes, through implementation of the BBAMP which is likely to be required as part of the Development Approval granted under the *Planning and Development Act 2005*.

It is anticipated that the Proposal will have no significant impact on terrestrial fauna.

The proposed environmental outcomes are consistent with the EPA objective *"To protect terrestrial fauna so that biological diversity and ecological integrity are maintained"*. Further, implementation of the Proposal may contribute to enhanced outcomes for some threatened species for which climate change is a key threatening process.

8 Social Surroundings

8.1 EPA environmental factor/s and objective/s

The social surroundings environmental factor under the EPA guidelines defines social surroundings as “living things, their physical, biological and social surroundings, and interactions between all of these” and “In the case of humans, the reference to social surroundings in the definition of environment is a reference to aesthetic, cultural, economic and other social surroundings to the extent to which they directly affect or are affected by physical or biological surroundings (EPA, 2023d).

The objective for the Social Surroundings Environmental Factor is “to protect social surroundings from significant harm” (EPA, 2023d) and “consider Aboriginal cultural heritage values through understanding significance of the physical or biological surroundings” (EPA, 2023d).

8.2 Relevant policy and guidance

Relevant legislation, policies and guidelines relevant to the social surroundings environmental factor is provided in Table 8-1.

Table 8-1 Social surroundings policy and guidance

Author, Year	Title	Consideration
Commonwealth technical guidance		
(DCCEEW, 2021)	National Environment Protection (Ambient Air Quality) Measure (NEPM) 1998	Australian framework established to protect human health and the environment by setting agreed national standards for air quality. The NEPM defines maximum allowable concentrations for key air pollutants—including particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide, nitrogen dioxide, sulfur dioxide, and ozone—in outdoor ambient air.
(NEPC, 2013)	National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)	Provision to establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, landowners, developers and industry.
(DCCEEW, 2024d)	Onshore Wind Farm Guidance Best practice approaches when seeking approval under Australia’s national environment law	Guidance has been developed to support a smooth and efficient regulatory pathway that is essential to a renewable energy transition, while maintaining protection for MNES, including animals, plants, ecological communities, as well as natural, indigenous, and historic heritage places and values, and internationally important wetlands listed under the EPBC Act.
(Standards Australia, 2016)	Australian Standard 2436-2010. Guide to noise and vibration control on construction, demolition, and maintenance sites.	This standard provides guidelines and principles for managing noise and vibration generated by construction, demolition, and maintenance activities to minimise their impact on surrounding environments and communities.
(CASA, 2021b)	Advisory Circular AC 139.E-05v1.0 Obstacles (wind farms) outside the vicinity of a CASA certified aerodrome	Guidance on matters that should be considered when assessing a wind turbine development so that all necessary measures can be taken to protect aviation safety. Mitigation measures such as warning lights, and reporting of tall structures that are at least 100 m agl is required.
(CASA, 2021a)	Advisory Circular AC 139.E-01v1.0 Reporting of tall structures	The hazards that such buildings or structures may pose to aircraft requires assessment, a requirement to notify CASA of the obstacle, structure of source of a hazardous plume. The information is provided by persons proposing to undertake planning, approval, erection, extension or dismantling of tall structures or sources of hazardous.
(DITRDCSA, 2012)	National Airports Safeguarding Advisory	Minimising the risk to civil aviation arising from the development, presence and use of wind farms and wind monitoring towers.

Author, Year	Title	Consideration
	Group (NASAG) Guideline D	
State technical guidance		
(EPA, 2023d)	Environmental Factor Guideline: Social Surroundings	The information provided in this chapter addresses the 'considerations for environmental impact assessment' outlined with in the technical guidance material, for this Proposal.
(EPA, 2023c)	Technical Guidance – Environmental impact assessment of Social Surroundings: Aboriginal cultural heritage	This document provides guidance on assessing impacts to Aboriginal cultural heritage and outlines how these impacts can be managed in accordance with the Aboriginal Cultural Heritage Act 1972 (as amended).
(EPA, 2018b)	Environmental Factor Guideline: Inland Waters	This guideline provides guidance on what information is required by the EPA regarding water hydrology and water quality impacts for an EIA in Western Australia. It highlights the need to understand, avoid, minimise, and manage any impacts from all phases of the Proposal lifecycle supported by detailed baseline data, impact modelling, and adaptive management in conformity with EPA expectations. This guidance was used by Aurecon (2025d) in conjunction with the Preliminary Water Resources Impact Assessment.
(DWER, 2024b)	Western Australian Government's Green Energy Approvals Initiative	This program is designed to expedite environmental approvals for renewable energy projects, supporting the State's commitment to achieving net zero emissions by 2050. This guidance was used by Social IQ (2025b) in conjunction with the Social Baseline Study.
(DWER, 2011c)	A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (2023)	This guideline deals primarily with the management of dust generated from diffuse sources such as land clearing activities, earthworks during construction, remediation of contaminated sites, demolition works, bulk materials handling, mining and quarrying activities including the storage, transport and stockpiling of soil or other material on site.
(GoWA, 2011)	WA Environmental Offsets Policy	The offset policy and guidelines have been considered in relation to the definition of significant residual impacts and the proposed offset strategy for the Proposal.
(GoWA, 2014)	WA Environmental Offsets Guidelines	The guidelines expand on the offsets policy to ensure that the basis for decision-making on environmental offsets is understood by decision-makers, government officers, industry and the community and consistently applied by decision-makers.
(DPLH, 2022)	Western Australia Planning Commission (WAPC) Position Statement on Renewable Energy Facilities	The purpose of these Guidelines is to establish the criteria for choosing sites, carrying out environmental assessments, and consulting with the community. The guidelines mandate that developers undertake comprehensive environmental impact evaluations and actively involve local communities to address concerns like visual intrusion and ecological disturbance. This guidance was used by Social IQ (2025b) (2025a), and Resonate (2025) in conjunction with the Social Baseline Study, Social Impact Assessment and the Environmental Noise Assessment.
(DoP, 2016)	WAPC Transport Assessment Guidelines (Volume 4 – Individual Developments)	Provides advice on the scale and content of the transport information that should be submitted to the approving authority in support of an individual development application. It also provides detailed technical advice on how to undertake the transport impact assessment. This guidance was used by Aurecon (2025b) in conjunction with the Traffic Impact Assessment.
(Main Roads, 2022)	Main Roads Western Australia guidelines for oversize and over mass vehicle corridors	Main Roads Western Australia provides specific guidelines and regulations for the movement of OSOM vehicles and loads on the state road network. The OSOM guidelines cover permit application procedures, route assessments, load escort requirements, and safety protocols to ensure the safe and efficient transport of large indivisible loads on designated corridors.

Author, Year	Title	Consideration
		This guidance was used by Aurecon (2025b; 2025c) in conjunction with the Traffic Impact assessment, and Route Assessment and Site Access Review.
(NTC, 2024)	Australian Code for the Transport of Dangerous Goods by Road & Rail as per Edition 7.9 (2024)	The Australian Dangerous Goods Code (edition 7.9, 2024) sets out the requirements for transporting dangerous goods by road and rail. Storage of hazardous or dangerous substances are supported by AS1940 and AS1692.
(EPA, 2005)	Environmental Protection Authority Guidance Statement No. 3 – Separation Distances Between Industrial and Sensitive Land Uses	The purpose of this Guidance Statement is to provide advice to proponents, responsible authorities, stakeholders, and the public on the minimum environmental management requirements expected by the EPA during the EIA process. This guidance was used by Aurecon (2025a) in conjunction with the Landscape Visual Impact Assessment.
Other guidance		
(EPA SA, 2021c)	South Australian (SA) Environment Protection Authority (EPA) Wind Farms Environmental Noise Guidelines November 2021 update	This document aims to help developers, planning and enforcement authorities, government agencies, acoustic engineers and the broader community assess environmental noise impacts from wind farms. This guidance was used by Resonate (2025) in conjunction with the Environmental Noise Assessment.
(DWER, 2011c)	A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (2023)	This guideline deals primarily with the management of dust generated from diffuse sources such as land clearing activities, earthworks during construction, remediation of contaminated sites, demolition works, bulk materials handling, mining and quarrying activities including the storage, transport and stockpiling of soil or other material on site.
(WAPC, 2007)	Visual Landscape Planning in Western Australia: A Manual for Evaluation Assessment, Siting and Design guideline	This manual provides advice to state agencies, local governments, developers and the community on techniques for incorporating visual landscape planning into the planning system. This guidance was used by Aurecon (2025a) in conjunction with the Landscape Visual Impact Assessment.
(DPHI, 2024)	Wind Energy Guideline – Technical Supplement for Landscape and Visual Impact Assessment', NSW Department of Planning, Housing and Infrastructure	Guidance for applicants, consent authorities and the community using the Wind Energy Guideline to understand the process and requirements for assessing visual and landscape character impacts for wind energy development in NSW. This guidance was used by Aurecon (2025a) in conjunction with the Landscape Visual Impact Assessment.
(WAPC, 2024b)	WAPC - State Planning Policy 3.7 Bushfire	Seeks to implement effective, risk-based land use planning and development which in the first instance avoids the bushfire risk, but where unavoidable, manages and/or mitigates the risk to people, property and infrastructure to an acceptable level. This guidance was used by Western Environmental (2025) in conjunction with the Bushfire Assessment.
(WAPC, 2024a)	Planning for Bushfire Guidelines – For the implementation of State Planning Policy 3.7 Bushfire	The guidelines provide support for decision making authorities, planners, landowners/ proponents and referral agencies. This guidance was used by Western Environmental (2025) in conjunction with the Bushfire Assessment.
(Standards Australia, 2018)	Australian Standard 3959: 2018 Construction of buildings in bushfire-prone areas	The purpose of AS 3959:2018 is to specify requirements for building in areas at risk from bushfires to improve awareness and ability to resist attack from embers, radiant heat, and flame contact. This guidance was used by Western Environmental (2025) in conjunction with the Bushfire Assessment.
(DWER, 2015)	Gingin Groundwater Allocation Plan	Provides allocation limits, licensing requirements and management approach for groundwater abstraction within the Gingin groundwater

Author, Year	Title	Consideration
		area. The Proposal is located within the Moore River catchment and provides context for identifying and mitigating potential downstream impacts to groundwater conditions. This guidance was used by Aurecon (2025d) in conjunction with the Preliminary Water Resources Impact Assessment.
(DWER, 2011a)	Gingin Surface Water Allocation plan	Sets out management objectives, allocation limits and licensing requirements for surface water resources in the Gingin area. The Proposal is located within the Moore River catchment and provides context for identifying and mitigating potential impacts to surface water flows. This guidance was used by Aurecon (2025d) in conjunction with the Preliminary Water Resources Impact Assessment.
(DBCA, 2006)	Lower Moore River – River Action Plan	Outlines management actions for riparian condition, water quality and habitat values along the Lower Moore River. Relevant as the Proposal is located within the Moore River catchment and provides context for identifying and mitigating potential downstream impacts to riverine environments. This guidance was used by Aurecon (2025d) in conjunction with the Preliminary Water Resources Impact Assessment.
(Barnett, Townley, Post, & Evans, 2012)	Australian Groundwater Modelling Guidelines	The objective of the guidelines is to promote a consistent and sound approach to the development of groundwater flow and solute transport models in Australia. This guidance was used by Aurecon (2025d) in conjunction with the Preliminary Water Resources Impact Assessment.
(ARR, 2019)	Australian Rainfall and Runoff Guidelines	The ARR Guidelines provide the best available and scientifically robust information and methodologies for estimating design floods in Australia. They assist engineers, planners, and decision-makers in tackling design flood problems by offering standardised approaches for flood frequency analysis, rainfall data interpretation, runoff estimation, and hydraulic modelling. This guidance was used by Aurecon (2025g) in conjunction with the Flood Study.

The Proponent has specifically considered guidance documents in the following ways to support the development of this Proposal:

- Assessments and analyses undertaken and planned to describe the receiving environment and its significance in relation to implementing the Proposal.
- Identification of activities which may lead to impacts to elements of social surroundings including aspects of Aboriginal cultural heritage.
- Application of the EPA's mitigation hierarchy when influencing elements of the Proposal's design and infrastructure placement so that as far as reasonably practical a reduction of potential impacts and lead to improve environmental outcomes where possible.

8.3 Social impact assessment methodology

Both the social baseline study and the Social Impact Assessment were implemented following best practice principles and practices. In addition, the requirements and guidance within the EPA's Environmental Factor for Social Surroundings and the Technical Guidance Environmental Impact Assessment of Social Surroundings – Aboriginal Cultural Heritage were incorporated. A mixed-methods approach was undertaken to ensure the resulting assessment was evidence-based, participatory, and context-specific (SIQ, 2025b).

Throughout the assessment for social impacts the EPA's Framework for Environmental Considerations within Environmental Impact Assessment guidance, and the *Statement of principles, environmental, factors, objectives and aims of EIA* (EPA, 2023b) were utilised.

The overarching methodology consisted of the following categories:

- Primary data collection:

Field-based and participatory research methods were used to capture local perspectives and place-based knowledge, including:

  - Semi-structured interviews (in-person and online) with stakeholders.
  - Community perception survey tailored to the study area
  - Site visits, physical and social mapping, and ethnographic observation

- Secondary data analysis:

  Review of local and regional government reports, statistical datasets, planning documents, and relevant policy frameworks to establish contextual trends and identify key social indicators.

- Impact significance assessment:

  Potential impacts were evaluated using a significance framework combining:

  - Magnitude of change; negligible, low, moderate, high (including beneficial)
  - Sensitivity of affected communities or receptors: low to high, based on resilience, interest, and adaptive capacity (SIQ, 2025b).

- Participatory validation:

  Stakeholder engagement was used to verify the relevance of significance criteria, test mitigation and enhancement proposals, and ensure community perspectives were accurately reflected in the final assessment. This process supports both regulatory compliance and social licence outcomes.

Magnitude and sensitivity elements were cross-referenced utilising the assessment impact matrix to determine overall significance (High, Moderate, Minor, Negligible, Beneficial) (Table 8-2) and sensitivity levels of Low, Medium and High (Table 8-3). Subsequently a final residual impact was undertaken to test validity of mitigation measures and if the potential impact being assessed had reduced to an acceptable level (Table 8-4).

Table 8-2 Overview of magnitude criteria

High	Moderate	Minor	Negligible	Beneficial
Effects are likely to be widespread within the Proposal area (regional to national effect). Effects may be irreversible. Effects are likely to result in substantial change to the current social situation (without mitigation).	Effects are likely to be widespread within the Proposal area (regional to local effect). Effects may be long-term* and may affect a large number of people. Effects likely to be result in noticeable change to the current social situation (without mitigation).	Effects are likely to be localised within the Proposal area (local to site effect). Effects may be medium-term** and may affect a small proportion of local stakeholders. Effects likely to be result in perceptible change to the current social situation (without mitigation).	Effects are likely to be localised within the site only. Effects may be short-term/transient*** and may be experienced only within households or individuals. Effects are likely to be imperceptible to the current social situation (without mitigation).	Effects likely to benefit more than individuals or single households. Effects are likely to be positive in the short or longer-term. Effects are likely to result in noticeable positive change to current social situation (with enhancement).

Source: Marri Wind Farm Social Impact Assessment, (SIQ, 2025a)

Table notes:

* Long-term = 10+ years but not permanent. ** Medium-term = 3-10 years. ***Short-term or transient = 0-3 years.

Table 8-3 Overview of sensitivity criteria

Low	Medium	High
Minimal vulnerability and community, item or area has a high ability to adapt to change (or no change required). There is little public interest in this change. High confidence in impact prediction and or potential for effective mitigation.	Some vulnerability yet community, item or area has some ability to adapt to change (at least in part). There is some public interest in this change. Moderate confidence in impact prediction and or potential for effective mitigation. For positive	Many vulnerabilities so community, item or area has little to no ability to adapt to change. There is high public interest in this change. Low confidence in impact prediction and or potential for effective mitigation.

Low	Medium	High
For positive impacts: high capacity to realise opportunities.	impacts: reasonable capacity to realise opportunities.	For positive impacts: limited or no capacity to realise opportunities.

Source: Marri Wind Farm Social Impact Assessment, Social IQ (2025a).

Table 8-4 Overview of residual impact matrix

Magnitude	Sensitivity		
	High	Medium	Low
High	Extreme	Major	Moderate
Moderate	Major	Moderate	Minor
Minor	Moderate	Minor	Negligible
Negligible	Minor	Negligible	Negligible
Beneficial	Minor Positive	Moderate Positive	Major Positive

Source: Marri Wind Farm Social Impact Assessment, (SIQ, 2025a)

Following the above assessment methodology, any potential impacts which require further management to lower the potential residual impact intensity, have been incorporated into individual studies to ultimately define the influencing metric more clearly. This results in targeted mitigation measures which have measurable outcomes and support any EPA reporting requirements (if applicable).

8.4 Surveys and studies

The Proponent commissioned subject-specific surveys to thoroughly explore other areas of influence and assess their potential to shape the overall reception of the Proposal within the social setting. These investigations included but are not limited to understanding concerns (regardless of whether vexatious or frivolous) related to noise, visual aspects, economic values, transport disruptions and/or disruption to other provided services and communications. Each of the individual supporting studies or impact assessments have been summarised within Section 8.4.

8.4.1 Social baseline study

A Social Baseline Study was undertaken by Social IQ in 2025 to document the existing social, cultural, and economic characteristics of the communities and areas which may be impacted due to Proposal implementation (SIQ, 2025b). The social baseline analysis identified that the region in general is defined by small but growing rural communities with an ageing demographic profile, declining youth population, and modest levels of cultural diversity.

8.4.2 Social impact assessment

Also in 2025, a Social Impact Assessment (SIA) was completed which provided a comprehensive evaluation of the Proposal's potential social and economic impacts across the expected lifecycle. The assessment follows WA EPA guidance on the social surroundings factor and applies best-practice SIA methodologies, including social baseline profiling, impact significance assessment, stakeholder engagement, and the development of targeted mitigation and enhancement strategies (SIQ, 2025a).

Stakeholder engagement was undertaken to support the development of the SIA which included an online community perception survey, one-on-one interviews, mitigation testing workshops, community drop-in sessions, and meetings with key local government representatives (SIQ, 2025a).

Engagement activities highlighted both support for and concerns in relation to the Proposal. Concerns raised by stakeholders related to housing, community cohesion, visual amenity and local infrastructure capacity emerging as priority (SIQ, 2025a). Whilst transparency of communication, ongoing participation opportunities, and demonstration of tangible local benefits (outcomes) were consistently emphasised as critical to maintaining trust and social licence (SIQ, 2025a).

The Traditional Owners (the Yued people) of the land within and surrounding the Development Envelope share cultural ties with other Noongar groups, although they do have their own distinct traditions, customs, and dialects. Members of the Yued have been engaged within the early stages of this Proposal with their advice and commentary included in the SIA (SIQ, 2025a).

Additional Aboriginal cultural heritage understanding has been gained through employing the following methods:

- Undertake ongoing consultation with the Yued Traditional Owners to ensure inclusion and transparency of information being provided
- Support the preservation of Aboriginal cultural heritage and protection of significant sites within and around the Development Envelope
- Integrate Aboriginal cultural heritage and landscape beliefs (ethnographic connection) into final Proposal design through sensitive awareness during siting, landscaping, and visual buffers

The SIA was carried out following the completion of the Social Baseline Study and Economic Impact Assessment and additional stakeholder engagement, to provide comprehensive information representative of the social and economic setting and any potential impacts or opportunities from implementing the Proposal.

The Local Impact Area (LIA) and associated boundaries are presented in Figure 8-1, and the Regional Impact Area (RIA) is presented in Figure 8-2.

It is expected that during the construction phase, the proposed workforce will create upwards of approximately 310 direct (and approximately 391 indirect) jobs (WSP, 2025). For particularly complex work or where the availability or a regulatory requirement for specialist skills and equipment is apparent (certifications and/or level of experience), interstate or international personnel may be required to fill these specialised employment opportunities (SIQ, 2025a).

The Proponent will continue community consultation commitments throughout delivery of the Proposal to ensure additional metrics are collected, and if required inform adaptive management to maintain local and regional community faith.

A full version of the Social Impact Assessment (SIQ, 2025a) has been included as Appendix S to support assessment of this Proposal.

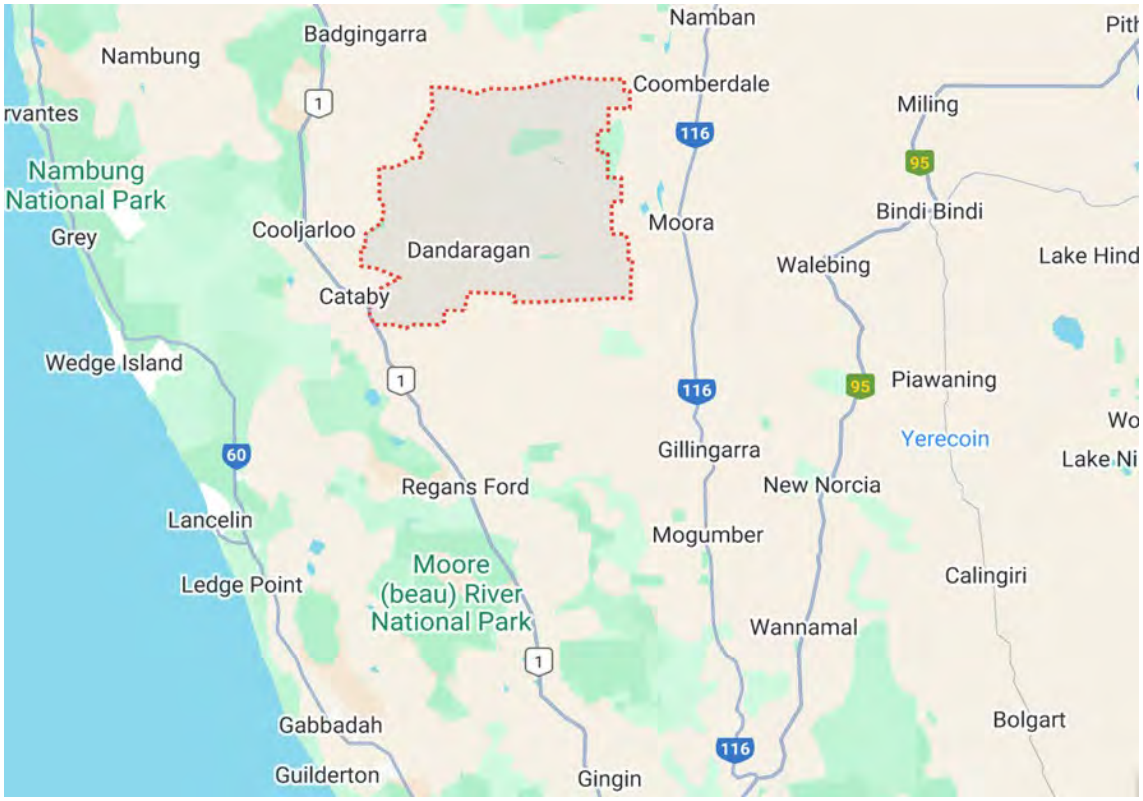


Figure 8-1 Local impact area

Source: Social Impact Assessment (SIQ, 2025a)

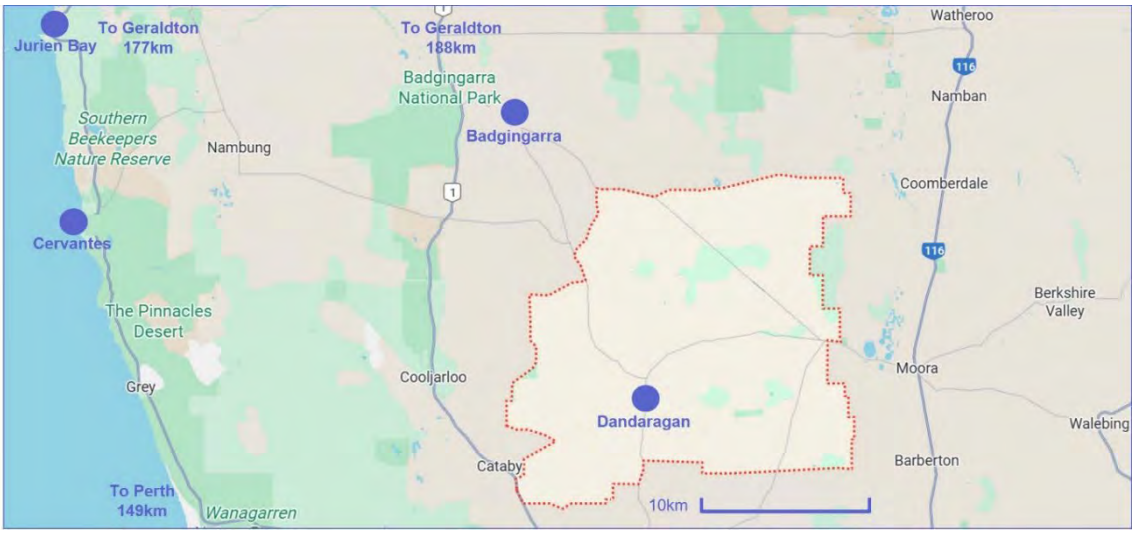


Figure 8-2 Regional impact area

Source: Social Impact Assessment (SIQ, 2025a)

8.4.3 Aboriginal and cultural heritage due diligence assessment

The Aboriginal and Historical Cultural Heritage Due Diligence Assessment (DDA) undertaken in 2025 identified multiple significant Aboriginal Cultural Heritage sites present in and around the Development Envelope. These included registered and lodged sites such as the Gingin Brook Waggyl site (Figure 8-3) in addition to other sites of cultural significance.

The DDA and identified 16 registered, lodged or historic Aboriginal Cultural Heritage sites within a 5 km buffer of the Development Envelope. The assessment found limited prior heritage surveys, indicating a need for broader field investigations. The ACHIS and DPLH online databases identified four sites either intersected or located within a 2 km (buffer) of the Development Envelope (Archae-aus, 2025), including one registered Aboriginal Cultural Heritage place, two lodged places and one historic place. The Aboriginal

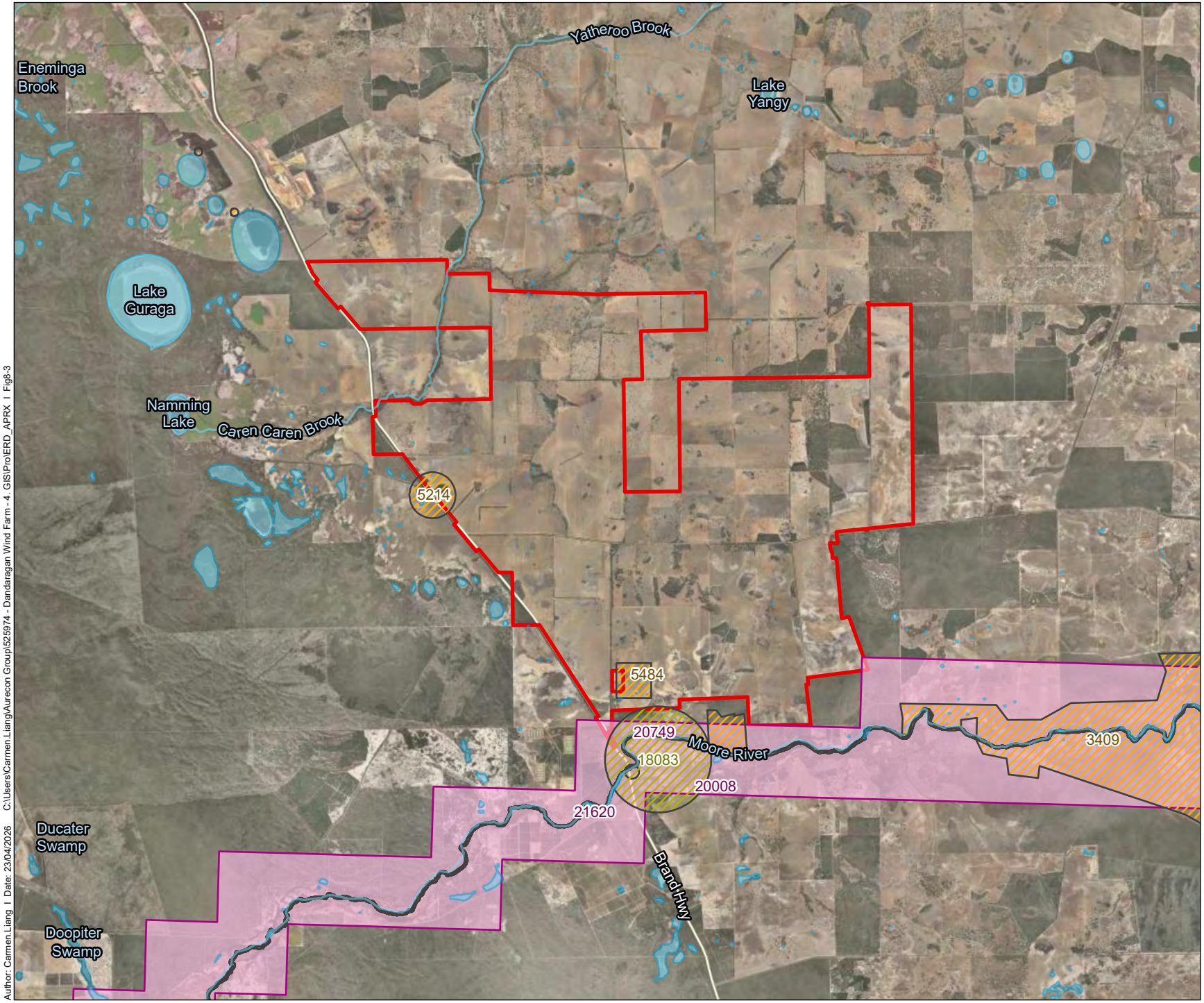
Cultural Heritage sites located within the Development Envelope are listed in Table 8-5, and shown in Figure 8-3.

There is high potential for ethnographic sites to be present within the Development Envelope in addition to archaeological objects, supported by records of artefact scatters often located near water sources.

Table 8-5 Aboriginal cultural heritage sites located within the Development Envelope

Place ID	Registered place name	Place type	Intersecting the Development Envelope (yes/no)
ACH registered places			
20008	Gingin Brook Waggyl Site	Camp; Creation / Dreaming Narrative; Historical; Hunting Place; Plant Resource; Water Source	Yes
ACH lodged places			
5214	NATGAS 133	Artefacts / Scatter	Yes
5484	GAS PIPELINE 81	Artefacts / Scatter	Yes
ACH historic places			
18083	Moore River Pools (PCE-06)	Hunting Place, Plant Resource, Water Source	Yes

Source: Desktop Aboriginal and Historical Cultural Heritage DDA (Archae-aus, 2025), DPLH-098, DPLH-099 DPLH-100



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- Development Envelope
- Watercourses (DWER-031)
- Waterbodies (LGATE-016)
- Aboriginal Cultural Heritage - Historic (DPLH-098)
- Aboriginal Cultural Heritage - Lodged (DPLH-100)
- Aboriginal Cultural Heritage - Register (DPLH-099)

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Marri Wind Farm Environmental Review Document

Figure 8-3 Location of Aboriginal Heritage Places and Culturally Significant Water Sources

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Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:150,000

Comments on culturally significant water sources and zones of cultural heritage potential are provided for context:

- Culturally Significant Water Sources: 11 culturally significant water sources within a 5 km radius of the Development Envelope were identified, including the Moore River Pool (PCE-06), Wetlands & Watercourses Moore River to Bullsbrook, Red Gully Creek, Gingin Brook Waggyl, Lennard Brook, Moore River Waugal, Boonanarring Brook, Wallering Brook, Nullilla Brook, Breera Brook, and Chandala Brook (Figure 8-3).
- Turbine locations and zones of Cultural Heritage potential: 10 proposed turbines were situated within zones of high potential, 13 within zones of moderate potential, and 58 within zones of low potential (Figure 8-4). One turbine was located within 500 m of Caren Caren Brook, and six were located within walking distance of the wetlands. The final turbine layout has since been revised resulting in multiple adjustments away from items of significance.
- Cultural Heritage potential: There is a moderate chance of unexpected findings of artefact scatters, historical or ancient archaeological finds. The overall archaeological and ethnographic characteristics of the entire Development Envelope remain uncertain due to limited prior surveys and the level of previous disturbance.
- On-ground cultural heritage survey work will be undertaken prior to commencement of construction. The requirement for additional on-ground survey work will be determined at that stage. Should delays occur with the broader planned on-ground survey work, a focus will be on areas of excavation for construction, with the assistance of Traditional Owners were possible. Micro-sighting allowance within the Indicative Disturbance Footprint also assists in mitigating risks where there are unexpected finds.
- Predictive statements for site types were used to identify four levels of heritage potential occurrence within the Development Envelope: low, moderate, high and very high (Archae-aus, 2025). Figure 8-4 presents the findings of the assessment of the potential occurrence (nil occurrence of ‘very high’). Depending on exact location, there is between low and high potential for the presence of archaeological aboriginal cultural heritage (including surface archaeological finds and features and areas of subsurface archaeological potential), and low potential for the presence of historical heritage, within the Development Envelope.

It is proposed that Traditional Owners will be available during the construction phase, in acknowledgement and mitigation of potential unexpected finds which may occur over the highly disturbed agricultural areas where surface indications are no longer visible.

Potential impacts have been presented within Section 8.6.

A full version of the Aboriginal Cultural Heritage DDA has been included as Appendix B to support assessment of this Proposal.

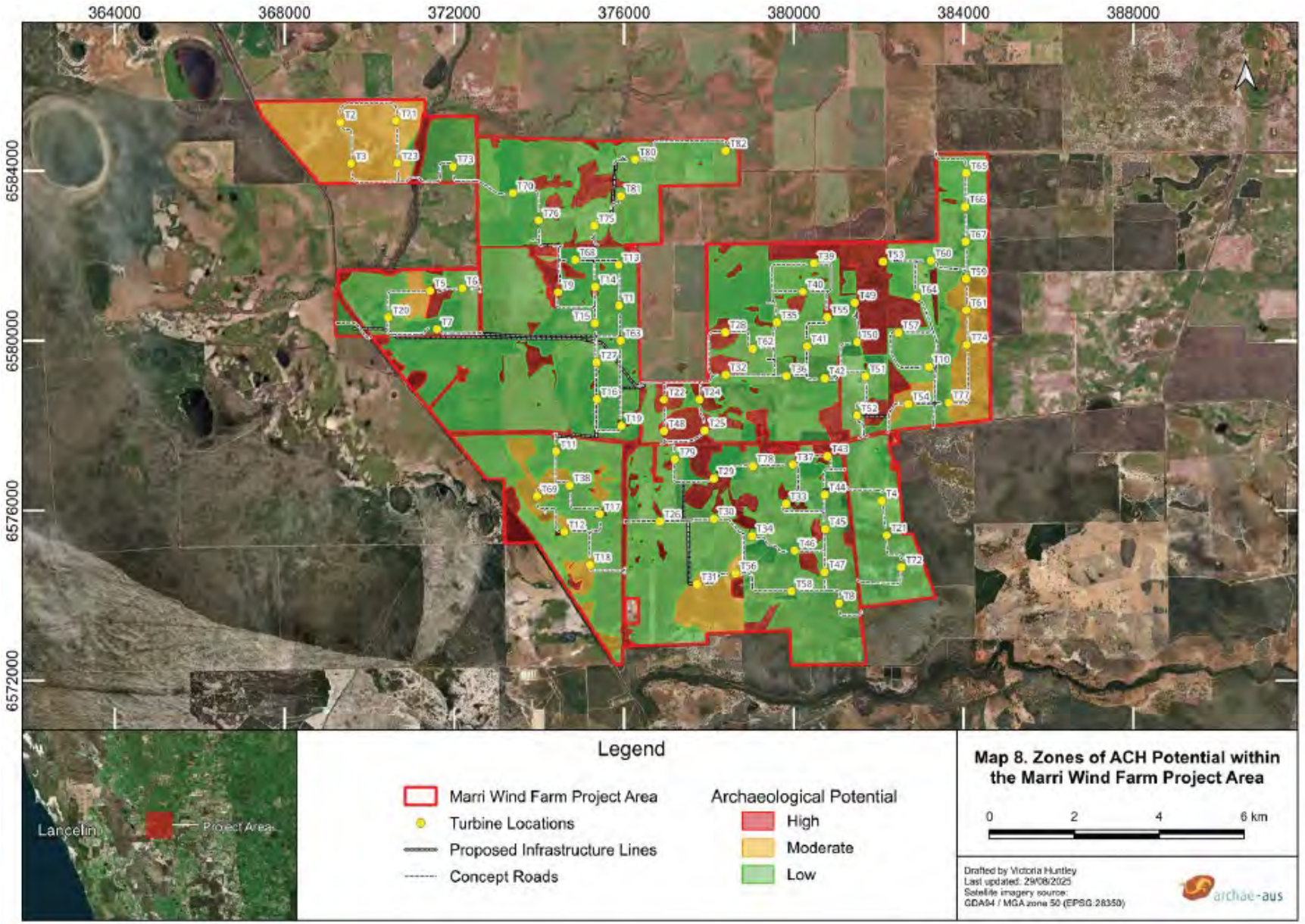


Figure 8-4 Zones of ACH potential

Source: Aboriginal and Cultural Heritage DDA (Archae-aus, 2025)

8.4.4 Environmental noise impact assessment

An operational Environmental Noise Impact Assessment was completed to support this Proposal in accordance with the requirements under the Environmental Protection (Noise) Regulations 1997 (Noise Regulations) (Resonate, 2025), and supporting guidance including:

- International Standard ISO 9613-2:2024 Acoustics - Attenuation of sound during propagation outdoors - Part 2 Engineering method for the prediction of sound pressure levels outdoors (ISO 9613-2:2024)
- IEC TS 61400-11-2:2024 Technical specification Wind energy generation systems – Part 11-2: Acoustic noise measurement techniques – Measurement of wind turbine sound characteristics in receptor position (IEC TS 61400-11-2:2024)
- South Australian EPA Wind Farms Environmental Noise Guidelines (2021)

As Western Australia has no standalone wind farm noise guidance document the SA Guideline was used, without application of the assigned noise level, 40 dB. As the Noise Regulations are based on industrial noise, which historically has presented a technical issue when applied to assessing turbine noise (due to noise modulation, tonality and impulsiveness from turbines), this Proposal is implementing best practice and the precautionary principle, adopting the noise limit for rural areas in Western Australia of 35 dB. The noise predictions were generated using SoundPlan (version 9.1) software which implements the prediction algorithm from ISO 9613-2:2024. The operational noise emission prediction was modelled, based on the worst-case scenario and the loudest turbine from several leading turbine models currently available. Metrics included varying wind speeds and directions from climate data, additional background proposed noise sources such as BESS and transformers, and the proposed 82 wind turbines in their specific geographical locations. Sensitive receptor locations, being dwellings located within the existing landscape were incorporated into the model. A 10 m topography resolution, ground absorption factors representing local terrain, receiver heights of 4 m for turbines and 1.5 m for ancillary infrastructure. Noise limit criteria was set at 35 dB for sensitive receptors and 45 dB for dwellings located outside the Development Envelope (un-involved receptors) (Resonate, 2025). The projected model including noise contours is presented in Figure 8-5.

The environmental noise assessment concluded that adequate noise mitigations are in place through design allowing for the construction and operation of the turbines in accordance with the Noise Regulations and other policies or guidelines as applicable, subject to final equipment selection and detailed design (Resonate, 2025).

Upon final selection and determination of placement of infrastructure, and prior to construction, a pre-construction noise assessment, and if required, the modelling/assessment may be refined or re-run to capture any possible increase in risk to allow for incorporation of appropriate mitigations as a safeguard measure, as noted below (Resonate, 2025).

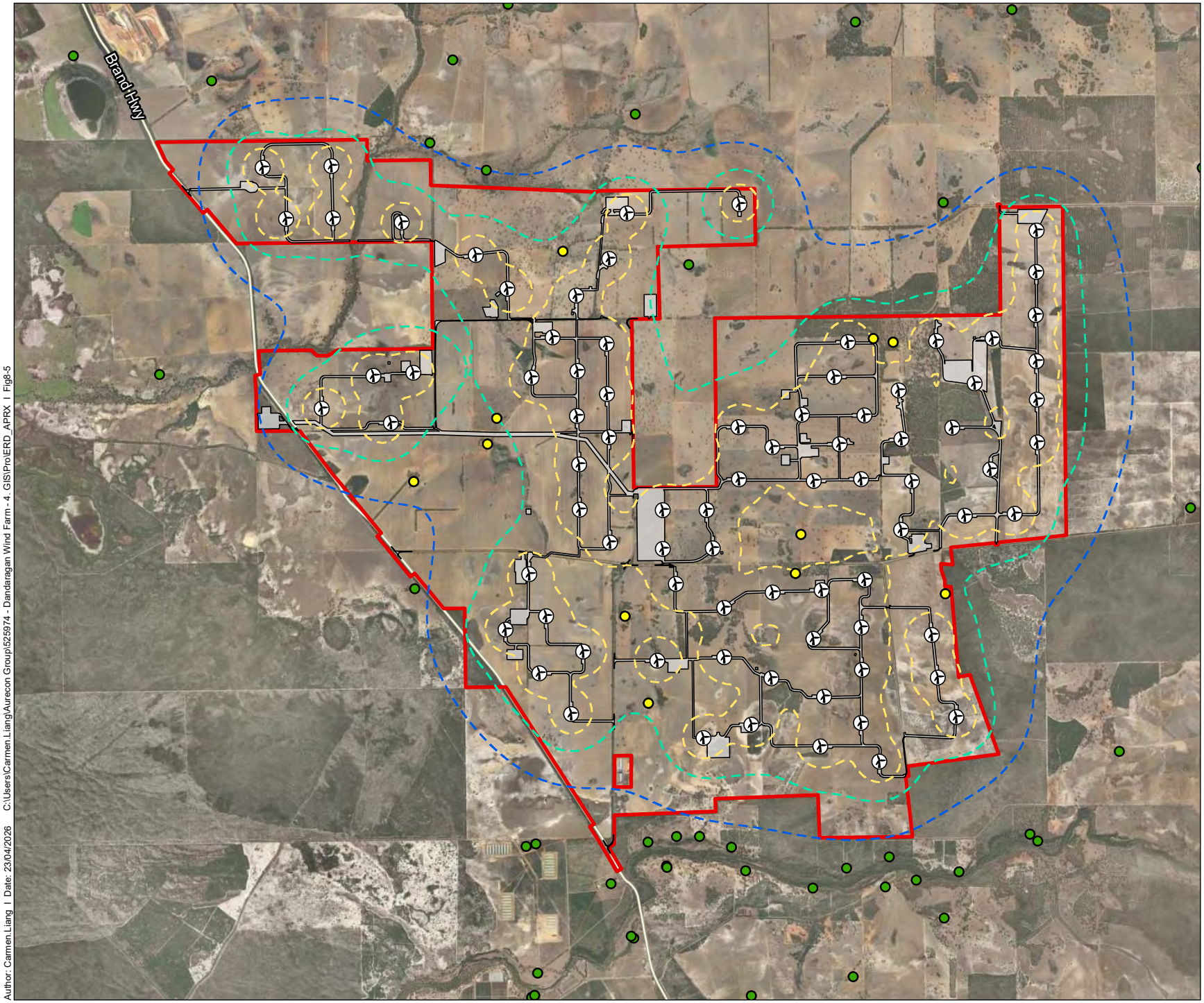
- Prior to the commencement of construction of the Proposal, a pre-construction noise assessment may be beneficial to reflect the final turbine and ancillary infrastructure selections and design.
- The pre-construction noise assessment should include a cumulative noise assessment incorporating the Yathroo Wind Farm.

Operational noise monitoring shall be undertaken to confirm turbine noise levels comply with the Noise Regulations assigned levels

It is noted that preliminary assessments have identified the selection of turbine type may impact sensitive Receiver 21, with a predicted noise level of 37 dB under maximum worst-case scenario. Further assessment at the pre-construction phase will review all available information to more closely define any potential elevated noise and their impacts.

Potential impacts have been presented within Section 8.6.

A full version of the Marri Windfarm Environmental Noise Assessment (Resonate, 2025) has been included as Appendix D to support this Proposal.



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Development Envelope

Indicative Disturbance Footprint

Turbine Layout

Involved Sensitive Receivers

Non-Involved Sensitive Receivers

Predicted Noise Level LAeq,10

35 db

40 db

45 db

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Marri Wind Farm Environmental Review Document

Figure 8-5 Environmental Noise Assessment

Version: 1

Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50

A4 Scale: 1:100,000

8.4.5 Landscape and visual impact assessment

The Landscape and Visual Impact Assessment (LVIA) was completed to support this Proposal, prepared in accordance with Visual Landscape Planning in Western Australia: A Manual for Evaluation Assessment, Siting and Design (WAPC, 2007) and the Wind Energy Guideline Technical Supplement (November 2024) to produce representative findings. The Landscape and Visual Impact Assessment comprised a desktop evaluation of the Proposal and its various components including turbines and ancillary facilities, then identified sensitive viewpoints where a higher potential for adverse visual impacts may occur (Aurecon, 2025a).

Visual effects from the Proposal may extend well beyond the Development Envelope boundary, due to the large size of the turbines (maximum 275 m agl), hence eight viewpoints were selected to support the landscape visual impact assessment. These locations are presented in Figure 8-6.

The methodology adopted to conduct the Landscape and Visual Impact Assessment is outlined below:

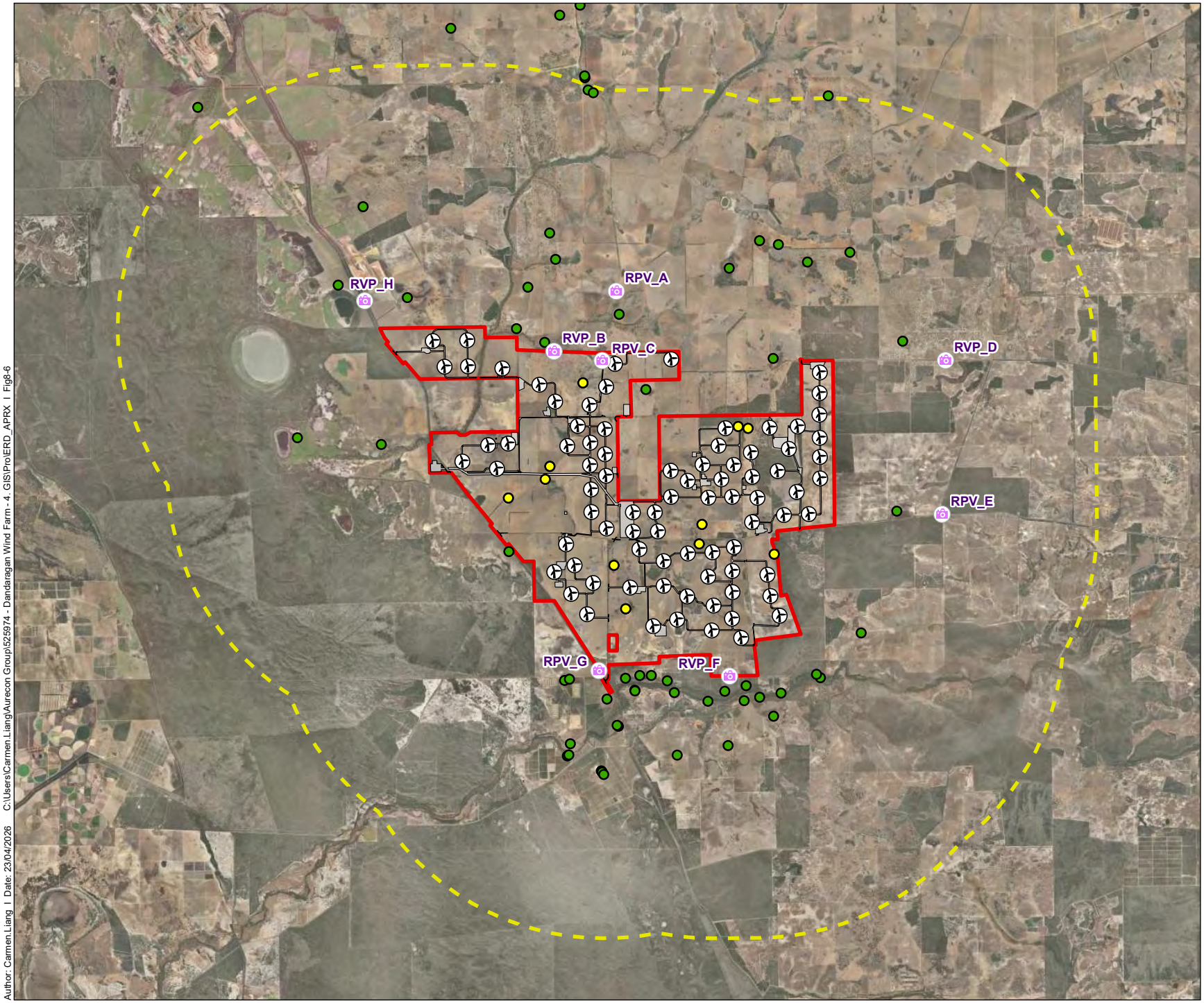
- Field surveys undertaken on 14 July 2025 and 1 August 2025.
- Landscape character assessments.
- Visual magnitude ratings.
- Sensitivity of landscapes and viewers determined.
- Zone of Theoretical Visibility mapping.

Cumulative impacts from existing and proposed future wind farms within 8 km to 20 km radius of the Proposal were also assessed to define a combined potential impact on sequential visibility, visual compatibility, land use changes, and loss of landscape elements.

Landscape character impacts are considered low to negligible following completion of a risk assessment (Aurecon, 2025a), including along the Brand Highway and Dandaragan Road, which will experience close views of turbines, transmission line towers and security fence.

Potential impacts have been presented within Section 8.6.

A full version of the Marri Wind Farm Landscape and Visual Impact Assessment (Aurecon, 2025a) has been included as Appendix C to support assessment of this Proposal.



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- Development Envelope
- Indicative Disturbance Footprint
- Study Area (10km)
- Turbine Layout
- Involved Sensitive Receivers
- Non-Involved Sensitive Receivers
- Representational Viewpoints

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Author: Carmen.Liang | Date: 23/04/2026 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\ERD_APRX | Fig8-6

Marri Wind Farm Environmental Review Document

Figure 8-6 Landscape and Visual Impact Assessment

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:200,000

8.4.6 Shadow flicker impact assessment

The potential for the proposed wind turbines to produce shadow flicker and resulting impacts on aviation and ground-based sensitive receptors was investigated by Aurecon in August 2025. This assessment was undertaken in the context of the national *Draft Future of the National Wind Farm Development Guidelines* (NEPC, 2010) as best available guidance within Australia (Aurecon, 2025e).

Shadow flicker occurs by an interaction between a turbine rotor blade rotating and sunny daytime conditions. The shadow produced may extend well past the initial point of the wind turbine and be visibly moving (resultant of wind turbine rotation). Under certain conditions the moving shadows may be noticeable against windows or walls of built structures which the human eye then perceives as a 'flicker'. Shadow flicker impact was assessed utilising the largest proposed turbine size (275 m agl) to a distance up to 2.2 km radius from the base of each turbine (Aurecon, 2025e).

The modelled approach incorporated normalising conditions, such as:

- Theoretical shadow flicker durations, further adjusting to realistic durations that account for cloud cover
- Turbine operational downtime, and vegetation screening
- Confirmation of no cumulative shadow flicker effects from the existing Yandin Wind Farm (due to distance)
- A projection to evaluate potential cumulative shadow flicker effects from the proposed Yathroo Wind Farm

The desktop assessment was modelled through WindPRO version 4.1 software and terrain data obtained from Copernicus Digital Surface Model (DSM) of the Proposed Development Envelope and surrounding areas. The shadow flicker assessment was completed utilising the characteristics of the proposed turbines. The assessment estimated two types of shadow flicker duration:

- Theoretical duration: calculated based on geometric relationships among the sun's position, turbines, residences, and terrain, predicting potential annual shadow flicker hours assuming turbines always face the sun.
- Realistic duration: adjusted theoretical values to reflect actual conditions by accounting for cloud cover, turbine downtime (maintenance and faults), and operational wind speed limitations. This resulted in realistic durations approximating 63.7% of the theoretical estimates.

Additional influences not included in the realistic calculation, such as turbine rotor orientation relative to the sun, window orientation, and dense vegetation blocking sunlight, would further reduce potential shadow flicker exposure, and therefore the reported values are conservative.

Potential impacts have been presented within Section 8.6.

A full version of the Marri Wind Farm Shadow Flicker Assessment (Aurecon, 2025e) has been included as Appendix E to support assessment of this Proposal.

8.4.7 Electromagnetic interference impact assessment

An Electromagnetic Interference (EMI) Impact Assessment (Aurecon, 2025f) which reviewed the potential impacts to existing telecommunications infrastructure was undertaken as part of the aviation impact assessment suite of investigations for this Proposal. EMI is a reduction in signal quality, clarity or magnitude of telecommunications.

The presence of turbines (tall structures) has the potential to cause electromagnetic interference on telecommunication services. The communication services which may be impacted include:

- Point-to-point and point-to-multipoint between fixed transmitter and receiver tower locations
- Point-to-area such as radio and digital television broadcasts, and mobile phone and internet services
- Radar such as meteorological (weather) and aeronautical

EMI can occur through mechanisms such as the turbine structure or blades causing obstruction, reflection or refraction of the electromagnetic waves used in various telecommunications services. The methodology used for the assessment was as defined in the Draft National Wind Farm Development Guidelines (EPHC, 2010).

Data collection via access to the Australian Communications and Media Authority (ACMA) telecommunications licence database, via MAPRAD.IO was utilised to identify licensed point-to-point (Figure 8-7) point-to-multipoint and point-to-area (Figure 8-8). This investigation incorporated other radar equipment within approximately 50 km of the Development Envelope (to 463 km for meteorological radar as per guidelines). Satellite imagery was utilised to verify and, where necessary, correct tower positions to ensure true alignment with ACMA coordinates (Aurecon, 2025f).

Technical analysis focused on the utilisation of the Fresnel zone concept, especially the second Fresnel zone (n=2), to ensure the precautionary approach when checking for possible interference.

Coverage maps for mobile phone, wireless internet, and digital TV services from Optus, Telstra, Vodafone, NBN Co, and the Australian Government's MySwitch were examined, paying special attention to homes near the Proposal. Licence holders for all telecommunication and radar sites near turbines have been provided with further information on the Proposal and offered the opportunity to provide feedback.

Potential impacts have been presented within Section 8.6.

A full version of the Marri Wind Farm Telecommunications Assessment (Aurecon, 2025f) has been included as Appendix A to support assessment of this Proposal.

8.4.8 Aviation impact statement

An Aviation Impact Statement (AIS) was prepared as part of the impact investigations supporting this Proposal (CAC, 2025). As mentioned previously, investigations into impacts incorporates information from Sections 8.4.5; 8.4.6 and 8.4.7.

The proposed maximum height of the turbine types being considered is 275 m agl. CASR Part 175E requires that obstacles having a height of 100 m agl (turbines and meteorological monitoring masts) be reported as 'tall structures' for inclusion in the vertical obstacle database and on appropriate aeronautical charts (CAC, 2025). Additional notification and assessments are required to support this Proposal under the CASA, supported under the *Civil Aviation Act 1988* (Cth) and regulations.

A Qualitative Risk Assessment (QRA) was conducted in accordance with ASNZS ISO 31000-2018 (ISO, 2018) Risk Management standards. It involved reviewing aviation regulations, National Airports Safeguarding Framework guidelines, and engaging with stakeholders including aerial agricultural operators and emergency services pilots.

The Development Envelope area has no Certified or Military aerodromes located internally or within 30 nautical miles (56 km). The nearest military aerodrome is located at Gingin (YGIG) approximately 30.58 nautical miles (56.63 km) south-southeast of turbine WP8.

One uncertified aerodrome is located within 16 nautical miles (30 km) of the Development Envelope, the unverified aeroplane landing area at Moora, located 15.09 nautical miles (27.94 km) northeast of turbine WP65 (CAC, 2025).

Potential impacts have been presented within Section 8.6.

A full version of the Aviation Impact Statement (CAC, 2025) has been included as an attachment within Appendix A to support assessment of this Proposal.

8.4.9 Transport route assessment

A Route Assessment and Site Access Review was carried out to support this Proposal (Aurecon, 2025c).

The aim of a transport impact assessment is to investigate if potential exists for impacts to environmental elements along any proposed transport routes located outside of the Development Envelope which may result from implementing this Proposal.

Desktop investigations utilised ArcGIS Pro, Nearmap imagery, and Main Roads WA OSOM guidelines. Two preferred transport routes were developed based on this desktop assessment (Aurecon, 2025c).

Two port facilities were considered the most likely options to support the construction phase of the Proposal. Options were assessed for the ability of heavy (transformers) and long (individual turbine blades) infrastructure and to transit through any given obstacle (roundabouts, bridges, corners etc.). The same assessment investigated the capability for safe importing of large infrastructure components from manufactures overseas.

The two identified two pathways are:

- AMC Port (approximately 150 km south of the site) then by road to the Proposal area.
- Geraldton Port (approximately 250 km north of the site) then by road to the Proposal area.

A comprehensive evaluation was conducted on the potential two routes from the two ports of entry. Each route was assessed based on factors including total distance, classification according to heavy vehicle approved routes (using Heavy Vehicle Services Mapping by Main Roads WA), number of turns, signalised intersections, roundabouts, structures along the path, and available stop areas for traffic passing.

At the time of writing for this Proposal, the preferred or actual port of delivery has not been selected. This is expected to occur following the financial investment decision (FID) (Aurecon, 2025c). Following confirmation of which transport route will service the Proposal, additional permits under Part V of the EP Act for clearing of native vegetation may be required. Access into the Development Envelope has also been incorporated into a review of alternative access points and methods of access from existing shire roads. Due to the size and number of expected transports to terminate within the Development Envelope, suitably sized entrance locations are required as no suitable access is currently available. Refer to Figure 8-7 as a conceptual view of potential Development Envelope access points. Once defined, additional permits under the EP Act may/will be required.

The Development Envelope is bordered to the west by the Brand Highway, a major north-south primary distributor road managed by Main Roads Gascoyne Region. Surrounding the Development Envelope, several lower-order roads which are managed by the Shire, provide access options. Dandaragan Road is classified as a regional distributor and Rowes Road as a local distributor. Other potential access roads include Gillingarra, Moochamulla, Walyoo, Walyer Walyer, Koodjee, and Woodbine Roads; however, Woodbine Road has no direct access to the Proposal and is excluded from assessment.

Routes were analysed for feasibility including distance, turns, clearances, and infrastructure impact. Potential impacts to vegetation along preferred routes and site access roads have been identified and quantified using aerial imagery and CAD swept path analysis.

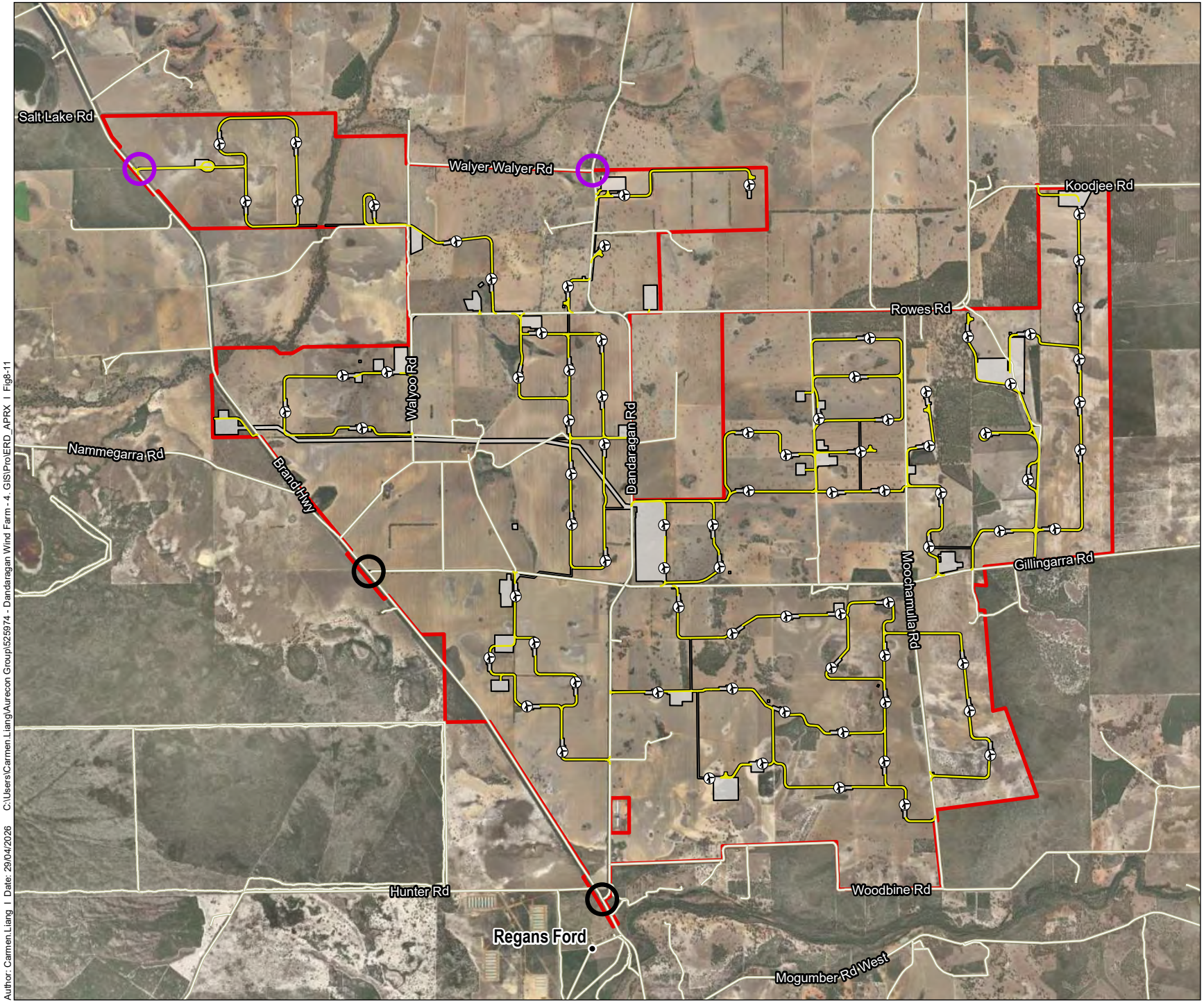
Drainage upgrades may be required at Dandaragan Road's southeast corner; whilst Brand Highway upgrades north and south of the site are planned (however not directly adjacent to the Proposal), including widening and new overtaking lanes approved for 2025/26, with further works proposed for future years. These changes could affect routes from both ports and will need to be considered in the TMP developed by the transport operator.

Swept Path Analysis utilising vehicle tracking analysis using a 91 m Blade Pinned Trailer evaluated the trailer's turning paths to identify if road realignment or strengthening is needed and to assess impacts on surrounding vegetation and infrastructure. Where the trailer wheels are unable to complete turns within paved areas, modifications such as widening or realignment will be required, and some light poles, traffic poles, and signage may need temporary relocation or removal.

Low-height objects under 1.5 m may remain if only the blade's overhanging section passes over them, with vegetation trimming preferred over clearing when possible. The analysis was based solely on aerial and street imagery without site visits. While staying within road pavement is prioritised, minimal encroachment onto shoulders or verges is sometimes unavoidable, with a priority order to avoid conflicts first with structures, then traffic poles, light poles, and signs. The results of this assessment indicate that during peak construction, the Proposal will generate approximately 80 light vehicle and 181 heavy vehicle daily return trips. This will include up to eight OSOM vehicle trips, which the local road network can accommodate with some upgrades and management.

Potential impacts have been presented within Section 8.6.

A full version of the Route Assessment and Site Access Review (Aurecon, 2025c) transport route assessment has been included as Appendix G to support assessment of this Proposal. A full version of the Route Assessment and Site Access Review (Aurecon, 2025c) transport route assessment has been included as Appendix G to support assessment of this Proposal.



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- Development Envelope
- Indicative Disturbance Footprint
- Turbine Layout
- Public Local Roads
- Access Tracks
- Main Access Points
- Alternative Access

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Marri Wind Farm Environmental Review Document

Figure 8-7 Proposed Access Locations

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:90,000

8.4.10 Traffic impact statement

An assessment of the potential impacts to traffic caused by the Proposal were considered through a Traffic Impact Statement reviewing surrounding road network as part of the Proposal Development Application (Aurecon, 2025b). It evaluates traffic generation, access to the Proposal, and route suitability for oversized and heavy vehicles during construction and operation phases, including an OSOM route assessment to inform transport planning and necessary infrastructure modifications.

The assessment is guided by relevant legislation and standards, primarily the Western Australia Planning Commission (WAPC) Transport Assessment Guidelines which classify developments according to their peak hour trip generation and corresponding level of traffic impact assessment required. As the Proposal is expected to generate moderate traffic impacts during construction but low during operation, a TIS was prepared. The report also follows standards set by MRWA, including the Restricted Access Vehicle network classifications, and Heavy Vehicle Services requirements for OSOM vehicle movements. The preparation of an OSOM TMP, with approval from Heavy Vehicle Services, is mandated to address the specific risks associated with transporting large turbine components.

The methodology involved a comprehensive desktop review of traffic data, existing road conditions, and Proposal layouts, supplemented by stakeholder consultations with MRWA, Shire of Dandaragan and the Shire of Gingin, Australian Marine Complex Port and Geraldton Ports, and transport operators. Traffic volumes on key access roads were analysed and estimated for both current and projected scenarios. The study undertook swept path analyses for the largest vehicle combinations expected, mainly the blade transport trucks measuring up to 103.1 m in length. Two potential primary access intersections off Brand Highway (via Dandaragan Road and Gillingarra Road) were reviewed for their geometric capacity and impact on vegetation. The route assessment examined two main port-to-Proposal options (Section 8.4.9 - Australian Marine Complex Port and Geraldton Port) evaluating route distances, turning requirements, overhead clearance limitations, and necessary modifications such as vegetation clearing and traffic management measures (Section 8.4.9).

Traffic volume and heavy vehicle data were primarily sourced from the Main Roads Western Australia Traffic Map and Crash databases, supplemented by public transport information obtained from data.wa.gov.au, with conservative estimates applied for local roads lacking direct data. Several existing and proposed developments, including other large-scale proposals, are situated near the Development Envelope. These infrastructure developments in planning occur within the region, covering the Shires of Dandaragan and Gingin. The nearest development is the Yathroo Wind Farm, located directly adjacent to and north of the Development Envelope.

The Development Application for the Yathroo Wind Farm was recently submitted and has overlapping area with this Proposal.

Brand Highway serves as the key high-order access road, with Dandaragan Road and Gillingarra Road identified as feasible primary access points (Figure 8-8). Both roads may require vegetation clearing or trimming and likely upgrades, with Gillingarra Road anticipated to need intersection enhancements at Brand Highway. Internal roads and intersections were found to demand some vegetation removal and temporary infrastructure such as hardstands to support oversized vehicle manoeuvring.

The preferred routes from both ports have been identified, considering overhead clearance constraints and roadway geometry. These routes will require targeted infrastructure modifications, traffic management plans including contraflow operations, and stakeholder coordination to mitigate risks.

Operational traffic is expected to be minimal in comparison to construction, and decommissioning impacts will be subject to a future assessment. Overall, with appropriate planning, design refinements, and coordination with authorities, the transport requirements and impacts of the Proposal can be effectively managed, ensuring safety and minimal long-term disruption to the local network.

Figure 8-8 Shire roads in vicinity of the Development Envelope

Source: Traffic Impact Statement (Aurecon, 2025b)

Consultation with the Shire identified that Gillingarra, Walyer Walyer, Moochamulla, Koodjee, and Walyoo roads may require upgrading to conditions suitable for heavy construction traffic. However, design refinement and the TMP will be finalised after the FID and prior to any works within the Development Envelope.

Brand Highway is slated for widening and overtaking lane improvements north and south of the Development Envelope, potentially temporarily affecting routes from AMC and Geraldton Ports. These works, including lane upgrades between Badgingarra, Eneabba and any future plans south of the Development Envelope, will be factored into the Development Application and supported through implementation of the TMP closer to the commencement of Proposal.

Heavy vehicles typically comprised the higher proportion of local vehicle movements locally, with a 30% heavy vehicle percentage assumed representative for data-lacking roads. Future traffic volumes for 2029 were projected from 2022 data using a conservative 2% annual growth rate (Aurecon, 2025b).

There is no existing or planned cycling or walking infrastructure to be positioned near the Development Envelope, according to the Department of Transport and the Shire of Dandaragan Path Network Plan 2022-2032. The N1 regional bus route passes by the Development Envelope twice daily along Brand Highway, and a school bus serves the area via local roads. These services are not expected to be greatly impacted.

Brand Highway and Dandaragan Road are high-order Restricted Access Vehicle routes, with Brand Highway rated N7/TD4 and Dandaragan Road ranging from N7/TD2 to N7/TD1. Gillingarra Road is expected to be upgraded to a higher Restricted Access Vehicle classification if used (Aurecon, 2025b).

Potential impacts have been presented within Section 8.6.

A full version of the Marri Wind Farm Traffic Impact Statement (Aurecon, 2025b) has been included as Appendix F to support assessment of this Proposal.

8.4.11 Hydrology impact assessment

An assessment of hydrology was completed to assess the existing pre-development surface water and flooding conditions within the Development Envelope (Aurecon, 2025g). The primary objective was then utilised to evaluate flood risks to the local surrounds and potential impacts to proposed infrastructure (and placement) during construction and operation phases. This was achieved through utilising numerous scenarios based on meteorological data to inform design and layout decisions for the Proposal.

Aurecon (2025g) provides detail on hydrological and geological settings and identifies registered groundwater bores within one km of the Development Envelope. Hydrological and hydraulic modelling was undertaken in accordance with Australian Rainfall and Runoff 2019 Guidelines (ARR, 2019).

Two key catchments have been identified and located in proximity of the Development Envelope. They are the Caren Caren Brook (north-west within the Development Envelope) and the Moore River located outside of the Development Envelope to the south. Inflows into these two catchments were then applied as boundary conditions within the TUFLOW modelling program which included representations of culverts and bridge structures at identified locations to ensure year-round access. Multiple spatial and temporal storm event scenarios were then simulated, including design floods at the 50%, 10%, 1%, and 0.5% Annual Exceedance Probability (AEP) levels.

Various storm durations (ranging from 10 minutes to 30 hours) and standardised temporal rainfall patterns were applied to ascertain critical rain fall durations which would result in predicting peak flood (flow) conditions. Model roughness coefficients were assigned based on DEM land cover classifications and site inspection, ensuring realistic surface flow behaviour.

Potential Impacts have been presented within Section 8.6.

A full version of the Marri Windfarm Flood Study (Aurecon, 2025g) has been included as Appendix I to support assessment of this Proposal.

8.4.12 Preliminary water resources impact assessment

A Preliminary Water Resources Impact Assessment (WRIA) was completed in September 2025 to evaluate the existing surface and groundwater conditions within the Development Envelope and assist with the estimated water use requirements across the construction, operation, and decommissioning phases of the Proposal (Aurecon, 2025d).

The assessment identified suitable water supply options, then assessed the potential impacts on these water resources if the Proposal was to be implemented without any mitigation measures.

In accordance with the EPA Environmental Factor Guideline: Inland Waters, the assessment involved a desktop review phase in which the Proposal design, legislation for compliance, and meteorological data to describe local climate and variability, topography and supporting geological setting including soils and hydrogeological matrix. Sensitive receptors where also identified and incorporated into the impact assessment.

Estimated water demand and availability were then assessed for durations throughout the entire Proposal lifecycle, alongside a qualitative risk assessment of potential impacts on water quality, quantity, and hydrogeological interactions within a changing subsurface setting (if any). Qualitative risk levels utilised during the impact assessment ranged from low to very high and were categorised utilising a risk matrix (impact severity and likelihood).

Data input sources included aerial imagery, cadastral and land use maps, meteorological records and climate data predictions, geological and soil maps, groundwater bore records, and watercourse and vegetation databases.

Additional information on wetlands, floodplains, flora, groundwater-dependent ecosystems, and subterranean fauna was gathered from government and environmental agencies to ensure a comprehensive

understanding of conditions and guide effective water resource management. It is noted that the subsurface environmental conditions are not supportive of subterranean fauna communities.

The Preliminary Water Resources Impact Assessment (Aurecon, 2025d) has been included as Appendix H.

8.4.13 Bushfire threat assessment

A Bushfire Attack Level (BAL) assessment was carried out in September 2025 (Western Environmental, 2025).The assessment was undertaken to assess the potential risk of impact to surrounding land holders and to capital investment infrastructure, in the context of the Proposal being implemented prior to any mitigation measures.

The assessment evaluated infrastructure siting, design, construction, and operation compliance with evolving bushfire safety standards, mitigating risks to people and assets within the bushfire-prone areas. The assessment also establishes the guidance for the future Proposal's Bushfire Management Plan. Primary and supporting infrastructure were assessed including wind turbines, substations, and temporary accommodation, with measures addressing spatial separation, fire suppression, access, and emergency planning to manage bushfire risks throughout the Proposal's lifecycle.

The assessment focused on location, siting and design, vehicular access, and water supply in accordance with State Planning Policy 3.7 (SPP 3.7) and supporting bushfire guidelines, in addition to the Victorian Country Fire Authority Guidelines for renewable energy facilities. BAL ratings and Asset Protection Zones (APZs) were calculated utilising a standardised calculation tool and the methodology under Australian Standard 3959:2018 construction of buildings in bushfire prone areas (AS 3959:2018) (Figure 8-9). The assessment was conducted by applying methods tailored to different asset types utilising the methods below:

- Determine the fire danger index (FDI)
- Determine the vegetation types nearby or surrounding structures
- Determine the distance from the site to the vegetation
- Determine the slope of the land under the vegetation
- Determine the appropriate BAL level

Where there is a lack of reticulated water, static firefighting water storage tanks are required for all facilities, sized according to Australian Standard AS 2419.1-2021 and aligned with asset-specific demands. For example, wind energy facilities require multiple static water tanks each with a minimum effective capacity of 45,000 litres located at vehicle access points and a safe distance from infrastructure. BESS facilities have more stringent requirements, needing a minimum total water supply of approximately 288,000 litres to provide a continuous flow of 20 litres per second for at least four hours.

Water tanks must be above-ground, constructed of concrete or steel, refilled within 24 hours, and equipped with hard-suction points and irrigation fittings to allow rapid connection by emergency services. Clear signage, unobstructed access roads, and hardstand areas meeting DFES specifications are essential for efficient firefighting operations.

Emergency access roads were identified, alongside recommendations for firewater storage facilities, fire detection and suppression systems, vegetation management measures including firebreaks. Special attention was applied to the assessment of the BESS due to the materials in storage (AS 1940 and Australian dangerous goods code) or in use (AS 3959:2018) depending on the phase of the Proposal being assessed.

A full version of the Bushfire Planning Advice: Marri Wind Farm (Western Environmental, 2025) has been included as Appendix J to support assessment of this Proposal.

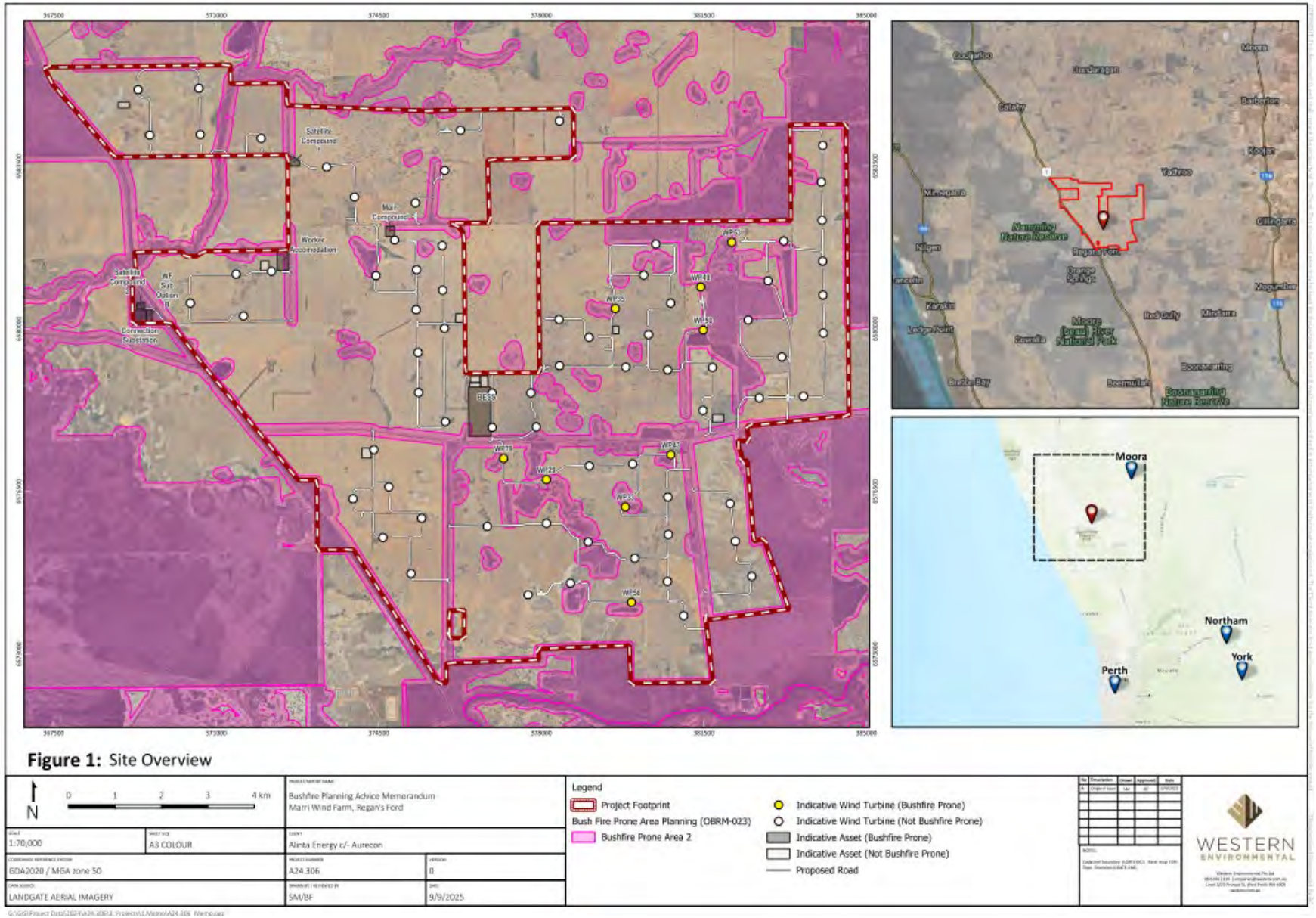


Figure 1: Site Overview

Figure 8-9 Bushfire assessment site overview

Source: Bushfire Planning Advice: Marri Wind Farm (Western Environmental, 2025)

8.5 Receiving environment

The Proposal is situated within a rural area of Western Australia's wheat belt region. The land is designated under the Shire of Dandaragan State Planning Scheme No. 7 and is zoned as rural (Shire of Dandaragan, 2006). The nearest main rural centre to the Development Envelope is the township of Dandaragan, approximately 20 km north of the Proposal. Dandaragan comprises a small rural town dominated by agricultural and mining.

Additional elements incorporated under the umbrella of receiving environment are individually summarised in the subsections below.

8.5.1 Cultural heritage

The Development Envelope is located on the traditional lands of the Yued traditional owners as stated under the Yued Indigenous Land Use Area (WI2015/009), as part of the South West Native Title Settlement (Determination Reference: WCD2021/010) (SIQ, 2025a; Archae-aus, 2025).

The legally determined indigenous group/mob for the lands on which the Proposal is based are the Yued traditional owners. The Proponent has identified the Yued as key stakeholders for this Proposal, with engagement well underway. The Yued traditional owners are part of the larger Noongar Nation, with traditional lands spanning the mid-coastal region of Western Australia, including the Shires of Dandaragan, Gingin, and Moora.

In 2024, the Proponent commenced consultations with Yued Aboriginal Corporation. Discussions are ongoing, with purpose to provide opportunity for Yued traditional owners to voice any concerns and opportunities regarding the Proposal. Ongoing consultation will continue throughout the duration of the Proposal life to ensure respect for cultural heritage interests, and the Southwest Native Title rights is incorporated into the Proposal. The Yued Aboriginal Corporation is the identified key stakeholder organisation which represents the Yued people, their community's welfare, cultural preservation, and land management interests.

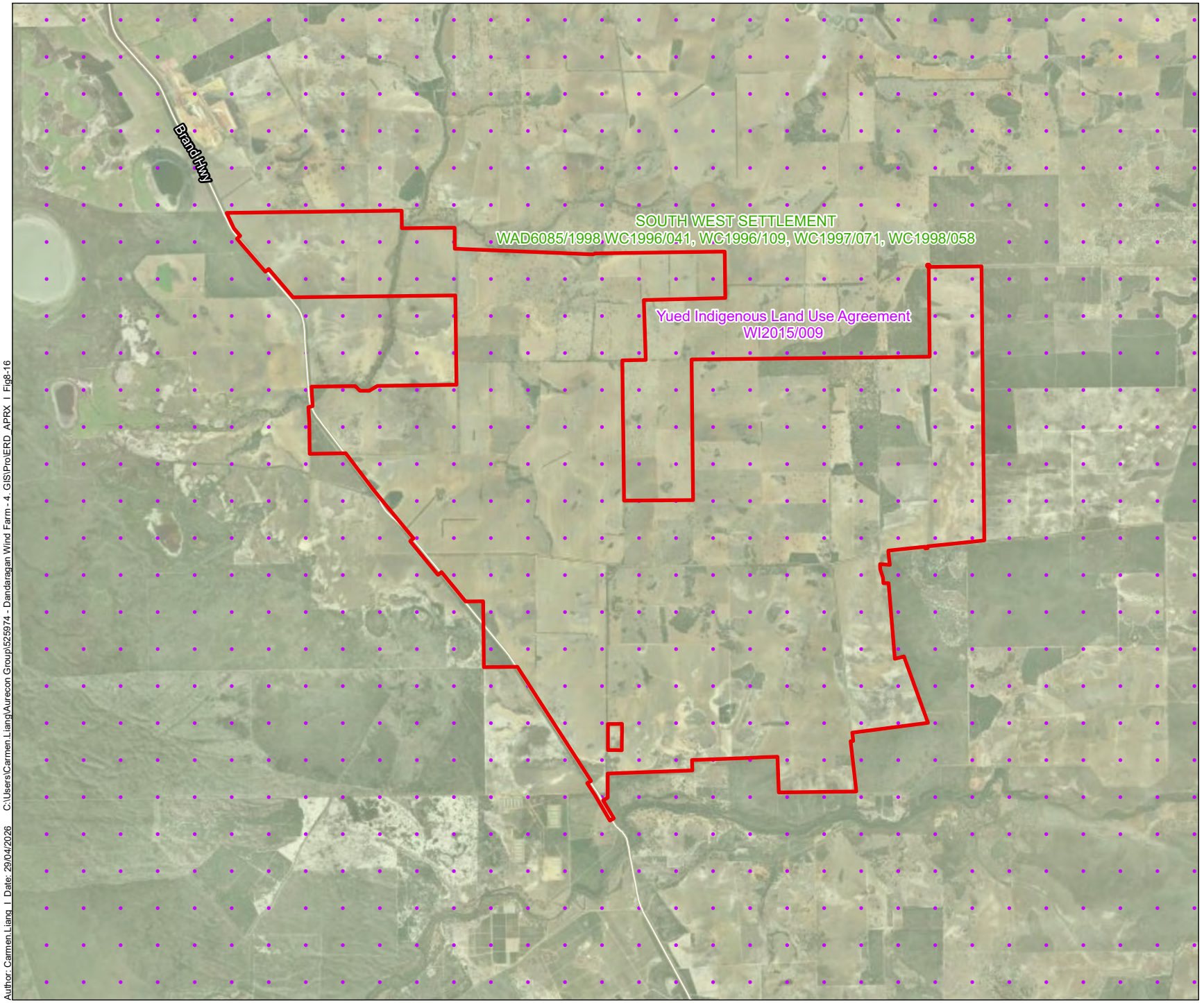
The Yued Heritage Protection Agreement is a confidential legal agreement between the YAC and Proponent. It governs the conduct of activities within the Agreement Area to ensure the protection of Aboriginal Cultural Heritage in accordance with relevant laws, including the *Aboriginal Heritage Act 1972* (WA) (Alinta Energy, 2025).

To demonstrate the Proponent's commitment to assess and consider potential impacts under social surroundings and Aboriginal cultural heritage, reasonable efforts have been taken to understand the values important to Yued that may be affected or have the potential to be impacted by the Proposal. Specialist anthropologists were also engaged in 2025 to compete an Aboriginal Cultural Heritage DDA (also incorporating more recent heritage) (Archae-aus, 2025).

Information and guidance will continue to be utilised to inform appropriate design refinements to support the Proposal and minimise potential significant impacts on matters of cultural, heritage and social values.

More information regarding stakeholder consultation is presented in Section 3.

Additional information regarding Native Title is presented in Section 1.5.11.



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- Development Envelope
- Native Title (ILUA) (LGATE-067)
- Native Title (Determination) (LGATE-066)
- Public Local Roads

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 8-10 Native Title Determination Area and Yued ILUA Area

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:120,000

8.5.2 Non-indigenous heritage

Places of World, and National heritage significance (i.e., non-indigenous heritage) are protected under Subdivision A and AA of the EPBC Act.

Non-indigenous heritage in Western Australia is protected under the *Heritage Act* 2018.

European settlement in the area began in the early 1830s, when explorers and early farmers recognised the agricultural potential of the land. The township of Dandaragan was formally gazetted in 1958 and developed as a service hub for the surrounding farming region. Throughout the early to mid-20th century, the region experienced growth in infrastructure, including roads, railways, schools, and community halls. Coastal towns such as Jurien Bay and Cervantes expanded from the 1960s onwards, driven by tourism and fishing industries and supported by improved access through routes like Indian Ocean Drive (SIQ, 2025b).

Public databases, including inherit (inHerit, 2024) Social Baseline Study (SIQ, 2025b) identified one heritage site that intersects the Development Envelope (Figure 8-11):

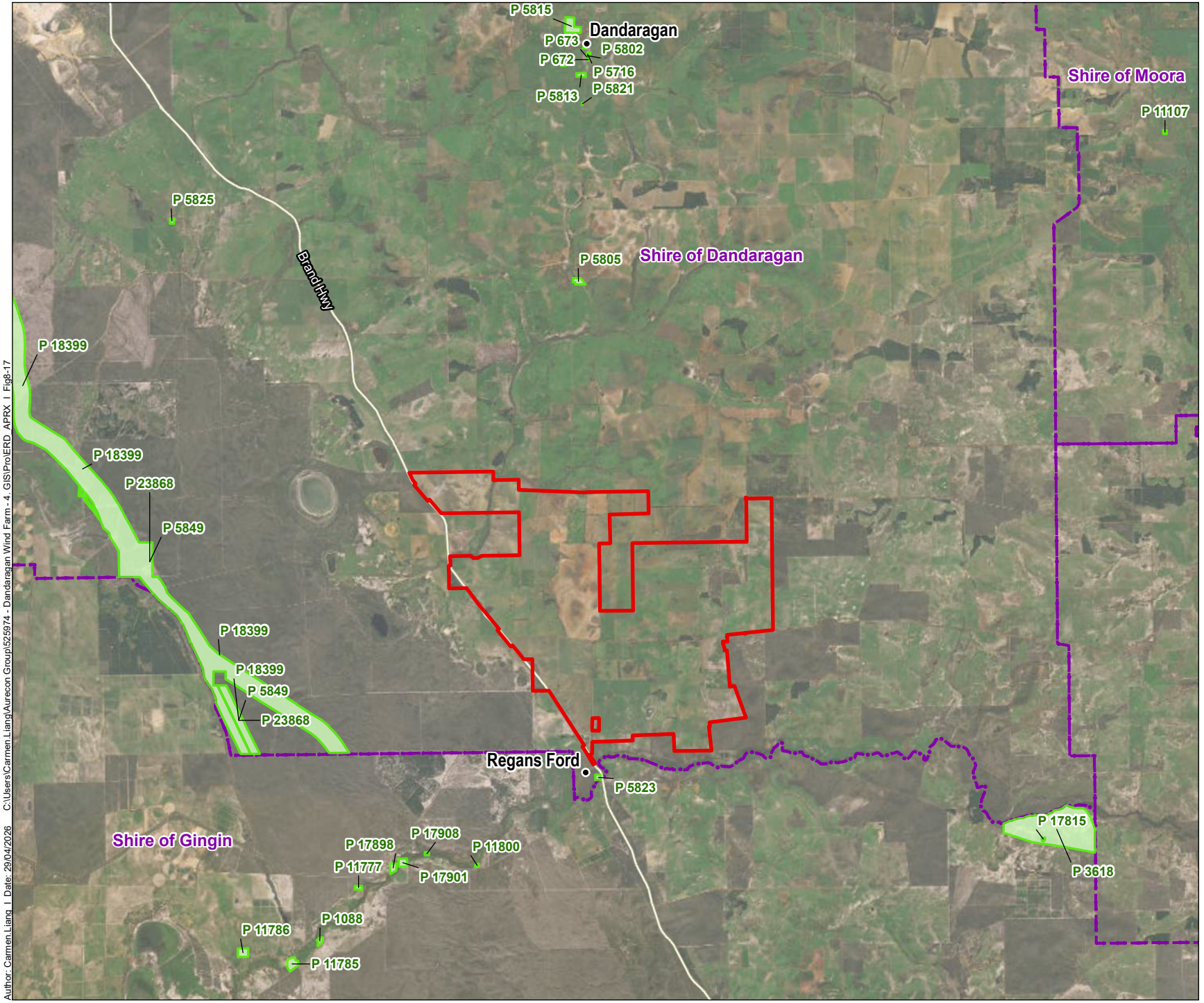
- Farmhouse site (Place Number 05824) located near Regans Ford in the south of the Development Envelope along Dandaragan Road. The layout has been refined to avoid impact with this site.

Additional heritage sites located within 10 km of the Development Envelope boundary identified three heritage sites, including:

- Regan's Ford River Crossing (Place Number 26282), approximately 1.8 km south of the Development Envelope boundary,
- Regan's Ford - River Crossing and Tennis Court Site (Place number 05823), approximately 1.7 km south of the Development Envelope boundary,
- Yathroo Homestead and Outbuildings (Place number 05805), approximately 10.2 km north of the Development Envelope boundary.

Other significant non-Indigenous heritage places in the area include (SIQ, 2025b; inHerit, 2024):

- Dandaragan Heritage Precinct, featuring around 15 historic places, including buildings such as St Anne's Church established 1988 (place number 00672), Vine Cottage (place number 5815) and the Katanaba Homestead Group (place number 5806), this precinct is located approximately 25 km north of the Development Envelope within the town of Dandaragan.
- The Mogumber Mission and Cemetery (Place number 3618), approximately 16 km southwest of the Development Envelope, which is listed as a State Heritage site and holds important historical significance



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- Development Envelope
- LGA Boundaries (LGATE-233)
- Heritage Council WA - Local Heritage Survey (DPLH-008)
- Public Local Roads

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, Western Power

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Figure 8-11 European Heritage Places near the Proposal Development Envelope

Version: 1
Job No.: 525974

Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:250,000

8.5.3 Regional amenity

Amenity can be defined as the pleasantness, attractiveness of a place or the desirable usefulness of an obvious feature, building, structure or place. The Regional Area of Interest is predominantly rural, characterised by farming activities including cropping and livestock grazing (Resonate, 2025). These agricultural operations are common sources of ambient noise in the area, typically involving the use of machinery, vehicles, and occasional livestock sounds.

In addition to farming, the region includes local roadways that contribute intermittent traffic noise, though traffic volumes are generally low given the rural nature of the district. The closest major roads are sufficiently distant such that their noise contribution is minor at residential receptors near the Development Envelope.

8.5.4 Economic activity

The Shire of Dandaragan's economy is relatively small but diverse, anchored in traditional but diverse industries such as beef cattle, sheep, rock lobster, broadacre farming and an expanding renewable energy sector. Together with tourism and mining, these sectors comprise over half of the local economy and support approximately 1,220 jobs (Shire of Dandaragan, 2019a; SIQ, 2025a). Agriculture accounts for nearly 20.3% of local employment, with an economic value of $183 million; with a focus on broadacre cropping, livestock farming, particularly sheep and beef cattle, and grain production. Mining also plays a significant role, notably through mineral sands extraction at Iluka Resources' Cataby Mine and Tronox's Cooljarloo West Titanium Minerals proposal. The region is actively exploring further opportunities in potash, vanadium titanium, and geothermal energy, reflecting diversification within the resource sector.

Renewable energy developments, including existing wind farms, contribute significantly to the region's clean energy capacity and local economy and has recently become a key economic driver (SIQ, 2025a). With wind and solar farms like the Yandin Wind Farm (214 MW), Badgingarra Wind and Solar Farms, and the Emu Downs Solar Farm collectively contributing over 460 MW of capacity. These proposals have provided temporary construction employment (such as the 150 workers during Yandin's development) as well as ongoing operational jobs and community benefit funds supporting local initiatives. Construction and other industries have also added to the region's economic boosts in recent years. The Shire's economy has grown at an average rate of 1.5% per year over the past decade, below the Western Australia average, reflecting some volatility due to the seasonal and commodity dependent nature of its key sectors.

8.5.5 Towns and population centres

The Shire of Dandaragan has a small population of 3,355, as of 2021 (Bureau of Statistics, 2021; SIQ, 2025a), distributed across three main towns: Dandaragan, Badgingarra, and Jurien Bay, however, the Shire of Dandaragan Economic and Tourism Strategy (2019a) identified that the population growth has slowed to 0.2% per annum over the last decade and is expected to increase to around 1% per year until 2031 due to an aging population, faster than the state average, which affects the local economic demand and labour supply. The Shire boasts low unemployment and high employment self-sufficiency, indicating good local job access despite demographic challenges.

The communities within the Shire of Dandaragan each possess distinct characteristics and development priorities. Dandaragan, 20 km north of the Development Envelope, is a small rural township with about 292 residents employed in agriculture and mining, facing population ageing and focusing on sustainable farming and economic diversification through renewables. Badgingarra, 54 km north of the Development Envelope, aims for vibrant rural growth by enhancing infrastructure, eco-tourism, and agricultural innovation while protecting natural assets and encouraging housing diversity (SIQ, 2025a). Jurien Bay located approximately 74 km northwest of the Development Envelope and situated on the coast, had a residential population of 2,619 in 2021. As the largest town in the Shire of Dandaragan, it serves as a key regional centre with a strong emphasis on tourism, coastal lifestyle, and community services (Shire of Dandaragan, 2020).

The cumulative presence of multiple wind farm developments within the region raises concerns about overlapping construction impacts that could overwhelm local infrastructure, strain social cohesion, and foster consultation fatigue. Community trust may be affected if decision-making is perceived as top-down or lacking

transparency, making inclusive engagement and governance essential to maintaining social licence (SIQ, 2025a).

8.5.6 Recreation and tourism

The Shire of Dandaragan offers a variety of natural attractions, including coastal areas such as Cervantes and the Pinnacles Desert within Nambung National Park. The park is renowned for its unique limestone formations and outdoor activities like hiking and wildlife viewing. Visitors can also enjoy beach and coastline experiences, skydiving, sea lion and rock lobster tours, sandboarding, 4WD trails, and wildflower tours. Social cohesion within the Shire is generally strong, supported by active community organisations, sporting clubs, and an above-average rate of volunteering, which fosters connectedness and resilience. The Proposal has potential to enhance community networks through transparent benefit-sharing and investment in local initiatives (SIQ, 2025a).

In 2019, an estimated 560,000 visitors came to the Shire, reflecting a strong average annual growth rate of 6% over the previous three years (Shire of Dandaragan, 2019a). Despite these numbers many attractions are not well known or effectively linked to the destination, and visitors frequently report a lack of local activities. Accommodation options in the Shire total approximately 800 rooms, caravan sites, and holiday homes (SIQ, 2025b), experiencing high occupancy during peak periods but averaging about 50% occupancy annually. The area has limited branded resort-style accommodation and affordable motels, partly due to the seasonal nature of tourism demand and the prevalence of holiday homes.

To the south, Gingin Shire offers a blend of rural charm and natural attractions. Known for its scenic landscapes, including National Parks, agricultural areas, and coastal proximity, Gingin supports activities such as bushwalking, birdwatching, and exploring heritage sites. The Shire also attracts visitors through local events and rural tourism experiences.

Brand Highway, which runs along the western border of the Development Envelope through both Gingin and Dandaragan Shires, connects Perth to Geraldton in the north. This highway serves as a crucial tourism corridor, providing convenient access to natural landmarks, coastal towns, and rural communities, thereby facilitating travel for both locals and visitors exploring Western Australia’s Midwest coast.

The broader region presents diverse recreational opportunities and stands as a significant tourism destination. Coastal towns like Jurien Bay and Cervantes offer year-round beaches and marine activities. Accommodation capacity within the Local Impact Area includes approximately 222 beds in various venues, while the wider Regional Influence Area provides around 800 rooms, caravan parks, and holiday homes (SIQ, 2025b).

Community sporting and recreational facilities are abundant, featuring golf courses, tennis and netball courts, bowling clubs, swimming pools, cricket clubs, and multi-purpose community centres that support local engagement and wellbeing. Events such as the annual Lancelin Buskers Festival and active sporting leagues contribute to social cohesion and cultural vibrancy. Together, these tourism and recreational activities generate substantial economic benefits and play an essential role in community life.

8.5.7 Agricultural land use

The land within and surrounding the Proposal has historically been used predominantly for pastoral and agricultural activities. No Pastoral stations are located within the Development Envelope (the closest being Pastoral station (DPLH-083) (Pastoral number: N049535) located 195 km northeast of the Development Area).

8.6 Potential impacts

Implementation of the Proposed Activities presented throughout this document may result in some potential level of direct, indirect or cumulative impacts.

Potential direct and indirect impacts have been considered for all phases of the Proposal including construction and operations, decommissioning and post operation, and are discussed in the following sections.

Potential impacts might not always affect all stakeholders uniformly, as different stakeholders can have varying concerns, with concerns and potential impacts described in Table 8-6.

Table 8-6 Stakeholders and potential impacts

Key stakeholders	Organisation	Concerns/potential impacts
Yued Traditional Owners	YAC	▪ Ground disturbance activities associated with the Proposal have the potential to impact on Aboriginal Cultural Heritage, namely within areas of higher Aboriginal Cultural Heritage potential. ▪ Alteration in hydrological regimes of culturally significant water sources (i.e., surface water runoff) across the Development Envelope.
Landholders	Confidential Information	▪ Reduction to high yield cropping/ agricultural areas, and impacts to productivity and efficiency of farming operations ▪ Cumulative noise (and vibration) from construction and operations in relation to existing activities ▪ Visual impacts, including shadow flicker of the turbines; disturbance to aesthetics ▪ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs point-to-point, point-to-multipoint, area networks. ▪ Disturbance from dust during construction ▪ Alteration in hydrological regimes (i.e., surface water runoff) across the Development Envelope. ▪ Access to ground water resources
Community and special interest groups	General Public Tourists	▪ Cumulative noise (and vibration) from construction and, to a lesser extent, during operations in relation to existing activities ▪ Visual impacts, including shadow flicker of the turbines and other ancillary infrastructure; disturbance to aesthetics ▪ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs point-to-point, point-to-multipoint, area networks. ▪ Disturbance from dust during construction including reducing aesthetics to surrounding area ▪ Temporary disturbance to travel routes due to transportation of turbines and other ancillary infrastructure to site (e.g., oversized trucks) ▪ Alteration in hydrological regimes (i.e., surface water runoff) across Development Envelope.
Government and Industry	Bureau of Meteorology (BOM)	▪ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs meteorological radar services.
	Aviation	▪ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs aeronautical radar services.
	Defence	▪ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs defence radar services.

8.6.1 Potential direct impacts

Potential direct impacts exist when there is a clear, direct link between a proposal's impact on the physical or biological surroundings and the subsequent effect on a person's aesthetic, cultural, economic or other social surroundings (EPA, 2023d).

Potential direct impacts of the Proposal on social surroundings factors, as identified in the SIA and supporting impact assessments (Section 8.5), will be managed through the mitigation hierarchy, specifically: avoid, minimise, rehabilitate and offset in accordance with the *Statement of environmental principles, factors, objectives and aims of the EIA* (EPA, 2023b).

As noted in Table 8-6, potential direct impacts that may occur resultant of the Proposal include:

- Indigenous, Social and Cultural Heritage:
  - Unauthorised disturbance to heritage sites
  - Impacts to Yued Traditional Owners connection to land, including sites use for traditional practices and cultural heritage management
- Social (general public):
  - Proposal has the potential to alienate older residents through inaccessible engagement and communication practices
  - Proposal has the potential to increase population gender imbalance
  - Proposal has the potential to exacerbate income disparity through unequal benefit distribution
- Changes to landscape character and views affecting general public, tourist and residential communities from turbine construction and shadow flicker (discussed in further detail below).
- Impacts to landowners, general public, and tourists due to noise.
- Electromagnetic interference by wind turbines impacting signal quality or causing telecommunication disruptions to defence radar services.
- Changes to airspace due to construction of turbines, meteorological masts and or transmission line
- Increased traffic volumes and changes to road safety or accessibility due to transportation of infrastructure required during construction
- Increased bushfire risk due to installation of turbines and other ancillary infrastructure.
- Increased dust during construction due to movement of vehicles including OSOW vehicles mobilising infrastructure to site.
- Increased impact to public safety due to temporary construction zones
- Temporary loss of access to water by Landowner during construction activities

8.6.2 Potential indirect impacts

The potential indirect impacts that may occur resultant of the Proposal is modification to hydrological regimes.

8.6.3 Cumulative impacts

Cumulative environmental impacts are the successive, incremental, and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities (EPA, 2024a). The EPA (2024a) defines ‘reasonably foreseeable future activities’ as:

- “Third party’ (or proponent) activities which are already approved, are in a government approvals process, or are otherwise reasonably likely to proceed
- Proposals assessed at the level of environmental review – at the time an Environmental Review Document for a proposal is accepted
- Proposals assessed at the level of assessment on referral information - at the time the final referral or required additional information is accepted
- Existing activities that are reasonably expected to be ongoing.

A review of other proposals in the vicinity of the Development Envelope indicates there are four operational and one reasonably foreseeable project near the Proposal, that may be considered in the cumulative impact assessment for social surroundings. These are listed in Table 8-7.

The cumulative impact assessment assumed the following:

- Cumulative impacts to social surroundings resulting from third-party operations are conservative and based on information available in the public domain only. They may not represent the most accurate levels of disturbance
- Cumulative impact calculations do not take into consideration areas outside of those assessed by each relevant Proposal
- The accuracy of data from external sources has not been verified and it is assumed that data available is accurate and collected in accordance with EPA guidance (at the time the survey was completed) and to standard industry guidelines
- Impacts from third parties were determined using proposals referred to the EPA and does not consider any further expansions that third-party operators may propose to undertake in the future that have not currently been assessed
- Where third party cumulative impacts could not be assessed due to impacts not occurring, naming conventions between proposals not aligning or data not being publicly available, the assessment has not been completed.

Cumulative impacts on social surroundings values that have been assessed in relation to the Proposal may include:

- Unauthorised disturbance of Aboriginal Heritage sites at local and regional scale
- Impacts to noise, visual amenity, telecommunications/EMI, visual landscapes and bushfire in the region, which already has several proposals (comprising of wind farms and mining) in the vicinity of the Development Envelope
- Impacts on landholders due to infrastructure and uses
- Impacts to community due to increased traffic

Table 8-7 Referred proposals with potential cumulative impacts on social surroundings

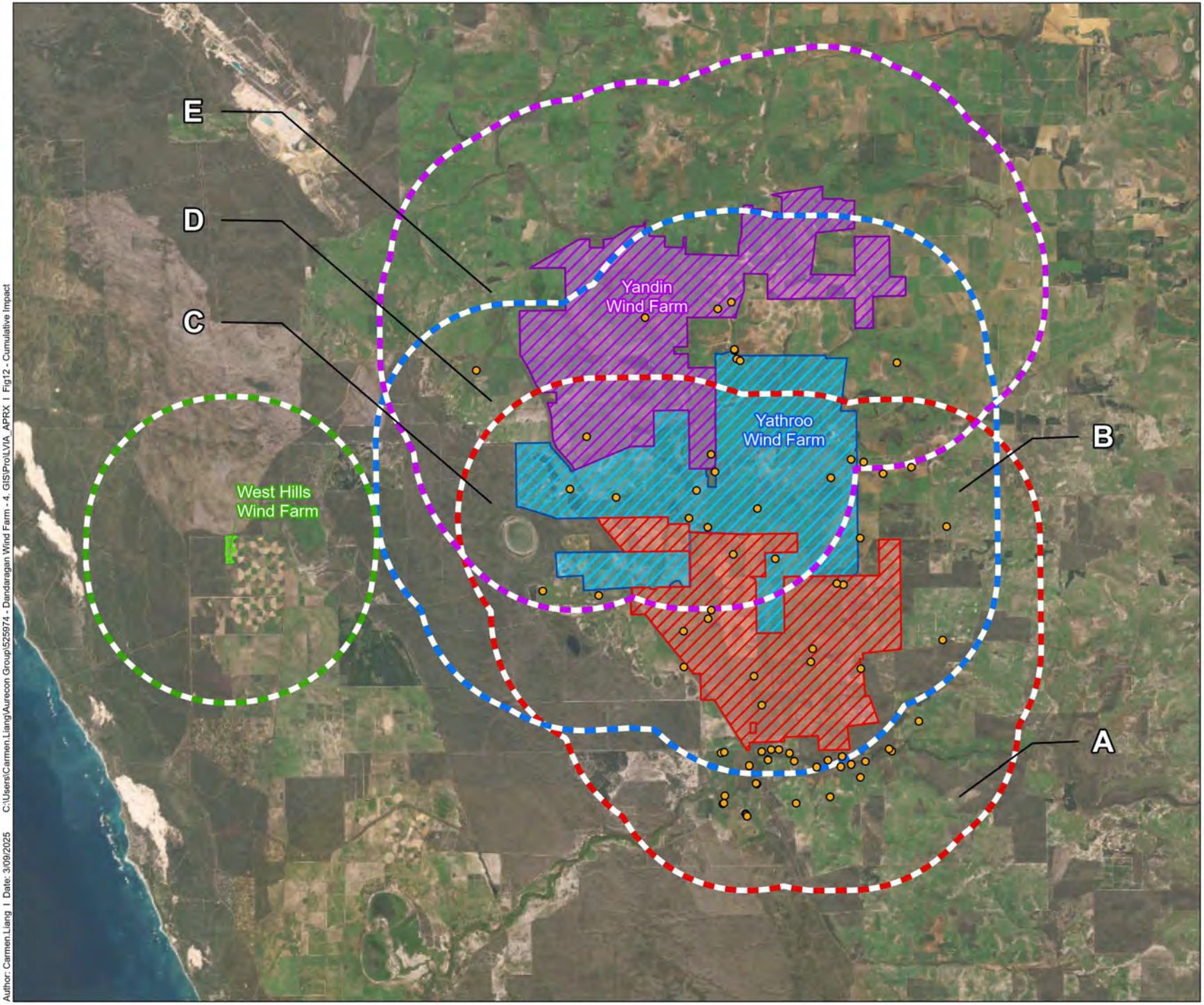
Proposal	Description	Distance from Proposal	Proposal status
Yathroo Wind Farm	A proposed wind farm that may be positioned between the existing Yandin and Proposals.	<10 km north	Proposed
Yandin Wind Farm	Has been operational since 2020 and consists of 51 wind turbines with an operational capacity of approximately 214 MW.	15 km north	Operational
Cataby Mineral Sands Mine	Has been operational since 2019, with an anticipated mine life of 8.5 years, with possibility of a four year extension.	15 km north	Operational
Cooljarloo Mine	Has been in operation since 1989, with an anticipated end date to be in 2039.	25 km north	Operational

Source: Iluka (2025), Tronox (2025)

As discussed in Section 8.4.5, visual effects from the Proposal may extend well beyond the Development Envelope boundary, due to the large size of the turbines. Cumulative impacts from existing and proposed future wind farms within a 50 km radius of the Proposal were also assessed to define a combined potential impact on sequential visibility, visual compatibility, land use changes, and loss of landscape elements. A detailed summary of impacts to visual amenity is provided in Table 8-8.

Table 8-8 Summary of potential visual impacts

Representative Viewpoint	Distance to nearest turbine (m)	No. turbines visible within 4 km of viewpoint				Impact assessment			
		Full height of turbine	Swept path of rotor	From hub	No. 60 ° sectors for this Proposal within 4 km	Visual sensitivity	Existing screening	Visual modification	Potential visual impact
RVP_A	2,735	3	3	3	2	Moderate – rural dwellings	At residential dwellings, except Sensitive receptor(a), desktop review shows that there is very good vegetative screening to dwellings. Sensitive receiver (a) has no vegetative screening surrounding the dwelling and is likely to therefore have clear views towards the Proposal.	**High** degree of visual modification including: Visibility of a high number of turbines covering 145° of viewpoint in the middle and background of the image. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	**High -** Moderate sensitivity and High magnitude of change
RVP_B	1,335	8	8	8	3	Moderate – rural dwellings	There is likely to be a considerable amount of screening vegetation with mature scattered trees located throughout the viewpoint, and likely at the dwelling location.	High degree of visual modification including: Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	**High -** Moderate sensitivity and High magnitude of change
RVP_C	2,180	3	4	4	3	Moderate – rural dwellings	The desktop assessment indicates a high degree of screening vegetation around the associated dwelling.	High degree of visual modification including: A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint. Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away, with likely intervening vegetation providing screening.	**Moderate -** Moderate sensitivity and Moderate magnitude of change
RVP_D	5,975 (3,325 to receptor)	0 (2 to receptor)	0 (2 to receptor)	0 (2 to receptor)	0	Moderate – rural dwellings	At the associated dwelling there is some mature vegetation, however, there are breaks to the west, allowing some views through. (It is recommended that field observations are made from the dwelling to ascertain the views available towards the Proposal)	High degree of visual modification including: Potential visibility of three turbines within zone of visual prominence with a high number of turbines in the background of the view, covering up to 180°.	**High -** Moderate sensitivity and High magnitude of change
RVP_E	4,950	0 (5 to receptor)	0 (5 to receptor)	0 (5 to receptor)	0	Moderate – rural dwellings	The desktop assessment has identified some vegetation on the southern side of the dwelling, potentially mitigating views towards the southwest area of the Proposal. There appears to be clear views west towards the Proposal.	High degree of visual modification including: Visibility of a high number of turbines extending into the horizon of viewpoint. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	**High -** Moderate sensitivity and High magnitude of change
RVP_F	1,500	5	12	13	33	Moderate – rural dwellings	The rural-residential properties nearest this viewpoint have trees surrounding them that screen views outside of the property and are located at a lower elevation. There are numerous dwellings located along Woodbine Road. These are generally set at a lower elevation as topography drops towards the Moore River. Generally, the dwellings have good gardens surrounding the houses, limiting or screening views towards the Proposal.	High degree of visual modification including: Visibility of a high number of turbines covering 90° of viewpoint within a short distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	**High -** Moderate sensitivity and High magnitude of change
RVP_G	2,610	6	6	6	2	Moderate – National highway with tourist traffic (noting Indican Ocean Drive is the primary scenic tourist drive).	The highway has significant roadside vegetation along much of the route, limiting views into the Proposal area.	Moderate degree of visual modification: Whilst there is a high number of turbines visible from the highway, there is anticipated to be a lot of roadside vegetation that screens the turbines. In addition, there are two existing wind farms in the vicinity (Wind Hill <30 km, and Yandin Wind Farm, less than 10 km away, and the proposed Yathroo Wind Farm immediate north of the Proposal. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.	**High -** Moderate sensitivity and High magnitude of change
RVP_H	2,945	0	1	3	1	Moderate – National highway with tourist traffic (noting Indican Ocean Drive is the primary scenic tourist drive).	The highway has significant roadside vegetation along much of the route, limiting views into the vicinity of the Proposal.	High degree of visual modification: Whilst there is a high number of turbines visible from the highway, desktop analysis identified a lot of roadside vegetation that screens the turbines. In addition, there are two existing wind farms in the vicinity (Wind Hill <30 km, and Yandin Wind Farm, less than 10 km away, and the proposed Yathroo Wind Farm immediate north of the Proposal. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.	**Low -** Moderate sensitivity and Low magnitude of change



aurecon

- Identified Dwellings
- Marri Wind Farm Project Area
- Marri Wind Farm Project Area - 8km Buffer Zone
- West Hills Wind Farm Project Area
- West Hills Wind Farm Project Area - 8km Buffer Zone
- Yandin Wind Farm Project Area
- Yandin Wind Farm Project Area - 8km Buffer Zone
- Yathroo Wind Farm Project Area
- Yathroo Wind Farm Project Area - 8km Buffer Zone

Source: ESRI (2023), Alinta, data.wa.gov.au, SLIP / Landgate, DPLH

0 2 4 6
Kilometres

Author: Carmen.Liang | Date: 3/09/2025 C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Prot\LVIA_APRX | Fig12 - Cumulative Impact

Marri Wind Farm Environmental Review Document

Figure 8-12 Overlapping area for potential visual cumulative impacts from wind turbine

Version: 1
Job No.: 525974
Coordinate System: GDA2020 MGA Zone 50
A4 Scale: 1:300,000

8.7 Mitigation measures

The mitigation hierarchy has been applied in accordance with the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023b) and as listed in Table 8-9. This Proposal considers avoidance as the most preferred mitigation and offsets as the least preferred option.

Table 8-9 Environmental factor mitigation hierarchy

Measure	Description
Avoid	Avoid the adverse environmental impact altogether. This may include reducing the footprint or changing the location of the footprint to avoid areas with high environmental values.
Minimise	Limit the degree or magnitude of the adverse impact. This may include reducing the footprint or carefully selecting technologies, processes (such as re-use of waste products) and management measures (such as bunding or dust and noise control measures) to reduce the impact.
Rehabilitate	Repair, rehabilitate or restore the impacted site as soon as possible. Adequate rehabilitation information is integral to the mitigation hierarchy to ensure early identification of knowledge gaps and risk as well as development of criteria and research to meet objectives.
Offset	Undertake a measure or measures to provide a compensatory environmental benefit or reduction in environmental impact to counterbalance significant adverse environmental impacts from implementation of a proposal. The measure(s) are taken after all reasonable mitigation measures have been applied and a significant environmental risk or impact remains. Offsets are not appropriate for all proposals and will be determined on a proposal-by-proposal basis.

Source: Statement of environmental principles, factors, objectives and aims of EIA (EPA, 2023b)

The following mitigation measures will be implemented to address the potential direct, indirect and cumulative impacts.

As described in Section 1.4.8, the Proposal has undergone reiterative redesign to avoid and minimise impacts to sensitive receptors. The proposed layout of wind turbines and support infrastructure, including roads, has been designed to maximise avoidance to social surroundings as demonstrated in Table 8-10.

Table 8-10 Mitigation measures - social surroundings

Potential impacts	Avoid	Minimise	Manage/rehabilitate
Yued Traditional Owners - social management measures			
Unauthorised disturbance to heritage sites due to clearing and earthworks.	■ All heritage places identified within the Development Envelope will be avoided ■ Adhere to mitigation management as defined in the SIA mitigation measures (2025a) including: – Consult Yued Traditional Owners to inform decision-making – Co-develop a First Nations engagement and employment strategy with Yued Traditional Owners, including the potential opportunities for cultural training and supplier opportunities. ■ Adhere to Yued Heritage Protection Agreement and the ILUA. – Submission of the Activity Notice to YAC – Conduct relevant heritage surveys on unsurveyed high-risk lands before ground disturbance. ■ Archaeological surveys should focus on zones of high and moderate Aboriginal Cultural Heritage (ACH) potential subject to ground disturbance. ■ Ethnographic surveys to cover the entire Proposed Operation Footprint, prioritising high and moderate ACH areas impacted by ground disturbance. ■ Include some sampling of low ACH potential areas affected by works, such as turbine locations and access tracks, if requested by Yued Traditional Owners. ■ Investigate culturally sensitive landforms discovered during surveys regardless of prior ACH potential assessments.	■ Development of a Cultural Heritage Management Plan (CHMP) – Implementation of the Proposal during construction and operation in accordance with the AH Act and Proposal's CHMP ■ All Proposal personnel and contractors to undertake relevant mobilisation inductions, including cultural awareness training ■ Adhere to mitigation management as defined in the SIA mitigation measures (2025a) including: – Support preservation and protection of significant cultural heritage sites in and around the Development Envelope. – Ensure mitigation measures are implemented as part of the CEMP to minimise impacts caused by construction	■ Ahere to mitigation management as defined in the SIA mitigation measures (2025a) including: – Support cultural heritage preservation Proposals and protection of significant sites within and around the Development Envelope. ■ All ACH sites identified should be registered with the DPLH with consent from Yued Traditional Owners. ■ Implement a Change Finds Procedures in accordance with the CHMP. ■ Auditing of disturbance areas post clearance.
Access to land	■ The granting of freehold title in Australia legally extinguishes native title because freehold ownership inherently grants exclusive possession rights, which are incompatible with native title interests (DoPC, 2024) ■ Access to land may still be an issue following ground field surveys	■ Built in micro-siting zones for relevant turbines to ensure minimal impact to access	■ Ahere to mitigation management as defined in the SIA mitigation measures (2025a) including: – Development of a CHMP as per the SIA mitigation measures (2025a) – Process for access to land

Potential impacts	Avoid	Minimise	Manage/rehabilitate
Modification to the hydrological regimes of culturally significant water sources including changes to surface flow, changes in water quality resulting from Proposal construction activities.	■ Proposal designed to avoid significant water sources identified in proximity to the Proposal. Including: – Location of turbines and access roads, and other ancillary infrastructure – Directional Drilling under Caren Caren Brook – Location of transmission line ■ Hydraulic infrastructure design to align with the adopted design flood criteria per AEP levels (1% for substations, 0.5% for turbine footings, etc.) and comply with relevant guidelines such as Austroads and the MRWA Supplement. ■ Water abstraction restricted to farm dams and/or bores (as per allocation)	■ Appropriate design on stormwater drainage in line with the *Stormwater management manual for Western Australia* (DWER, 2025a) and local government guidance (Shire of Dandaragan, 2006) ■ Sediment controls and implementation of stormwater management systems implemented as part of the CEMP and the Erosion and Sediment Control Plan to minimise impacts caused by increased impervious surfaces.	■ Continued correspondence with Traditional Owners ■ Monitoring of culturally significant water sources
Other key stakeholder impacts			
Impacts to Social Surroundings (general social outcomes) including population, tourism and economy	■ Correspondence with Stakeholders will ensure all concerns are addressed during design stages	■ Ahere, where appropriate, to mitigation management as defined in the SIA mitigation measures (2025a)	■ Continued engagement and consultation with applicable stakeholders during construction, operation and decommissioning phases
Changes in land use resulting in Impacts to land used for agriculture	■ Proposal design will ensure that impacts to land use for agricultural activities are limited.	■ Adherence to the Proposals CEMP	■ Continued engagement and consultation with existing land users during construction, operation and decommissioning phases
Disturbance of employee and general public amenity - noise	■ Site design such that noise limits comply with the Environmental Protection (noise) Regulations 1997 (WA) – Turbines have been setback a minimum 1,500 m from known non-involved sensitive receptors. ■ Prior to the commencement of construction of the Proposal, a Pre-Construction Noise Assessment be prepared that reflects the final wind turbine and ancillary infrastructure selections and design. – Noise modelling undertaken to inform turbine layout, with turbines located so that the Proposal will not result in exceedance of 35 dB at existing non-involved sensitive receptors.	■ Plan construction works accordingly to minimise noise impacts and managed in accordance with the Environment Protection (Noise) Regulations 1997, local governments (i.e., Shire of Dandaragan) noise guidelines (Shire of Dandaragan, 2019b) and adherence to the Proposal's CEMP.	■ Noise monitoring post construction undertaken to confirm wind turbine noise complies with the applicable noise assessment criteria. ■ Continued engagement with affected stakeholders

Potential impacts	Avoid	Minimise	Manage/rehabilitate
Disturbance of stakeholder amenity - visual impacts.	■ Proposal design approach to avoid clearing within the Development Envelope ■ Avoid vegetation removal for transportation of equipment to site and in siting of infrastructure. In particular, significant species and mature trees. ■ Laydown areas and other ancillary equipment, during construction, away from public viewpoints and views from public roads and sensitive receptors. ■ The LVIA identified low to negligible impact to visual amenity due to landscape is highly modified and that farming practices have already shaped the visual character; therefore, no management is required.	■ Minimise vegetation removal for transportation of equipment to site and in siting of infrastructure. In particular, significant species and mature trees.	■ Temporarily cleared vegetation to be rehabilitated where possible or returned to previous land use ■ Continued engagement with affected stakeholders
Disturbance to sensitive receptors – shadow flicker.	■ Site design to include rotor orientation considerations to decrease shadow flicker to higher impacted sensitive receptors. ■ Reduce micro-siting zones for relevant turbines to ensure all non-involved residences will be below shadow flicker duration hour per year limit and/or the minutes per day	■ Implement a turbine shut-down protocol to switch off the turbines causing shadow flicker during high impact hours, according to the Australian Draft National Guidelines: – Limit of 30 hours per year and 30 minutes per day theoretical (modelled) duration – If the theoretical duration limit is exceeded: Limit of 10 hours per year and 30 minutes per day realistic (modelled) or actual (measured) duration.	■ Continued engagement with affected stakeholders with impact from shadow flicker. ■ Opportunistic Shadow Flicker observations
Disturbance of EMI and telecommunications (interference of signals) to sensitive receptors	■ Site design ensures minimal interference to sensitive receptors	■ Ongoing consultations with impacts stakeholders prior to groundbreaking	■ Continued engagement with affected stakeholders with impact from EMI and telecommunications interference
Disturbance to aviation	■ Designated flight paths and height of flight path. .	■ Meteorological monitoring masts require marking with contrasting paint and marker balls to ensure visibility	■ All turbines and masts must be reported as tall structures to be included in official obstacle databases and aeronautical charts as required by CASA
Temporary disturbance during construction of public roads road works, overweight/ wide loads	■ Route selection to reduce impact to sensitive receptors (including local and state-controlled roads)	■ Develop a OSOM TMP which can include but is not limited to: – Restrict movement of vehicles outside peak traffic hours – Limit the size and frequency of OSOM loads, when possible, to reduce the duration of road disruption. – Employ traffic management controls such as temporary signage, barriers, and reduced speed zones	■ Opportunistic monitoring of road conditions

Potential impacts	Avoid	Minimise	Manage/rehabilitate
Modification to the hydrological regimes of water sources including changes to surface flow, changes in water quality resulting from Proposal construction activities.	■ Proposal designed to avoid significant water sources identified in proximity to the Proposal. Including: – Location of turbines and access roads, and other ancillary infrastructure – Directional Drilling under Caren Caren Brook – Location of transmission line ■ Water abstraction will be restricted to farm dams and/or bores (as per allocation) ■ Hydraulic infrastructure design to align with the adopted design flood criteria per AEP levels (1% for substations, 0.5% for turbine footings, etc.) and comply with relevant guidelines such as Austroads and the MRWA Supplement.	■ Sediment controls and implementation of stormwater management systems to be implemented as part of the CEMP and the Erosion and Sediment Control Plan to minimise impacts caused by increased impervious surfaces.	■ Monitoring of water sources.
Increase in bushfire risk due to installation of turbines and other ancillary infrastructure.	■ Site design is such that construction complies with CFA Guideline Requirements (adapted to WA) (CFA, 2023) outlined in the Bushfire Assessment (Western Environmental, 2025) before groundbreaking commences, including but not limited to: – Appropriate separation distances between infrastructure – Appropriate firebreaks	■ A Bushfire Management Plan (BMP) to be developed for the facility, in consultation with DFES. Before any works commence, the facility operators must undertake the following measures: – Grass must be maintained at or below 100 mm in height. – Long grass and/or deep leaf litter must not be present in areas where heavy equipment will be working, during construction or operation. – Restrictions and guidance must be adhered to during days of high (and above) fire danger or Total Fire Ban days. ■ Design of infrastructure to consider layout to minimise risk of fire ■ Installation of fire detection and fire suppression during construction to all facilities ■ Adhere to total fire ban days according to emergency WA website ■ All Proposal personnel and contractors to undertake relevant bushfire awareness inductions ■ Static firefighting water tanks must be installed for all major assets, sized per Australian Standard AS 2419.1-2021 ■ Clear signage, unobstructed access, and hardstand areas following DFES guidelines	■ Emergency Plan to be developed in accordance with AS 3745-2010: Planning for emergencies in facilities and include the following: – Emergency prevention, preparedness and mitigation activities. – Activities for preparing for emergencies. ■ Control and coordination arrangements for emergency response (e.g., Evacuation procedures, sheltering place arrangements, emergency assembly areas and emergency response procedures). ■ Management of firebreaks, including vegetation clearing and landscape screening ■ Communication of BMP and Emergency Plan with affected stakeholders
Disturbance of public amenity –	■ Road surface design, preparation and construction.	■ Road surface design, preparation and construction of all roads and access track undertaken in a way to minimise dust ■ Implementation of the Proposal's CEMP. Key measures are:	■ Reducing vehicle speed limits ■ Dust monitoring (when required) during construction to confirm

Potential impacts	Avoid	Minimise	Manage/rehabilitate
dust during construction	■ Forecast and works planning to consider high wind events ■ Topsoil stripping not undertaken during the following conditions: – High wind events. – When topsoil is saturated or when very dry.	– Water trucks to be used for dust suppression on access tracks, cleared areas, and high traffic areas. – Watering of surface area prior to commencing topsoil stripping - by water truck, where necessary – Reducing vehicle speed limits.	dust levels comply with the applicable dust assessment criteria
Human safety	■ Permanent and temporary fences to be installed during the construction and operational phases ■ Temporary signage, barriers, and reduced speed zones during construction ■ Works notifications advising community of activity	■ Adhere to Proposal's CEMP ■ All Proposal personnel and contractors to undertake relevant mobilisation inductions, including toolbox meetings and safety briefings	■ Ongoing maintenance of permanently fenced areas.

8.8 Assessment of residual impacts

A summary of residual impacts expected after the application of mitigation and management measures is provided in Table 8-11, with further discussion in the following sections.

Table 8-11 Summary of residual impacts to social surroundings after mitigation measures

Potential impact	Residual impact after management	Regional/local significance
Unauthorised disturbance to heritage sites due to clearing and earthworks.	The loss or disturbance of Aboriginal cultural heritage sites is unlikely to cause significant impacts due to the design of the Proposal (Development Envelope and Proposed Operation Footprint) to avoid these values.	Unlikely to be regionally significant. Not likely due to the design of the Development Envelope avoiding known sites of Aboriginal cultural heritage.
Access to land	Potential impacts to access of land due to the freehold title in Australia legally extinguishing native title because freehold ownership inherently grants exclusive possession rights, which are incompatible with native title interests.	Unlikely to be significant.
Modification to the hydrological regimes of culturally significant water sources including changes to surface flow, changes in water quality resulting from Proposal construction activities.	Potential impacts to hydrological regimes are unlikely to be significant due to the design of the Development Envelope and the Proposed Operation Footprint.	Unlikely to be significant.
Impacts to Social Surroundings (general social outcomes) including population, tourism and economy	Potential impacts to general social outcomes are unlikely to be significant due to the ongoing consultation with involved and non-involved stakeholders	Unlikely to be significant.
Changes in land use resulting in Impacts to land used for agriculture, land access.	Potential impacts to disturbance of local commercial activity including agricultural activities, land access and public safety are unlikely to be significant due to the design of the Development Envelope and the Proposed Operation Footprint and the effectiveness of management measures identified in Section 8.7.	Unlikely to be significant.
Impacts to amenity: noise, visual, shadow flicker, telecommunications, aviation, traffic and dust for general public, tourists and other tenement holders/stakeholders	Potential impacts to impacts to general public, tourists and other tenement holders/stakeholders due to noise, visual, shadow flicker, telecommunications, aviation, traffic and dust are unlikely to be significant due to the effectiveness of management measures identified in Section 8.7.	Unlikely to be significant.
Temporary disturbance during construction of public roads road works, OSOM loads	Potential impacts to traffic during construction of public roads and OSOM loads are unlikely to be significant due to the effectiveness of management measures identified in Section 8.7.	Unlikely to be significant.
Modification to the hydrological regimes of water sources including changes to surface flow, changes in water quality resulting from Proposal construction activities.	Potential impacts to hydrological regimes are unlikely to be significant due to the design of the Development Envelope and the Proposed Operation Footprint.	Unlikely to be significant.
Increase in bushfire risk due to installation of turbines and other ancillary infrastructure.	Potential impacts to risk of bushfire are unlikely to be significant due to the design of the Development Envelope and the Proposed Operation Footprint, and the effectiveness of management measures identified in Section 8.7.	Unlikely to be significant.

8.8.1 Aboriginal cultural heritage

Prior to construction commencing, an on-site detailed survey will be conducted by suitably qualified people with participation of the Yued. A CHMP will be developed based on outcomes of the site survey work, with all activities within the Development Envelope to be undertaken in accordance with Proposal's approved CHMP procedures to minimise impact of heritage places within or surrounding the Proposal.

Continued consultation with the Yued and adherence to the YHPA will ensure compliance and assist with understanding the significance and extent of values under the Aboriginal Heritage Act 1972. Surveys including archaeological and ethnographical are to be completed prior to any construction works.

As impacts to Aboriginal Cultural Heritage can be avoided and mitigated through the implementation of mitigation measures outlined in Table 8-10 it is unlikely that the Aboriginal Heritage Act (i.e., s18) will be triggered.

Therefore, it is anticipated that **no significant residual impact** to Aboriginal Cultural Heritage and Heritage Places will occur resultant of the Proposal's implementation.

8.8.2 Social impacts

The potential impacts of uneven distribution of benefits and potential human rights concerns relating to community engagement (FPIC) and supply chains (modern slavery) can be avoided and mitigated through the implementation of mitigation measures outlined in Table 8-10.

Therefore, it is anticipated that **no significant residual impact** to local community or human rights will occur resultant of the Proposal's implementation.

8.8.3 Amenity

8.8.3.1 Noise

The Proposal's noise emissions will generally comply with relevant noise criteria at most sensitive locations, with targeted management measures proposed in relation to the single predicted exceedance. With further refinements anticipated as turbine selection and final designs are confirmed.

The potential impacts of noise can be avoided and mitigated through the implementation of measures outlined in Table 8-10.

Therefore, it is anticipated that **no significant residual impact** due to noise will occur resultant of the Proposal's implementation.

8.8.3.2 Visual amenity

The potential impacts caused by the varying numbers of visible turbines will be mitigated through the implementation of measures outlined in Table 8-10.

Therefore, it is anticipated that **no significant residual impact** to visual amenity will occur resultant of the Proposal's implementation.

8.8.3.3 Dust generation

Dust arising from activities such as excavation, grading, and movement of soil and construction materials, which disturb the surface and release fine particles into the air, shall be mitigated through development and implementation of a CEMP. This management plan provides the framework for identifying, managing, and monitoring environmental risks during construction, including dust. Any resulting dust emissions from construction are expected to be temporary.

The potential impacts from dust can be avoided and mitigated through the implementation of measures outlined in Table 8-10.

Therefore, it is anticipated that **no significant residual impact** caused by dust will occur resultant of the Proposal's implementation.

8.8.4 Shadow flicker

Eight involved residences within the Development Envelope are forecast to exceed prescribed limits due to their proximity to multiple turbines.

The potential impacts of shadow flicker for the involved residents are mitigated through agreements with landowners, and micro-siting movements, as necessary. It is noted that dwelling #22 is situated within the Yathroo Wind Farm boundary area and is assumed to be part of the involved dwellings for that project. Therefore, this dwelling is not considered as requiring mitigation by this Proposal and is outside the scope of assessment.

Mitigation strategies provided in Table 8-10 will minimise impacts caused by shadow flicker. While shadow flicker is anticipated to cause minor annoyance at a limited number of non-involved residences, all predicted effects currently comply with relevant duration and distance guidelines. Additional mitigations including final turbine selection and layout confirmation, reassessment of shadow flicker and realistic modelling of shadow flicker durations considering visibility and screening will further mitigate any residual impacts.

Therefore, it is anticipated that **no significant residual impact** caused by shadow flicker will occur resultant of the Proposal's implementation.

8.8.5 Telecommunications

Current fixed telecommunication infrastructure is largely avoided under the Proposal and further mitigation will occur through micro-siting. Potential impacts to broadcasting and mobile services are likely to be localised and can be effectively addressed through stakeholder consultation, infrastructure design, or customer equipment upgrades. The risk of radar interference exists at regional distances, however, will be mitigated through engagement with the relevant agencies and additional measures put in place to minimise impacts.

Mitigation strategies provided in Table 8-10 will minimise impacts to telecommunications and radar systems.

Therefore, it is anticipated that **no significant residual impact** to telecommunications and radar systems will occur resultant of the Proposal's implementation.

8.8.6 Aviation

The turbines do not penetrate any Obstacle Limitation Surfaces or PANS-OPS of protected airspace related to certified or military aerodromes. No adverse effects on aviation communications, navigation, or surveillance facilities were identified.

The qualitative risk analysis concluded that the overall risk to aviation safety is low, with negligible impacts on civil and military aviation activities including training, recreational flights, aerial agricultural operations, firefighting, and emergency services. Obstacle lighting is therefore not required for the turbines. Mitigation strategies provided in Table 8-10 address the visibility challenge for low-flying aircraft, in addition to turbines and masts being reported as tall structures, to ensure their inclusion in obstacle databases and aeronautical charts as mandated by CASA regulations.

Therefore, it is anticipated that **no significant residual impact** to aviation will occur resultant of the Proposal's implementation.

8.8.7 Traffic

Moderate traffic impacts will occur during construction, and low impacts during operation. Preferred transport routes from the Australian Marine Complex and Geraldton Ports have been identified as best probable transport routes, with attention to route geometry, overhead clearances, and traffic management measures, including contraflow operations, to ensure safe passage of the longest turbine components.

The impacts from changes to traffic both along the route to, and within the Development Envelope can be mitigated through the implementation of strategies in Table 8-10.

Therefore, it is anticipated that **no significant residual impact** to traffic will occur resultant of the Proposal's implementation.

8.8.8 Bushfire

The site layout requires careful vegetation management and, where necessary, the establishment of firebreaks to reduce exposure to bushfire risk. Certain setbacks are mandated to limit radiant heat impact to acceptable thresholds, with larger separation distances required for renewable energy infrastructure to mitigate ignition risk. The siting of all habitable buildings and infrastructure will ensure radiant heat flux does not exceed 29 kW/m² (BAL-29). All fire breaks and clearance zones shall be implemented and maintained to effectively reduce likelihood of fire spreading in an uncontrolled manner. With special attention and management of the renewable energy assets such as wind turbines, BESS, and substations (requiring larger separations ranging from 30 to 75 m depending on vegetation class and slope), the design will incorporate firebreaks of at least a 10 m in width around the perimeter of all infrastructure and specific reduced-fuel zones infrastructure.

The impacts due to bushfire can be avoided and mitigated through the implementation of measures outlined in Table 8-10.

Therefore, it is anticipated that **no significant residual impact** caused by bushfire risk will occur resultant of the Proposal's implementation.

8.8.9 Hydrological regimes

Impact assessments have identified that Lake Guraga, a wetland of national importance approximately 5 km west and fed by the Caren Caren Brook system, could be indirectly affected by the Proposal. Given the distance and limited hydrological connectivity, potential impacts are considered unlikely. Geomorphic wetlands, primarily Dampland and Palusplain types occur within the Proposal area, and downstream wetlands along the Moore River are designated for either conservation, requiring protection, or multiple use, permitting sustainable development. Considering the sensitivities of hydrological regimes, water demand of Proposal, and the local aquifers and surface water regimes underpinning the viability of surrounding farming, strict implementation of environmental management plans with mitigations is required. Plans for prevention of erosion and sedimentation, to be implemented during construction and operation, the Emergency Response Plan(s), and adherence to relevant water quality protection guidelines, in addition to implementation of measures outlined in Table 8-10 will minimise impacts to hydrological regimes.

Therefore, it is anticipated that there is **low likelihood of residual impact** to hydrological regimes resultant of the Proposal's implementation.

8.8.10 Cumulative impacts

The cumulative impact assessment recognises that the Proposal, when considered alongside four existing operational proposals and one reasonably foreseeable proposal nearby, has the potential to generate combined effects on social surroundings at a regional scale. These cumulative impacts include unauthorised disturbance of Aboriginal heritage sites, noise, visual amenity, telecommunications and EMI, changes to visual landscapes, increased bushfire risk, effects on landholders due to infrastructure use, and increased traffic within the region. Proposals currently contributing to cumulative impacts in the Proposal area include the existing (i.e., operational) Yandin Wind Farm, Cataby Mineral Sands Mine, Cooljarloo Mine, as well as the proposed Yathroo Wind Farm.

Following the implementation of mitigation and management measures outlined in Table 8-10, the residual cumulative impacts to social surroundings are anticipated to be managed to acceptable levels, with **low likelihood of residual impact**. While some incremental effects on noise, visual amenity, traffic, and heritage disturbance are possible given the clustered nature of developments, these are expected to be minor or moderate and not lead to significant adverse outcomes.

Continuous stakeholder engagement, adherence to the future CHMP and TMP, and coordinated regional planning will be critical to minimising residual risks. Therefore, the overall significance of residual cumulative impacts is assessed as low to moderate, reflecting manageable effects within the broader regional context.

8.9 Environmental outcomes

Following completion of the assessment of residual impacts in Section 8.8, it is considered that the Proposal **will not have significant residual impacts** on social surroundings as a result of the implementation of the measures described in Table 8-10.

The Proposal meets the EPA objective “to protect social surroundings from significant harm”.

9 Other environmental factors

Remaining environmental factors not identified as “preliminary key” in Section 5 have been incorporated under the classification of “other environmental factors”. All sea themed environmental factors were collectively closed out in Table 5-1 with no further assessment undertaken.

Placement of an environmental factor under this section reflects the absence of part or all elements of any environmental factor through the systematic approach of EIA to understand the significance.

Table 9-1 through to Table 9-7 represents the environmental factors which were not considered “preliminary key” environmental factors.

9.1 Landforms

Following initial scope assessment, the environmental factor for landforms was discounted following the application of the mitigation hierarchy as outlined in Table 9-1.

Table 9-1 Landforms assessment of potential impacts

Aspect	Description/reasoning
EPA Objective	“To maintain the variety and integrity of distinctive physical landforms so that environmental values are protected” (EPA, 2023b).
Guidance and Policy	Environmental Factor Guideline Landforms (EPA, 2018a).
Environmental Factor Context	“The distinctive, recognisable physical features of the earth’s surface having a characteristic shape produced by natural processes. A landform is defined by the combination of its geology (composition) and morphology (form)” (EPA, 2018a). The EPA considers a landscape to be “all the features of an area that can be seen in a single view, which distinguish one part of the earth’s surface from another part. Landscapes can be either natural (largely unaffected by human activity) or anthropogenic (created or largely modified by human activity)” (EPA, 2018a) when assessing or considering elements of the Proposal. The significance of a landform is determined in relation to 6 criteria: variety, integrity, ecological importance, scientific importance, rarity and social importance (EPA, 2018a) .
Receiving Environment	The Development Envelope is located inland on land previously cleared and utilised for agricultural purposes. The natural environment has been extensively amended since settlement; little remains of pre-European landscape within the Development Envelope. As stated in a biodiversity audit paper (DBCA, 2025a) the Dandaragan Plateau subregion is “bordered by Derby and Dandaragan faults with cretaceous marine sediments, mantled by sands and laterites”. The subregion, which forms part 1 of the Swan coastal plain, has gentle undulating geomorphology supportive of agriculture and urban development. Additional key points relating to the receiving environment include: ■ Geological and environmental surveys of the Development Envelope have not identified any unique or distinctive landforms. ■ The area is undulating but devoid of physical geological features which can be described as distinctive (geological anomalies).
Potential Impacts	Ground disturbance will be confined to the clearing for construction of turbines, internal roads and other infrastructure. Foundation excavations are expected to be approximately 10 m at their deepest. No large scale earthworks are proposed across the Development Envelope. Potential impacts may include: ■ Increased erosion and associated impacts to the surfaces of geophysical features (i.e., landforms). These may be related to construction or operational actions (i.e., modified surface water flow). Due to the absence of significant landforms, the likelihood of impacts is considered unlikely. ■ Impacts to the morphology or the geological setting of the Dandaragan Plateau subregion. Changes are limited to individual footings of each construction element of the Proposal (i.e., turbines, internal road, substation). The absence of significant landforms means the potential for impacts is negligible. ■ Man-made structures common with large construction sites such as waste rock landforms. These are not supported by the scope of this Proposal.

Aspect	Description/reasoning
Proposed Mitigation and Management Actions	Mitigation measures or environmental management actions under the environmental factors will be identified and incorporated into the CEMP, TMP and the Project Execution Plan (PEP). An assessment has not identified any landforms within the Development Envelope that may be considered significant in accordance with the criteria set out in the factor guidance (EPA, 2018a). Indicative Disturbance Footprint has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure. Micro-sighting refers to a level of flexibility already incorporated into the engineered design and delivery, to enable the construction team to move around obstacles (native vegetation, critical habitat) and avoid impacts.
Predicted Environmental Outcome	The EPA objective for the landforms environmental factor is therefore expected to be met.

9.2 Subterranean fauna

Following initial scope assessment, the environmental factor for subterranean fauna was discounted following the application of the mitigation hierarchy as outlined in Table 9-2.

Table 9-2 Subterranean fauna assessment of potential impacts

Aspect	Description/reasoning
EPA Objective	“To protect subterranean fauna so that biological diversity and ecological integrity are maintained” (EPA, 2023b).
Guidance and Policy	Environmental Factor Guideline Subterranean Fauna (EPA, 2016d). Technical Guidance ‘Sampling Methods for Subterranean Fauna (EPA, 2021c).
Environmental Factor Context	“Subterranean fauna; are defined as fauna which live their entire lives (obligate) below the surface of the earth” (EPA, 2016d). Two groups of subterranean fauna include “stygofauna – aquatic and living in groundwater” and “troglofauna – air-breathing and living in caves and voids” (EPA, 2016d) (EPA, 2016d)Two groups are subterranean fauna include “stygofauna – aquatic and living in groundwater” and “troglofauna – air-breathing and living in caves and voids” (EPA, 2016d).With reference to the Environmental objective for this factor, integrity is defined as “ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements” (EPA, 2016d), when assessing or considering elements of the Proposal.
Receiving Environment	▪ No subterranean fauna specific studies have been undertaken for the Proposal as no significant impacts to groundwater or excavations are anticipated.
Potential Impacts	Potential impacts to subterranean fauna include: ▪ Changes to groundwater levels ▪ Changes to groundwater quality
Proposed Mitigation and Management Actions	Water for construction and operation of the Proposal will be sourced from current (i.e., approved) groundwater allocations and surface storages. Foundation excavations are expected to be approximately 10 m at their deepest.
Predicted Outcome	The EPA objective for the subterranean fauna environmental factor is therefore expected to be met.

9.3 Terrestrial environmental quality

Following initial scope assessment, the environmental factor for terrestrial environmental quality was discounted following the application of the mitigation hierarchy as outlined in Table 9-3.

Table 9-3 Terrestrial environmental quality assessment of potential impacts

Aspect	Description/reasoning
EPA Objective	“To maintain the quality of land and soils so that environmental values are protected” (EPA, 2023b).

Aspect	Description/reasoning
Legislation, Guidance and Policy	Environmental Factor Guideline Terrestrial Environmental Quality (EPA, 2016e). Technical Guidance: Assessment and Management of Contaminated Sites (DWER, 2021c). *Contaminated Sites Act 2003*.
Environmental Factor Context	"The chemical, physical, biological and aesthetic characteristics of soils" (EPA, 2016e). Environmental objectives for this factor include understanding the "organic and inorganic materials which accumulates on the earth's surface" and the "link between the soil quality and the protection of ecological and social values, which good soil quality supports" (EPA, 2016e) .
Receiving Environment	Additional key points relating to the receiving environment include: ■ Agriculture has been the primary land use across the Development Envelope. ■ Native vegetation coverage has been impacted by land clearing to a large extent. Remaining native vegetation is considered fragmented and degraded by agriculture impacts to the soil, modification of surface water runoffs and fragmentation impacts such as edge effects.
Potential Impacts	No contaminating materials will be generated by the Proposal nor is the long term storage of these materials associated with the development of the Proposal. Potential impacts to terrestrial environmental quality may include: ■ Localised contamination of soils (and surface water) due to loss of containment and unplanned spills of hydrocarbons/fuels. This type of impact is concentrated to the immediate area and controlled through implementation of the CEMP.
Proposed Mitigation and Management Actions	Mitigation measures or environmental management actions for the terrestrial environmental quality environmental factor will be incorporated into the CEMP, TMP and the PEP. Indicative Disturbance Footprint has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure. Micro-sighting refers to a level of flexibility already incorporated into the engineered design and delivery, to enable the construction team to move around obstacles (native vegetation, critical habitat) and avoid impacts. Standard site procedures include industry best practice for the transport, storage, use and disposal of any substances.
Predicted Outcome	The EPA objective for the terrestrial environmental quality environmental factor is therefore expected to be met.

9.4 Inland waters

Following initial scope assessment, the environmental factor for inland waters was discounted following the application of the mitigation hierarchy as outlined in **Table 9-4**.

Table 9-4 Inland waters assessment of potential impacts

Aspect	Description/reasoning
EPA Objective	"To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected" (EPA, 2023b) .
Legislation, Guidance and Policy	Environmental Factor Guideline Inland Waters (EPA, 2018b). *Rights in Water and Irrigation Act 1914* *Country Areas Water Supply Act 1947*
Environmental Factor Context	"The occurrence, distribution, connectivity, movement, and quantity (hydrological regimes) of inland water including its chemical, physical, biological and aesthetic characteristics (quality) (EPA, 2018b). With reference to the Environmental objective for this factor "inland waters include groundwater, such as superficial and confined aquifers, and surface water, such as waterways, wetlands and estuaries. A 'waterway' is any river, creek, stream or brook, including its floodplain and estuary or inlet" (EPA, 2018b) and should be considered as such when assessing or considering elements of the Proposal.
Receiving Environment	Key points relating to the receiving environment include: ■ Ecological surveys have confirmed that no wetland or RAMSAR wetland exists within the Development Envelope.

Aspect	Description/reasoning
	■ Surface water flows (if/when they occur) may report in part to the Moore River to the south of the Development Envelope and locally to Caren Caren Brook in the northwest. However, there is a surface distance of approximately 500 m between the southern boundary of the Development Envelope and the Moore River. ■ The land between the Development Envelope and the Moore River has been historically disturbed through agricultural practices. It currently comprises smaller hobby farms and areas of native vegetation. The land can act as a sediment control system (if) in the event over surface water flows occur. ■ The Leederville-Parmelia aquifer is generally deep and confined in the Proposal area, with the exception of where the Leederville Formation outcrops in the Moore River Valley. In the southern region of the PDE, the Leederville–Parmelia aquifer is confined beneath interbedded siltstone and shale of the Coolyena Group, specifically the Kardinya Shale Member (Department of Water Hydrogeological Bulletin Series Report no. HB1, 2017). Caren Caren Brook is hydraulically connected to the superficial aquifer rather than the Leederville-Parmelia aquifer. The brook intersects the Development Envelope in the north-west corner and feeds into Namming Lake, which is fed by the Perth-Superficial Swan Aquifer. The Leederville-Parmelia aquifer lies deeper and is semi-confined to confined, contributing to baseflow in larger rivers like the Moore River but is not directly connected to Caren Caren Brook. ■ Caren Caren Brook is associated with the superficial aquifer system rather than the deeper Leederville-Parmelia aquifer in this area. The Leederville-Parmelia aquifer is generally encountered from near surface in outcrop areas to depths exceeding 200 meters below ground level in confined zones.
Potential Impacts	Potential impacts may include: ■ Drawdown from groundwater abstraction. ■ Altered surface water drainage patterns **Drawdown from groundwater abstraction** Water for construction and operation of the Proposal will be sourced from current (i.e., approved) groundwater allocations and surface storages. ■ Production bores accessing the Leederville-Parmelia aquifer in the Proposal area have depths recorded around 112 meters to over 200 meters below ground level, indicating the aquifer is typically accessed at depths of approximately 100 to 200+ meters below ground surface. The Proponent is seeking to acquire an existing groundwater licence held by Lawson Grains operation as detailed below for the duration of construction phase. Licence Number: 110835 Licence Type: Groundwater Licence Issue Date: 6/5/2014 Expiry Date: 31/10/2024 Licence Allocation: 672,000 KL There are two groundwater bores associated with the licence: • Yathroo - Rf1 03 (Site reference 61710938) • Regans Ford - Rf3 03 (Site reference 61710942) Inlet screen depth on Rf1 03 range from 75.4 – 87.4 mbGL and Rf3 03 range from 99.7 – 178 mbGL. Both bores will be extracting water from the Leederville-Parmelia aquifer within the Cowalla confined sub-area. **Altered surface water drainage patterns** ■ Local drainage patterns are altered from access roads, hardstand areas and cable trenches as they intercept overland flow. ■ The Proposal has been modified to avoid impacts to known creeks and brooks, for example Caren Caren Brook. The likelihood of impact to a hydrological regime is considered unlikely. ■ Pollution of the local inland waterways (including Moore River) due to a large volume loss of contained substances (e.g., hydrocarbons) used during the construction or operational phases. The Moore River is approximately 500 m from the southernmost boundary of the Development Envelope. In light of the management measures that will be implemented it is considered unlikely that inland waters would be impacted by the Proposed construction and operational activities. The same applies to other creeks as these have been avoided through the iterative design process adopted for the Proposal.

Aspect	Description/reasoning
Proposed Mitigation and Management Actions	Given the knowledge of the aquifer systems within the project area, and the depth of abstraction, water abstraction is not expected to significantly impact GDEs associated with Caren Caren Brook.
Predicted Outcome	The EPA objective for the inland waters environmental factor is therefore expected to be met.

9.5 Air quality

Following initial scope assessment, the environmental factor for air quality was discounted following the application of the mitigation hierarchy as outlined in Table 9-5.

Table 9-5 Air quality assessment of potential impacts

Aspect	Description/reasoning
EPA Objective	"To maintain air quality and minimise emissions so that environmental values are protected" (EPA, 2023b).
Guidance and Policy	Environmental Factor Guidelines Air Quality (EPA, 2020a).
Environmental Factor Context	"The chemical, physical, biological and aesthetic characteristics of air" whilst 'air' refers to all the air above the ground up to and including the stratosphere (EPA, 2020a). Environmental objectives for this factor include understanding that "maintaining good air quality and minimising emissions protects human health and amenity, as well as the broader environment" (EPA, 2020a). Examples of air quality pollution may include odour from a waste discharge or processing point, gaseous emissions to air, or particulate loading from disturbed soils. These elements have been considered and investigated in the context of the Proposal description.
Receiving Environment	Additional key points relating to the receiving environment include: ■ Gentle undulating inland sand dune systems with established vegetation best describes the visual extent of the Development Envelope. The air quality is representative of typical open vegetated areas with good ground coverage. ■ Due to fair volumes of ground cover, the presence of nuisance dust particulates has not been recorded as a health and safety concern during field surveys. ■ No air pollution vents, stacks, evaporation ponds or other emission to air structures have been reported during the various studies completed for the Proposal or within the vicinity of the Proposal.
Potential Impacts	Potential impacts to air quality may include: ■ Disturbance of surface soils within a defined area is expected during the construction phase. Such activities include the development of access/maintenance tracks, excavation of turbine footings, excavation for the placement of sub-surface cables, and general traffic movements. These activities are considered to be intermittent and can be adequately managed through a TMP and CEMP. ■ Other short term air quality pollutants (in the construction and commissioning phases) may include sullage odour from onsite crib kitchen or ablution facilities, or designated smoking areas. These are managed under a CEMP.
Proposed Mitigation and Management Actions	Mitigation measures or environmental management actions for the environmental factor air quality will be incorporated into the CEMP, TMP and the PEP. Indicative Disturbance Footprint has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure. Use of water trucks for dust suppression as part of normal site activities to mitigate mobilisation of disturbed particulates.
Predicted Outcome	The EPA objective for the air quality environmental factor is therefore expected to be met.

9.6 Greenhouse gas emissions

Following initial scope assessment, the environmental factor for greenhouse gas emissions was discounted following the application of the mitigation hierarchy as outlined in Table 9-6.

Table 9-6 Greenhouse gas assessment of potential impacts

Aspect	Description/reasoning
EPA objective	"To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable" (EPA, 2023b).
Guidance and policy	Environmental Factor Guideline 'Greenhouse Gas Emissions' (EPA, 2024e).
Environmental factor context	"Scope 1 GHG emissions are those released to the atmosphere as a direct result of an activity, or a series of activities, which are part of a proposal under" consideration by the Administrating Authority (EPA, 2024e). "Scope 2 GHG emissions are those from the independent consumption of an energy product" (EPA, 2024e) by implementation of the Proposal activities. "Scope 3 emissions (both upstream and downstream) occur as a consequence of the activities" being proposed, but from sources not owned or controlled by the proponent" (EPA, 2024e).
Receiving environment	Additional key points relating to the receiving environment include: ■ Agricultural practices result in the generation of Scope 1 greenhouse gas emissions. These are generally associated with the combustion of hydrocarbon-based fuels by internal combustion engines.
Potential impacts	Potential impacts may include: ■ Greenhouse Gas Emissions released due to physical delivery of the Proposed Activities may occur at a volume greater than the exceedance threshold stated within the guidance for either Scope 1 or Scope 2 emission types. ■ Over the short construction phase, under the NGER reporting mechanism, reported emission volumes will be different to previous activities and may trigger a request for additional information during the NGER report lodgement.
Proposed mitigation and management actions	Annual greenhouse gas emission reporting is required under the Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act). The Proponent will continue to monitor and report entity emissions annually through existing workplace practices (NGER-PR-COR-FY25) to satisfy requirements under the NGER Act. Mitigation measures or environmental management actions for the environmental factor greenhouse gas emissions will be incorporated into the CEMP and TMP. Including speed restrictions, limiting numbers of vehicles onsite and maintaining schedules. A projection has been completed to ascertain the likelihood of greenhouse gas emissions exceeding 100,000 t·CO_2e for this type of Proposed Activity. The findings assessed the GHG Scope 1 emission estimate over a -year construction phased to be 12,500 t CO2-e. It can be concluded that the potential for the safeguard mechanism is unlikely to be triggered. Infrastructure placement will occur within the Indicative Development Envelope only.
Predicted outcome	The EPA objective for the greenhouse gas emissions environmental factor is therefore expected to be met.

9.7 Human health

Following initial scope assessment, the environmental factor for human health was discounted following the application of the mitigation hierarchy as outlined in Table 9-7.

Table 9-7 Human health assessment of potential impacts

Aspect	Description/reasoning
EPA Objective	"To protect human health from significant harm" (EPA, 2023b).
Guidance and Policy	Environmental Factor Guideline Human Health (EPA, 2016f).
Environmental Factor Context	Health hazards including and not limited to the emission or discharge of harmful materials noise, asbestos or lead explicitly informed through and considered in accordance with other EPA guidelines. Human health provides the specific framework for considering the possible impacts to human health arising from the emission of radiation. The guideline does not address occupational health and safety which is comprehensively regulated by other agencies.
Receiving Environment	There are no known sources or emitters of radiation within the Development Envelope or the vicinity of the Proposal.

Aspect	Description/reasoning
Potential Impacts	No impacts to human health are anticipated as a result of the Proposal.
Proposed Mitigation and Management Actions	No mitigation measures or environmental management actions are proposed under the human health environmental factor due to the incorporation of these elements within community and stakeholder engagement. No impacts to this environmental factor are expected through the implementation of the Proposal as described within this supporting document.
Predicted Outcome	The EPA objective for the human health environmental factor is therefore expected to be met.

10 Offsets

The Proposal will play a crucial role in advancing the transition to clean energy and reducing carbon emissions within Western Australia's energy networks. Key energy reduction priorities reflect the commitment to a sustainable and low-carbon future in Western Australia.

Located within the “Intensive Land Use Zone (Southwest)” (DWER, 2021a), the Proposal will require some level of environmental offsets to mitigate impacts resulting from site access locations extending from the Brand Highway. An assessment of the Proposal was undertaken in line with Section 4 of the *WA Environmental Offsets Guidelines* (DWER, 2024a) as shown in Table 10-1.

This applies to proposals being assessed by the State under any bilateral agreement/accredited assessment with the Commonwealth under the *EPBC Act.* In such cases the State will also have regard for the *Offsets assessment guide* under the EPBC Act (DWER, 2024a).

Table 10-1 Policy and guidance relevant to offsets

Author, year	Title	Consideration
Technical guidance		
(DWER, 2011b)	WA Environmental Offsets Policy 2011	Provides a framework for consistent application of environmental offsets to protect and conserve environmental and biodiversity values
(DWER, 2024a)	WA Environmental Offsets Guidelines 2014	These guidelines complement the WA Environmental Offsets Policy by clarifying the determination and application of environmental offsets in Western Australia. Application ensures that decisions made on environmental offsets are consistent and accountable under the EP Act.
(DWER, 2021b)	DWER WA environmental offsets calculator 2021	Regulator provided calculator to be used to ensure consistency of calculation process.
(DWER, 2021a)	Environmental offsets metric: Quantifying environmental offsets in Western Australia	Applies to all land-based biodiversity offsets required as a condition of EP Act approvals and sets out the approach for applying the offsets calculator in both the intensive and extensive land use zones.
(EPA, 2024d)	Public Advice: Considering environmental offsets at a regional scale	This advice assists to identify the guiding values and priorities considered to enable environmental offsets to contribute to environmental protection and enhancement outcomes regionally.

10.1 WA Environmental Offsets Framework

“Environmental offsets are designed to counterbalance the significant residual impacts of proposals and clearing regulated under the EP Act on biodiversity” (DWER, 2021a).

The WA Environmental Offsets Policy seeks to protect and conserve environmental and biodiversity values for present and future generations. This Policy ensures that economic and social development may occur while supporting long term environmental and conservation values (DWER, 2011b).

The Policy seeks to ensure that environmental offsets are applied in specified circumstances in a transparent manner to engender certainty and predictability, while acknowledging that there are some environmental values that are not readily replaceable. It serves as an overarching framework to underpin environmental offset assessment and decision-making to (DWER, 2011b):

- Facilitate transparency and accountability of offsets
- Provide a single cross-Government record for environmental offsets
- Monitor offset implementation and outcomes
- Improve auditing and quality control of offsets
- Provide for efficient retrieval of offset information in flexible ways to meet Government, industry and community needs.

10.2 Part IV of the EP Act

The Proposal is being referred for assessment under the Part IV assessment process (significant impact) under Section 38 of the EP Act. Section 39A of the EP Act enables the Administrating Authority to decide whether to assess the provided Proposal. The Administrating Authority bases the decision to assess on the "likely significance of impact(s) of the Proposal on the receiving environment" (DWER, 2024a).

If the Administrating Authority decides to formally assess the Proposal, the level of assessment will also be incorporated to ensure the most appropriate management measures can be applied (DWER, 2024a).

10.3 Residual impacts for this Proposal

Following the implementation of the EPA's impact minimisation hierarchy, residual impacts to identified listed species from the implementation of the Proposal have been summarised below:

- A total of 0.168 TEC within the IDF to be disturbed includes:
  - DE (12,483.55 ha) contains 186.5 ha of regionally significant Banksia Woodlands TEC.
  - IDF (964.37 ha) contains 0.168 ha of locally significant Banksia Woodlands TEC.
  - The IDF largely avoids mapped Banksia Woodlands TEC, however approximately 0.168 ha (of which 0.153 ha is in 'Excellent' condition and 0.015 ha in 'Very Good' condition) is proposed to be impacted, representing approximately 0.1% of the total surveyed Banksia Woodlands TEC (427.42 ha surveyed extent of TEC (Phoenix, 2025b)).
- Up to 7.02 ha (0.73%) of remnant native vegetation comprised of 4.08 ha of native vegetation and 2.94 ha of isolated native trees is proposed to be cleared in the IDF (total area of IDF 964.37 ha).
  - Additionally, the transportation of the turbines within the Development Envelope may necessitate some vegetation management including minor temporary trimming of overhanging roadside vegetation above the height of 1.80 m. This is not expected to be more than 3.65 ha of native vegetation trimming.
- The potential for disruption to Black Cockatoo forage habitat and potential nesting trees within the Development Envelope. Carnaby's Black Cockatoo's have been observed within the DE.
  - A total of 5.02 ha (0.52 % of IDF) of moderate to high quality foraging habitat for CC and 3.36 ha (0.35% of IDF) of moderate quality foraging habitat for FRTBC will be impacted within the IDF.
  - The remaining 957 ha (over 99% of the IDF: NB: 2.23 ha of IDF not accessed) within the IDF is Low quality habitat for CC and 1.65 ha (0.17%) is low quality foraging habitat for FRTBC.
- Sixty-three (63) PNTs were recorded within the IDF, of these 57 were in areas cleared for agriculture or in areas cleared for infrastructure and six in Open Jarrah-Marri woodland. Although 63 individual trees are located within the IDF, 1,516 (approximately 96%) trees remain undisturbed within the broader Development Envelope. Two trees were identified to have possible hollows within the IDF, however there were no suitable hollows identified within the IDF.

The clearing of native vegetation will impact terrestrial fauna habitats. The assessment of residual impacts on MNES fauna habitats are further discussed in Section 11.

10.4 Proposed offsets

The significance of these residual impacts has been assessed with reference to the "consideration of significance" matters listed in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023b). Impact assessments were based on the maximum potential area of clearing. Actual disturbance is likely to be lower; therefore, the predicted residual impacts presented below are likely to represent an over-estimate (conservative approach).

Residual environmental impacts assessed but not considered significant include:

- **Action:** Trimming to native vegetation above approximately 1.8 m in height. This allows for the expected overhang that will essentially pivot or sweep out behind the turning transport vehicle. This is expected to mainly occur when transporting turbine blades of up to 91 m in length. Total trimming of native roadside vegetation above 2 m in height will be required over approximately 3.65 ha within the Indicative Disturbance Footprint.

  Impact: Considered short term and recoverable and not of a significant extent which would result in loss of vegetation. Trimming will be undertaken to enable the vegetation to regrow relatively easily (recover).

  Offset: not applicable as incorporated into licencing process.

- **Action:** Clearing of 7.02 ha of native vegetation within the Indicative Disturbance Footprint or at site entry locations, does not contain conservation significant flora species.

  Impact: Whilst clearing presents a long-term impact that is both visual and ecological, it is known that some land clearing will be required to implement the Proposal. The volume of clearing has been minimised where possible through use of pre-cleared agricultural lands.

  Offset: not applicable as incorporated into licencing process.

Review of the identified residual environmental impacts which are likely to be considered as significant impacts include:

- **Action:** Clearing of approximately 0.168 ha of Banksia Woodland of the Swan Coastal Plain Threatened Ecological Community (TEC) of which approximately 0.153 ha is of excellent condition and approximately 0.015 ha is very good condition and is listed as endangered under the EPBC Act and as Priority 3 by DBCA (BC Act).

  The TEC identified in this area is captured under the Transmission Route and is also classified as potential foraging habitat for the Carnaby's Black Cockatoo (*Zanda latirostris*), threatened under the EPBC Act and BC Act within the Indicative Disturbance Footprint.

- **Impact:** Clearing under Transmission Line (option b) will result in the permanent removal and loss of approximately 0.153 ha of TEC roadside vegetation to enable access from the Brand Highway to the connector sub-station and the state grid, and entry to site via Dandaragan Road. Also, site access to Wind Farm area will result in the permanent removal and loss of approximately 0.015 ha of TEC roadside vegetation at Moochamulla road.

  Of the 1,333 observations of Carnaby's Black Cockatoo recorded during BBUS and targeted Carnaby's Black Cockatoo surveys (Phoenix, 2026) within the Development Envelope, no breeding or foraging of habitat or sightings of birds were observed in these sections of the TEC.

  Offset: Application of the early indications from the offset calculator suggests direct land conservation of approximately up to 2 ha of the same type and condition Banksia Woodlands TEC could be located and placed into conservation as an offset by the Proponent if required by the regulator.

An environmental offset will be required and will be prepared in accordance with the WA Environmental Offset Policy 2011 and Environment Offset Guidelines 2014.

10.5 Offsets not required for agricultural areas

The construction of the Proposal will require the clearing of up to 7.02 ha of native vegetation. Within this larger area offsets may be required for the clearing of 0.168 ha of TEC and the removal of any isolated paddocks trees that have potential to be habitat trees (foraging, roosting) for Carnaby's Black Cockatoos. The need for both these offsets will be confirmed following completion of spring flora and vegetation surveys and habitat tree breeding surveys.

11 Matters of national environmental significance

Matters of national environmental significance (MNES) are protected under the EPBC Act. Factors incorporated under MNES include World Heritage Properties, National Heritage Properties, Wetlands of International Importance, Great Barrier Reef Marine Park, Commonwealth Marine Areas, Listed Threatened Ecological Communities (TEC), Listed Threatened Species and Listed Migratory Species (DoE, 2013) .

Any proposed action that has, will have, or is likely to have a significant impact on a species listed as extinct in the wild, critically endangered, endangered, vulnerable; or an ecological community listed as critically endangered or endangered (DoE, 2013), may require a strategic assessment of significance of that impact. For the purpose of this document, State nomenclature will apply.

A self-assessment of all supporting impact studies for the Proposal has been undertaken by the Proponent, who acknowledges the following:

- One listed fauna species and one threatened ecological community identified through field surveys (with the decision to refer confirmed by the Proponent).
  - Carnaby's Black Cockatoo (*Zanda latirostris*); listed as Endangered.
  - Banksia Woodlands of the Swan Coastal Plain ecological community; a TEC (herein referred to as 'Banksia Woodlands TEC'), listed as Endangered.
- Requirement to prepare and submit a separate EPBC Referral application under the federal EPBC Act, in addition to the state-level significant impact on protected species self-assessment within this supporting document under the Bilateral Agreement (2015).
- Requirement to prepare and finalise the EPBC Referral for federal lodgement in accordance with the *EBPC Act Referral Preparation Guide* (DCCEEW, 2024a).
- Anticipated EPBC Referral scheduled for lodgement via the EPBC Act Business Portal during Quarter 4 (Q4) 2025.

The EPBC self-assessment process was completed in accordance with *the Significant Impact Guidelines (No. 1.1): Matters of National Environmental Significance* (DoE, 2013) (SIG 1.1) as part of this Proposal. Results from this strategic assessment expanded the knowledge and understanding of the significance of these potential impacts if the Proposal was to be implemented.

11.1 Policy and guidance

The following guidance documents in Table 11-1 were utilised during the evaluation of MNES under the Bilateral agreement (2015) made under section 45 of the EPBC Act relating to environmental assessments.

Table 11-1 Policy and guidance relevant to MNES

Author, year	Title	Consideration
Commonwealth		
(DCCEEW, 1999)	*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)	Australia's main national and environmental legislation, it clarifies the government's role in protecting and preserving the environment and heritage, enables efficiency between states and territories on protected matters.
(DCCEEW, 2000)	Environment Protection and Biodiversity Conservation Regulations 2000	As amended 14 October 2024, supports the implementation of the EPBC Act through defining terms and expressions of key meanings.
(CoA, 2015)	Bilateral agreement made under section 45 of the EPBC Act relating to environmental assessment	Allows for the state to progress MNES at state level to maintain approval progress with only proposals which require Commonwealth assessment being referred.

Author, year	Title	Consideration
(DCCEEW, 2024a)	EPBC Act referral preparation guide	Outlines the requirements for a EPBC referral as per regulation 4.03 and Schedule 2 of the EPBC Regulations 2000.
(DoE, 2013)	Significant Impact Guidelines (No. 1.1): Matters of National Environmental Significance (SIG 1.1)	Overarching guidance on determining whether an action is likely to have a significant impact on a matter protected under the EPBC Act.
(DoEE, 2016a)	Banksia Woodlands of the Swan Coastal Plain: a nationally protected ecological community	Guide is designed to assist land managers, owners and occupiers, as well as environmental assessment officers and consultants, to identify, assess and manage the Banksia Woodlands TEC.
(DEWHA, 2010b)	Survey guidelines for Australia's threatened birds Guidelines for detecting birds listed as threatened under the EPBC Act.	Survey guidelines for the methods considered appropriate in conducting presence/absence survey for birds listed as threatened under the EPBC Act. Also advises on expectations for survey methodology.
(DAWE, 2022)	EPBC Act Referral Guidelines for 3 threatened black cockatoo species: Carnaby's Black Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Black Cockatoo (vulnerable) *Calyptorhynchus baudinii*, and Forest Red-tailed Black Cockatoo (vulnerable*) Calyptorhynchus banksii naso*	Revised guidelines to 3 species of Western Australian (WA) black cockatoos listed as threatened, guides on referment to the EPBC Act. Updates previous guidelines from 2012.
(DEWHA, 2010a)	Survey Guidelines for Austr*alia's threatened bats*	Guidelines for detecting bats listed as threatened under the EPBC Act.
State		
(EPA, 2024a)	Environmental Protection Authority, Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual	Provides guidance on the environmental impact assessment under Part V of the EP Act. Identifying this as an impact of some significance.
(EPA, 2016c)	Environmental Factor Guideline: Terrestrial Fauna	Describes the EPA environmental factor Terrestrial Fauna and explains the associated objective, EIA considerations for this factor, discussing the environmental values of terrestrial fauna, and their significance.
(EPA, 2016a)	Environmental Factor Guideline: Flora and Vegetation	Describes the EPA environmental factor Flora and Vegetation and explains the associated objective, EIA considerations for this factor, discussing the environmental values of flora, vegetation and their significance.
(EPA, 2020b)	Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment	State-level technical guidance on the accepted fauna survey methodologies for different regions within WA under EIA.
(EPA, 2009)	Technical Guidance: Sampling of Short-Range Endemic Invertebrate Fauna	State-level technical guidance on the accepted short-range endemic (SRE) fauna sampling techniques for different regions within WA under EIA.
(EPA, 2019)	Technical Guidance: Carnaby's Black Cockatoo in Environmental Impact Assessment in the Perth and Peel Region	Details the issues affecting CC, focusing on the Perth and Peel portions of the Swan Coastal Plain region. Outlining known threats and evaluation of risks to inform environmental assessment, management and monitoring.
(EPA, 2016b)	Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment	State level technical guidance provides accepted flora and vegetation survey methodologies for different regions within WA under EIA.

11.2 Protected Matters Search Tool

The Protected Matters Search Tool (PMST) was utilised to identify MNES which are known or likely to occur within the Development Envelope boundary and an additional 20 km buffer zone, rather than a centralised geographical point. This search query was completed on 24 April 26.

A summary of the PMST results is presented in Table 11-2. This initial search identified that five threatened ecological species, 66 threatened species and 11 migratory species would benefit from additional investigation and assessment to clearly understand the level of potential significance for each species.

Table 11-2 Summary of MNES within <20 km of the Proposal

MNES	Count	Description	Significantly impacted by Proposal activities? (Y/N)
World Heritage Properties	None	N/A	No
National Heritage Places	None	N/A	No
Wetlands of International Importance	None	N/A	No
Great Barrier Reef Marine Park	None	N/A	No
Commonwealth Marine Areas	None	N/A	No
Threatened Ecological Communities (TEC)	5	Refer to Table 11-3	Yes*
Threatened Species	66	Refer to Table 11-4	No
Migratory Species	11	Refer to Table 11-5	No

**Minor local impact anticipated; refer to Section 11.2.1.*

11.2.1 Listed threatened species

The PMST report indicated that up to 66 EPBC Act listed threatened species may occur within the Development Envelope or in the surrounding 20 km buffer zone. Of those, 32 species were considered likely to occur or have habitat occurring within the Development Envelope itself, including 8 birds. These are outlined in Table 11-3.

However, subsequent field surveys conducted to support this Proposal identified only 32 listed threatened species, have the likelihood to occur within the Development Envelope (due to the presence of habitat, forage availability and potential breeding areas). These fauna species are identified in Table 11-3.

11.2.2 Listed migratory species

The PMST report identified 11 migratory species which may have potential to utilise the land or sky area within the Development Envelope. These species are presented in Table 11-4.

Table 11-3 EPBC Act listed threatened species which may occur within the Development Envelope (source: PMST database)

Species	EPBC Act conservation status	Previous record	Observed within DE during survey	Risk of impact
Southern Whiteface *(Aphelocephala leucopsis)*	VU	No records	No	Negligible to none
Sharp-tailed Sandpiper *(Calidris acuminata)*	VU and Migratory	No records	No	Negligible to none
Curlew Sandpiper *(Calidris ferruginea)*	CR and Migratory	Recorded 1978	No	Negligible to none
Malleefowl *(Leipoa ocellata)*	VU	Recorded nearby in 1993, 1988, and 2005	No	Negligible to none
Eastern Curlew *(Numenius madagascariensis)*	CR and Migratory	No suitable habitat	No	Negligible to none
Australian Painted Snipe *(Rostratula australis)*	EN	No records	No	Negligible to none
Common Greenshank *(Tringa nebularia)*	EN and Migratory	Recorded 2003 and 1977	No	Negligible to none
Carnaby's Black Cockatoo *(Zanda latirostris* (listed as *Calyptorhynchus latirostris*)*)*	EN	Within known range	Yes	Low (Open woodland, pine plantation, shrubland, drainage line)
Chuditch, Western Quoll *(Dasyurus geoffroii)*	VU	Recorded in 2001 and 1987	No	Negligible to none
Ghost Bat *(Macroderma gigas)*	VU	**Outside known range	No	Negligible to none
Dibbler *(Parantechinus apicalis)*	EN	***Outside known range	No	Negligible to none
Western Spiny-tailed Skink, *(Egernia stokesii badia)*	EN	Outside known range	No	Negligible to none
Balston's Pygmy Perch *(Nannatherina balstoni)*	VU	No	No	Negligible to none
Forest's Wattle *(Acacia forrestiana)*	VU	6.2 km N of DE.	No – Considered unlikely Spring survey to confirm	Low to Negligible
Slender Andersonia *(Andersonia gracilis)*	EN	389 m SSW of DE.	No - Possible Spring survey to confirm	Low to Negligible
Dwarf Green Kangaroo Paw *(Anigozanthos viridis* subsp. *terraspectans)*	VU	2.6 km SSW of DE.	No - Possible Spring survey to confirm	Negligible to none

Species	EPBC Act conservation status	Previous record	Observed within DE during survey	Risk of impact
Dark-bract Banksia *(Banksia fuscobractea)*	CR	No	Spring survey to confirm	Low to Negligible
Summer Honeypot *(Banksia mimica)*	EN	7.3 km ESE of DE.	No - Possible Spring survey to confirm	Negligible to none
Southern Serrate Dryandra *(Banksia serratuloides* subsp. *Serratuloides)*	VU	No	Spring survey to confirm	Negligible to none
Sandplain Duck Orchid *(Caleana dixonii (listed* as *Paracaleana dixonii*))	EN	No	Spring survey to confirm	Low to Negligible
Gingin Wax (*Chamelaucium lullfitzii* (*listed as Chamelaucium* sp. Gingin)	VU	8.9 km N of DE.	No - Possible Spring survey to confirm	Negligible to none
One-headed Smokebush *(Conospermum densiflorum* subsp. *unicephalatum)*	EN	No	Spring survey to confirm	Low to Negligible
Glossy-leafed Hammer Orchid, *(Drakaea elastica)*	EN	1.8 km W of DE.	No - Possible Spring survey to confirm	Negligible to none
Keighery's Eleocharis *(Eleocharis keigheryi)*	VU	No	Spring survey to confirm	Negligible to none
Dandaragan Mallee *(Eucalyptus dolorosa)*	EN	No	Spring survey to confirm	Negligible to none
Scaly Butt Mallee (*Eucalyptus leprophloia)*	EN	No	Spring survey to confirm	Negligible to none
Narrow curved-leaf Grevillea *(Grevillea curviloba* subsp. *incurva)*	EN	No	Spring survey to confirm	Negligible to none
Lesueur Hakea *(Hakea megalosperma)*	VU	No	Spring survey to confirm	Negligible to none
Red Snakebush *(Hemiandra gardneri)*	EN	No	Spring survey to confirm	Low to Negligible
Keighery's Macarthuria *(Macarthuria keigheryi)*	EN	5.2 km WNW of DE.	No - Possible Spring survey to confirm	Negligible to none
Dwarf Pea *(Ptychosema pusillum)*	VU	1.9 km W of DE.	Spring survey to confirm	Low to Negligible
Star Sun-orchid *(Thelymitra stellata)*	EN	No	No - Possible Spring survey to confirm	Low to Negligible

Table notes:

** Restricted to the Pilbara and Kimberley regions of WA (*Macroderma gigas*).

*** Restricted to Fitzgerald River National Park and offshore islands near Jurian Bay (*Parantechinus apicalis*), included via data base most likely due to potential habitat setting.

Table 11-4 Listed migratory species and likelihood of occurrence

Scientific name	Common name	Threatened category	IUCN	PMST area status	PMST presence likelihood to occur	Recorded in DE Survey (Y/N)	Critical breeding area	Critical habitat area	Critical to feeding, rest or migration	Risk of impact
Actitis hypoleucos	Common Sandpiper	Migratory Wetlands Species, Listed	Least Concern	Within DE	Likely	No records	No	No	No	Negligible to none
Apus pacificus	Fork-tailed Swift	Migratory Marine Birds, Listed - overfly marine area	Least Concern	Within DE	Likely	No records	No	No	No	Negligible to none
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable; Migratory Wetlands Species, Listed	VU	Within DE	May	No records	No	No	No	Negligible to none
Calidris canutus	Red Knot, Knot	Vulnerable; Migratory Wetlands Species, Listed - overfly marine area	Near Threatened	In buffer area only	May	No records	No	No	No	Negligible to none
Calidris ferruginea	Curlew Sandpiper	Migratory Wetlands Species, Listed - overfly marine area	VU	Within DE	May	Recorded 1978	No	No	No	Negligible to none
Calidris melanotos	Pectoral Sandpiper	Migratory Wetlands Species, Listed - overfly marine area	Least Concern	Within DE	May	No records	No	No	No	Negligible to none
Motacilla cinerea	Grey Wagtail	Migratory Terrestrial Species, Listed - overfly marine area	Least Concern	Within DE	May	No records	No	No	No	Negligible to none
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	Critically Endangered; Migratory Wetlands Species, Listed	EN	Within DE	May	No records	No	No	No	Negligible to none
Pandion haliaetus cristatus	Osprey	Migratory Wetlands Species, Listed	Least Concern	Within DE	Known	Approximately 1 km from DE in 2000 Previous record only	No	No	No	Negligible to none
Pristis pristis	Freshwater Sawfish	Vulnerable; Migratory Marine Species	CR	In buffer area only	May	No	No	No	No	Negligible to none
Tringa nebularia	Common Greenshank	Endangered; Migratory Wetlands Species, Listed - overfly marine area	Least Concern	Within DE	Likely	Previously recorded 2003 and 1977 Previous record only	No	No	No	Negligible to none

Table note:

Noting the freshwater sawfish (*Pristis pristis*) requirement for water, no physical disruption to any inland water course is expected during the construction or operational phase of this Proposal.

11.2.3 Listed TEC

Listed TECs under the EPBC Act and their likelihood of occurrence within the Development Envelope are summarised within Table 11-3. Initially five potential TECs were identified as having suitable range (growing conditions) within either the Development Envelope or within a 20 km buffer zone.

The known range of potential TEC communities was investigated through ground truthing (field survey) by a suitably qualified and experienced botanist (five years or more experience within that ecological setting). Actual field observed occurrences were then checked against publicly available state databases, and in some instances new or extended discoveries were mapped (i.e., increasing local population representation).

Reconnaissance and targeted flora and vegetation surveys were completed by suitably qualified and experienced botanists in late 2024, with additional field surveys throughout 2025. Additional spring surveys are scheduled for 2026-2027 to ensure a comprehensive understanding of baseline conditions is achieved prior to the commencement of construction.

Table 11-5 Listed TEC and likelihood of occurrence

Community type	PMST buffer status	Threatened category	Presence likelihood	Recorded in DE (Y/N)	IDF? (Y/N)
TEC within the DE					
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community	Within DE	Critically Endangered	Likely to occur within area	No*	No
Banksia Woodlands TEC	Within DE	Endangered	Likely to occur within area	Yes	Yes**
TEC located outside of the DE					
Eucalypt Woodlands of the Western Australian Wheatbelt	In buffer area only	Critically Endangered	Likely to occur within area	No	No
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	In buffer area only	Critically Endangered	May occur within area	No	No
Empodisma peatlands of southwestern Australia	In buffer area only	Endangered	May occur within area	No	No

Table notes:
*16.6 km SSW from DE
**Connection substation access approximately 0.153 ha

Results of these surveys concluded that the *Eucalypt* Woodlands of the Western Australian Wheatbelt, Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion and *Empodisma* peatlands of southwestern Australia are entirely absent from within the Development Envelope and IDF. As the self-assessment determined these communities will not be significantly impacted or at risk from implementation of the proposed action, they are not considered further.

11.2.3.1 Potential to impact

Delivery of the Proposal (as described) will result in the requirement to undertake clearing activities, of which clearing of approximately 0.168 ha of Banksia Woodlands TEC, of which approximately 0.153 ha is of excellent condition and approximately 0.015 ha is of very good condition within the IDF. This approximate 0.168 ha representing approximately 0.1% of the total surveyed Banksia Woodlands TEC (Phoenix, 2025e; RPS, 2025)

A summary of Banksia Woodlands TEC extents, in relation to the Proposal, are provided below:

- Development Envelope (12,483.55 ha) contains 186.5 ha of regionally significant Banksia Woodlands TEC.
- IDF (964.37 ha) contains 0.168 ha of locally significant Banksia Woodlands TEC.

11.3 Threatened species with the potential to occur

A desktop review and basic and targeted terrestrial fauna surveys have been completed in accordance with the Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA, 2020b) in late 2024 and across 2025. These surveys have identified the following protected species may be present.

- Carnaby's Black Cockatoo (CC) (*Zanda latirostris)* - EN
- Forest Red-tailed Black Cockatoo (FRTBC) (*Calyptorhynchus banksii* subsp*. naso*) - VU

Of these two species listed above, the FRTBCs' presence within the Development Envelope is considered "irregular" due to the Development Envelope being located outside of what is considered its normal home range (details provided in Section 7.4). In contrast, the CC has been observed repeatedly in the Development Envelope and is known to forage, fly, roost and breed within the general area of the Proposal.

The EPBC Act *Referral guidelines for 3 WA threatened black cockatoo species* (DSEWPC, 2012) was utilised for mapping and characterisation of foraging and breeding habitat. Characterising of foraging and breeding habitat findings were also reviewed by Bamford Consulting Ecologists (Bamford, 2021). A scoring system (site condition, site context and stocking rates) was utilised to provide numerical values which reflect the significance of vegetation as foraging habitat for black cockatoos.

The numerical value is designed to provide the information needed by the DCCEEW, Department of Water and Environmental Regulation (DWER) and the EPA to assess impact significance and offset requirements (Bamford, 2021).

11.3.1 Carnaby's Black Cockatoo

The CC (*Zanda latirostris*) was the only species observed within the Development Envelope, which infers there is some level of habitat present to attract them. The level of species reliance on habitat, foraging and breeding areas within the Development Envelope, compared to more favourable locations nearby, has been studied at depth since 2024 (including the establishment of a 24-month potential nesting tree (PNT) monitoring program (Phoenix, 2025c) to determine the availability of suitable forage or nesting trees (critical habitat)). Further information can be found in Section 6.

Recent surveys (Phoenix, 2025c) indicate a total of 1,686 PNTs were recorded in over a 12,555.50 ha survey area, and include the following species:

- 1,488 Marri (*Corymbia calophylla*)
- Six unidentified eucalypt trees
- 43 Tuart (*Eucalyptus gomphocephala*)
- 35 River Gums (*Eucalyptus camaldulensis*)
- 18 Jarrah (*Eucalyptus marginata*)
- 11 Wandoo (*Eucalyptus wandoo*)
- Five Blackbutt (*Eucalyptus todtiana*)
- Three Powderbark Wandoo (*Eucalyptus accedens*)

Of the total PNTs surveyed, 116 were found to contain one or more hollows; however, 58 of those did not meet the minimum criteria required to host breeding black cockatoos (hollow diameter or orientation), four were occupied by other species such as the European Honeybee, Australian Galahs, or Corellas; 16 PNT showed evidence of recent chew marks, 20 showed evidence of old chew marks and the remaining 12 had no evidence of use (Phoenix, 2025c).

Of the 1,686 PNTs recorded within the survey area, 1,241 were in areas cleared for agriculture, 276 in Open Jarrah-Marri woodland, 116 in Drainage line and riparian zones, 29 in areas cleared for infrastructure, 17 in Banksia heath and woodland and four in Pine plantations (Phoenix, 2025c). The remaining 3 PNTs were recorded opportunistically outside the survey area (Phoenix, 2025c), to support local and regional occurrence and understanding of availability of mature trees potentially suitable as nesting trees.

11.3.2 Forest Red-tailed Black Cockatoo

The FRTBC is commonly found in the jarrah forests of the northern Darling Range (near Collie to Mundaring) and very common throughout the lower south-west. Observations of this species on the Swan Coastal Plain are not unheard of but are considered rare with movements known to be irregular especially when in search of food (exotic white cedar) (Chapman, 2008).

A total of 26 FRTBCs have been directly observed within 5 km of the Development Envelope during four field monitoring occasions under the 24-month potential nesting tree monitoring program (Phoenix, 2025c). Of these observations, four individuals have been recorded either within or close to the boundary (<1 km) of the Development Envelope. In addition, one historical desktop record (2013) of the FRTBC was located through background data research. The location of this observation was included within the assessment of impact significance. Further information can be found in Section 6.

11.3.3 Key threatening processes

As defined under section 188(3) of the EPBC Act, a threatening process is eligible to be treated as a key threatening process if it threatens, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community, whilst section 35 of the BC Act provides criteria for listing a key threatening process which may include (but not limited to):

- Cause a native species or ecological community to become eligible for listing as threatened or critically endangered
- Significantly contribute to the continuing decline of two or more threatened species or communities
- Degrade critical habitat essential for species survival.

11.3.3.1 Direct and indirect impacts

Table 11-6 considers direct and indirect impacts resulting from key threatening processes identified for CC and FRTBC species.

Table 11-6 Direct and indirect impacts to CC and FTRBC

Key threatening process	Species	Impact
Land clearance	CC	Direct ■ Removal of 5.02 ha of high to moderate foraging habitat ■ Removal of 63 PNT's ■ Increased injury rates of young birds flying the coop, with no previous learned avoidance tactics for avoiding impacts with vehicles or machinery.
Fire regimes		Indirect ■ Destruction of nesting and foraging trees from fire events.
Competition for hollows from other species		Indirect ■ Nest hollow shortage due to competition with other bird species. Competition for hollows with other bird species has been observed. Cockatoos, including Sulphur-crested Cockatoo (*C. galerita*), as well as Galah (*Cacatua rosiecapilla*), Great Knot (*C. tenuirostris)*; as observed within the Development Envelope (Phoenix, 2025c). ■ Outcompeted by European honeybees (*Apis mellifera*) for suitable nest hollows (Phoenix, 2025c).
Invasive species		Direct ■ Infestation of plant pathogens and pests including root-rot fungus (*Phytophthora cinnamomi*) dieback, Marri canker (*Quambalaria coyrecup*) as well as leaf and shoot blight (*Quambalaria pitereka*) ■ Significant attack on jarrah, marri and karri by the bullseye borer beetle (*Phoracantha acanthocera*) has been observed and is likely to be contributing to the decline in breeding and foraging habitat

Key threatening process	Species	Impact
Climate change		Indirect ■ Population decline or increase mortality rates within localised populations due to natural climatic influences (heat waves or drought, regional clearing rates) ■ Loss of suitable forage, roosting, nesting and/or breeding habitat from other developments or climatic events (drought, bushfire or avian pathogen) ■ A decline in rainfall is likely to have a significant impact on the extent of survival, capacity for regeneration and recruitment of key tree species within the habitat of CC across its range. Key *eucalypt* species require adequate rainfall for successful germination to occur as well as regeneration after fire (DPaW, 2013). The effect of reduced rainfall on CC habitat is likely to be further exacerbated by an increased frequency and intensity of fires.
Land clearance	FRTBC	Direct ■ Removal of 3.36 ha of moderate foraging habitat ■ Habitat loss for agriculture, timber harvesting and mining is the principal cause of historic decline of the subspecies (Mawson & Johnstone, 1997). The FRTBC may be more vulnerable to disturbance from clearing than other black cockatoo species because the subspecies is more sedentary and likely to remain in an area year-round. Indirect ■ Increased injury rates of young birds flying the coop, with no previous learned avoidance tactics for avoiding impacts with vehicles or machinery.
Competition for hollows from other species		Indirect ■ Nest hollow shortage is the principal ongoing threat to the FRTBC (Garnett, Szabo, & Dutson, 2011), although the extent of the impact is unknown. Trees with hollows large enough for use by the subspecies may need to be at least 209 years old (Johnstone & Sarti, 2013), and such trees are scarce, and many have been preferentially felled (Chapman, 2008; Garnett, Szabo, & Dutson, 2011).
Poaching		Direct ■ Illegal shooting is a historic threat, but there is evidence of shooting throughout the 1990s and 2000s (Abbott, 2001). During the late 1800s and early 1900s, FRTBC were shot for food, for sport and to obtain their tail feathers for ornamental and decorative purposes (Abbott, 2001). There are records of this subspecies being shot apparently because they had been snapping off the top of blue gums (Chapman, 2008). Reports of WA orchardists shooting the FRTBC are received in most years and prosecutions for these actions are undertaken whenever sufficient evidence is available.
Climate change		Indirect ■ Loss of suitable forage, roosting, nesting and/or breeding habitat from other developments or climatic events (drought, bushfire or avian pathogen)

11.3.3.2 Potential mitigation measures

Two Commonwealth plans are in place to aid implementation of threat reducing mechanisms for the black cockatoos; these are:

- Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan (Chapman, 2008).
- Threat Abatement Plan for Predation by Feral Cats 2024 (DCCEEW, 2024b).

Where possible, ongoing monitoring or risk reduction controls should be implemented in line with these Commonwealth plans. This is of particular importance during the Proposal construction phase when waste food scraps etc, are likely to attract predator fauna species into the Development Envelope.

Additional mitigation measures highlighted as a result of the two-year PNT and breeding assessment program include:

- Identify factors affecting the number of breeding attempts and breeding success, and if possible, manage hollows to increase recruitment (avoid clearing mature trees due to the potential to become nesting trees)

- Identify and manage important sites (prior identification of “potential to become” a nesting tree) and protect these from threatening processes, i.e., clearing, degradation, feral pests.

11.4 Migratory species

The most important sites for migratory shorebirds in Western Australia are located along the northwest coast. Eighty Mile Beach and Roebuck Bay are internationally significant for 16 and 18 species respectively and regularly support some of the highest shorebird numbers recorded in the country (Umwelt, 2026).

A total of 21 migratory shorebirds (EN/Mig, EPBC Act and/or Mig (BC Act)) were recorded or considered possibly occurring within the drainage lines and/or wetlands Fork-tailed Swift (*Apus pacificus*) may possibly occur in all habitat types within the Development Envelope, however none were recorded within the Development Envelope (Phoenix, 2025c). It is possible that wetlands in the Development Envelope and the surrounds may be used opportunistically by small numbers of Migratory birds during their time in Australia (Phoenix, 2025c). Consequently, the study area is not considered to provide important habitat for migratory species, and they are not considered further in the MNES impact assessment.

11.5 Threatened ecological communities with the potential to occur

A desktop assessment (Phoenix, 2025b) of potential MNES ecological communities was undertaken for the Proposal with subsequent reconnaissance and targeted flora and vegetation surveys completed in accordance with the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016b). As a result, it was established that the Banksia Woodlands TEC is present both within and outside of the Development Envelope.

11.5.1 Banksia Woodlands TEC

Typically, Banksia Woodlands TEC is a prominent tree layer of Banksia species sometimes with scattered eucalypts and other tree species present within or above the Banksia canopy. The understorey is species rich and has many wildflowers, including sclerophyllous shrubs, sedges and herbs (DoEE, 2016a). Some key identifying features include:

- Known to occur on well drained, low nutrient soils in sands of dune landforms. Especially deep Bassendean and Spearwood sands, or occasionally on Quindalup sands. Commonly occur on sandy colluvium and aeolian (wind-blown) sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau (DoEE, 2016a).

Structure of the Banksia Woodlands TEC (height, percentage of cover, density and dominant banksia species) varies. In general, dominant Banksia components includes at least one of four key species, which are candlestick banksia (*Banksia attenuata*) , firewood banksia (*Banksia menziesii*), acorn banksia (*Banksia prionotes*) and/or holly-leaved banksia (*Banksia ilicifolia*), Swamp banksia (*Banksia littoralis*) and Burdett’s banksia (*Banksia burdettii*) may in some areas also be observed in increased numbers (DoEE, 2016a).

This TEC provides habitat for many smaller native plants and animals which rely on the Banksia Woodlands TEC for their habitat and foraging resources. Remaining patches also provide important wildlife corridors and refuges to fauna in what has become a mostly fragmented (DoEE, 2016a) landscape since the introduction of agriculture and urban development (across the Dandaragan plateau).

11.5.2 Key threatening processes

Guidance for the identification of key threatening processes is provided in the within the EPBC Act and BC Act, as outlined in Section 11.1 Additionally, significant impact criteria for critically endangered and endangered ecological communities is provided in DCCEEW’s Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (DoE, 2013).

11.5.2.1 Direct and indirect impacts

Table 11-7 considers direct and indirect impacts resulting from key threatening processes identified for the MNES ecological community – Banksia Woodlands TEC.

Table 11-7 Direct and indirect impacts to TEC

Key threatening process	Species	Impact
Land clearance	Banksia Woodlands TEC	Direct ■ Clearing for construction projects, road or highway reserves, urban development, agriculture or other primary industries. This Proposed Action will require a total ground disturbance of 964.37 ha (IDF), of which 7.02 ha (0.73%) is native vegetation which includes 4.08 ha native vegetation and 2.94 ha scattered trees within agricultural lands) within the surveyed portion of IDF. ■ The area of ground disturbance not yet surveyed within the IDF of 964.37 ha falls largely across agricultural land and is not anticipated to contain Banksia Woodlands TEC or native vegetation (to be confirmed during planned spring surveys). ■ Clearing of approximately 0.168 (0.02%) ha of Banksia Woodlands TEC within the IDF, of which approximately 0.153 ha is excellent and approximately 0.015 ha is of very good condition. ■ Introduction of hard hooved animals (farming animals escaped from farmlands) and either consuming or trampling low growing species within the TEC community or degrading the soil profile. Indirect ■ Fragmentation of remaining stands of Banksia Woodlands TEC at two site entry locations, or more noticeable edge impacts; including higher rates of invasive weed colonisation (degrading the overall vegetation health).
Invasive species		Direct ■ Presence or new introduction of die-back diseases such as *Phytophthora cinnamomi* (DoEE, 2016a) from farming or earth moving equipment, due to poor equipment hygiene practices between work sites.
Hydrological degradation		Direct ■ Changes to hydrological or hydrogeological processes, quality or availability which can be resultant of excessive groundwater use (less water availability or increased salinity) or harvesting surface water and preventing downstream ecosystems from receiving environmental flows. Indirect ■ Groundwater contamination which may occur some distance away, but through groundwater processes leads to the contamination reaching and impacting on TEC community (loss of vigour, health or death).
Climate Change		Indirect ■ A decline in rainfall is likely to have a significant impact on the extent of survival, capacity for regeneration (DPaW, 2013) of flora and native vegetation through lower-than-average rainfall, higher than average summer temperatures, lower regeneration following bushfire (DPaW, 2013) events and potentially higher soil erosion. ■ Presence or new introduction of die-back diseases such as *Phytophthora cinnamomi* from upstream surface water (hydrology), as the fungus is water borne (DoEE, 2016a). In this instance the infection would infiltrate under climatic conditions not from machinery.
Feral animals		Indirect ■ Dense vegetation provides excellent refuge to feral animals such as rabbits, mice, cats, foxes and dogs.

11.5.2.2 Potential mitigation measures

Mitigation options for the proposal have been developed by considering potential concerns and impact pathways, undertaking further investigation and review of flora and vegetation data, and proposing appropriate engineering measures. Results of this work has concluded that minimising the overall impact on

Banksia Woodlands TEC will be achieved through considered design of the Proposals' final footprint so that the TEC is avoided in the first instance.

As the connection location into the State grid at the proposed connector substation is linked to external direction from Western Power, it is outside the Proponents' control. As such, offsets may be required for the clearing of approximately 0.168 ha of Banksia Woodlands TEC at the discretion of the regulator (to be determined at a later stage).

11.6 Assessment of significance

An assessment of significance as per the Guidance (the *Matters of National Environmental Significance, significant impact guidelines 1.1* (DoE, 2013) has been completed for each individual MNES species listed below. The assessment analyses the appropriate significant impact criteria for each protected value as presented in Guidance (the *Matters of National Environmental Significance, significant impact guidelines 1.1* (DoE, 2013).

- Carnaby's Black Cockatoo (*Zanda latirostris*), listed endangered species
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*) listed endangered species
- Banksia Woodlands TEC, endangered
- Listed Migratory species

Findings from each assessment are presented in Table 11-8, Table 11-9, Table 11-10 and Table 11-11.

11.6.1 Carnaby's Black Cockatoo

Species assessment utilising the significant impact criteria has been summarised in Table 11-8 for the actions within and surrounding the Proposed Action (this Proposal) on the listed endangered Carnaby's Black Cockatoo (CC).

Table 11-8 Significant impact assessment – CC

Significant impact criteria	Significant impact assessment – CC
Lead to a long-term decrease in the size of a population	**Unlikely** ■ Considered unlikely to impact on the long-term population size of CC as the operational minimum turbine blade sweep area has been designed for at least 66 m agl. This exceeds the observed and verified typical flight height range of the CC (0 to 60 m agl (Bamford, Bird and Bat Management Plan, 2025)). ■ 2,397 CC observations were observed across the Development Envelope and immediate surrounds during field surveys (terrestrial, potential breeding habitat, bird and bat utilisation survey, tree nesting hollow survey). ■ Records from the surrounding fauna field surveys (nine) at distances varying from 2.5 to 36.5 km in distance are included within these results.
Reduce the area of occupancy of the species	**Unlikely** ■ In field observations combined with additional nearby observations at similar wind farm and future wind farm locations point to a trend of the CC transversing the open areas, when traveling from one foraging or roosting area to another. ■ All locally identified CC confirmed roosting locations occur externally to the Development Envelope and the Transmission line.
Fragment an existing population into two or more populations	**Unlikely** ■ The Development Envelope is approximately 12,483.55 ha, which is relatively small and poorly vegetated in respect to forage and nesting critical for the CC. ■ No significant impact is considered likely to result from implementing site access clearing. Especially not of an extent that may fragment local or regional CC populations.
Adversely affect habitat critical to the survival of a species	**Unlikely** ■ Preferred habitat of the CC occurs in uncleared or remnant native *eucalypt* woodlands south-west WA or on coastal plains during non-breeding times of the year.

Significant impact criteria	Significant impact assessment – CC
	■ Fauna habitat mapping identified *eucalypt* woodlands vegetation type within the Development Envelope. ■ Preferred breeding habitat occurs mainly in *eucalypt* woodlands with suitable hollow bearing trees in the Wheatbelt. ■ No active or historical potential nesting trees are located within the within the Development Envelope. ■ Foraging habitat includes native vegetation surrounding breeding areas during the breeding season, and Banksia heath and woodlands in the non-breeding season (DCCEEW, 2024c). ■ Foraging habitat within IDF consisting of high to moderate foraging habitat of 5.02 ha, the remaining 957.12 ha (99.2% - 2.23 ha of IDF not assessed) is classified as low foraging habitat. ■ The agricultural land classification Ag (Cc) within the Development Envelope is described as 'agricultural land with low to mid isolated trees to open woodland of *Corymbia calophylla* (occasionally *E. todtiana*), over low sparse to closed grassland of non-native crop or pasture species'. This constitutes low quality foraging habitat for CC. ■ Majority of the IDF contains the Ag(Cc) land unit (931.80 ha, 96.62%). ■ 63 individual isolated Cockatoo PNTs, including 62 trees with evidence of recent, intermediate, active and old foraging identidied in the IDF. 1,516 (approximately 96%) PNT remain undisturbed within the broader Development Envelope. ■ Early observations conclude critical habitat for nesting/ breeding occurs outside of both the Development Envelope and IDF.
Disrupt the breeding cycle of a population	**Unlikely** ■ Three hollows found during potential nesting tree surveys are located outside of the Development Envelope and the Transmission line (option b). No confirmed nesting habitat (recent or historical) have been located within the Development Envelope or Transmission line (option b). ■ Proposed Transmission line (option a) has been removed from this Proposal due to the higher risk of likelihood for Aboriginal cultural heritage, flora and vegetation and potential avian fauna nesting habitat values. ■ Hollow investigations in 2025 have concluded that these hollows have not been used recently or for a very long time if at all. The same hollows will be revisited in 2026 under an ongoing 2-year study. ■ Two possible hollows have been identified in the IDF, however, no hollows suitable for CC nesting requirements have been positively identified within the Development Envelope, following extensive survey under the continuing 2-year potential nesting tree survey program. ■ No planned or potential impacts to identified or monitored, potential or actual nesting hollows is expected to result from this Proposal during clearing activities. ■ Currently no known nesting of the CC is occurring within the Development Envelope.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely** ■ Moderate to high foraging habitat within IDF totals 5.02 ha, the remaining 957.12 ha (99.2%) is classified as low foraging habitat (2.23 ha not assessed). ■ 63 individual isolated Cockatoo PNTs, including 62 trees with evidence of recent, intermediate, active and old foraging identidied in the IDF. 1,516 (approximately 96%) PNT remain undisturbed within the broader Development Envelope. ■ All mature trees which offer potential forage, nesting and roosting sites will remain standing, especially as these tend to be isolated across paddocks.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	**Unlikely** ■ Some potential for introduced species (mice, cats) to be attracted to crib waste during the construction phase. ■ However, effective management of waste food, will be managed through the CEMP to reduce this risk.
Introduce disease that may cause the species to decline, or	**Unlikely**

Significant impact criteria	Significant impact assessment – CC
Interfere with the recovery of the species	▪ Importation of infrastructure from overseas, may carry the risk of foreign matter of some sort being introduced into Australia. ▪ All deliveries will be subject to import customs inspections and once onsite additional checks and if required quarantine area established. ▪ It is not in visaged that an avian virus, disease or other pathogen which may harm local avian populations would be imported.
Habitat critical to the survival of a species	
For activities such as foraging, breeding, roosting, or dispersal	**Unlikely** ▪ The observations of CC during field surveys have been recorded and assessed by suitably qualified and experienced zoologists utilising habitat quality score methodology developed by Bamford Consulting Ecologists
For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)	**Unlikely** ▪ Available habitat within the Development Envelope has some low potential of forage. ▪ Of the three hollows located, no breeding has occurred. Potentially due to an established breeding area to the east, outside the Development Envelope.
To maintain genetic diversity and long-term evolutionary development, or	**Unlikely** ▪ Clearing of approximately 5.02 ha of CC foraging habitat within the IDF, the remaining 957.12 ha (99.25%) is classified as low foraging habitat (2.23 ha of IDF was not accessed). ▪ Resulting small area, is not considered to impact on the genetic diversity, evolutionary development or recovery of local populations of the CC. ▪ Offsets may be required for this Proposal.
For the reintroduction of populations or recovery of the species or ecological community.	

11.6.1.1 Predicted outcome

The total area of the IDF, representing the maximum potential extent of direct disturbance, is 964.37 ha. Of this 964.37 ha, 99% consists of disturbed and low-quality agricultural land, predominantly absent of native vegetation with some scattered native trees* (approximately 3.7 ha of scattered trees within the IDF).

The area and quality of foraging habitat proposed to be impacted in the IDF is low due to avoidance of impacts through Proposal design. A total of 5.02 ha (0.52% of the IDF) of moderate to high foraging habitat for CC will be impacted within the IDF. The remaining 957 ha (over 99% - 2.23 ha of IDF not accessed) within the IDF is Low quality habitat for CC. Foraging habitat loss as a result of the Proposal is unlikely to result in a significant impact to CC.

Sixty-three (63) PNTs were recorded within the IDF, of these 57 were in areas cleared for agriculture or in areas cleared for infrastructure and six in Open Jarrah-Marri woodland. Although 63 individual trees are located within the IDF, 1,516 (approximately 96%) trees remain undisturbed within the broader Development Envelope. Two trees were identified to have ‘possible’ hollows within the IDF, however there were no ‘suitable’ hollows identified within the IDF.

11.6.2 Forest Red-tailed Black Cockatoo

The FRTBC was observed during the PNT and breeding field surveys (Phoenix, 2025c). Therefore, a species assessment, utilising the significant impact criteria has been summarised in Table 11-9 for the actions within and surrounding the Proposed Action (this Proposal) on the listed Vulnerable FRTBC.

Table 11-9 Significant impact assessment – FRTBC

Significant impact criteria	Significant impact assessment - FRTBC
Lead to a long-term decrease in the size of an important population of a species.	**Unlikely** ▪ Considered unlikely to impact on long-term population size as the Development Envelope is located outside of the northern modelled distribution range for this species.
Reduce the area of occupancy of an important population	

Significant impact criteria	Significant impact assessment - FRTBC
Fragment an existing important population into two or more populations	■ Preferred and critical habitat conditions are not present within the Development Envelope. ■ No population or individual FRTBC has been observed within the Development Envelope or immediate surrounds during surveys (terrestrial, potential breeding habitat, bird and bat utilisation survey, tree nesting hollow survey). ■ Field surveys have noted the observation of 26 FRTBCs. ■ Desktop analysis resulted in a single record being discovered approximately 11 km South-Southeast of the Development Envelope. ■ Records from surrounding field surveys (nine) at distances varying from 2.5 km to 36.5 km in distance are included within these results.
Adversely affect habitat critical to the survival of a species	**Unlikely** ■ The FRTBC prefers habitat that resembles dense Jarrah, Karri, and Marri forests, mainly in the hilly interior, and a range of other forest and woodland types (DCCEEW, 2024c). ■ The Development Envelope and survey vicinity consists of >97% cleared agricultural land and public roads and not considered reflective of preferred habitat type for this species. ■ Habitat considered possible (by assessing Zoologists) that the FRTBC may at some point forage on occasion or as a transient, based on the nearby desktop record, and supported by field sightings of only low numbers. ■ Foraging habitat quality was therefore also assessed for FRTBC. Findings of not critical habitat to survival of the species due to no endemic population being present.
Disrupt the breeding cycle of an important population	**Unlikely** ■ It is considered unlikely that the FRTBC to breed or roost within the Development Envelope. This is directly reflective of the complete absence of preferred habitat type for nesting and breeding which is located much further south. ■ None of the PNT with hollows (three) incorporated into the monitoring program were in use by FRTBC.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely** ■ Not key habitat type for the FRTBC, therefore negative impacts on population numbers is not expected. ■ 63 individual isolated Cockatoo PNTs, including 62 trees with evidence of recent, intermediate, active and old foraging. 1,516 (approximately 96%) PNT remain undisturbed within the broader Development Envelope.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	**Unlikely** ■ Some potential for introduced species (mice, cats) to be attracted to crib waste during the construction phase. ■ However, effective management of waste food, will be managed through the CEMP to reduce this risk.
Introduce disease that may cause the species to decline, or Interfere substantially with the recovery of the species.	**Unlikely** ■ Not key habitat type for the FRTBC, therefore negative impacts on population numbers is not expected.
Habitat critical to the survival of a species	
Key source populations either for breeding or dispersal	**Unlikely** ■ Key source populations of the FRTBC were not identified within the 24-month PNT and breeding monitoring program currently being undertaken for CC. ■ The available habitat within the Development Envelope is not considered to be critical to the survival of the FRTBC. Known breeding habitat is known to be located well south of the Proposal area, where Jarrah forests are more dominant.
Populations that are necessary for maintaining genetic diversity, and/or Populations that are near the limit of the species range.	**Unlikely** ■ The observations of FRTBC during field surveys have been recorded and assessed by suitably qualified and experienced zoologists utilising habitat quality score methodology developed by Bamford Consulting Ecologists. ■ Known and documented breeding areas are further south of the Proposal and are highly unlikely to be impacted by the Proposals implementation.

11.6.2.1 Predicted outcome

Given that the disturbance to FRTCB is limited to 3.36 ha moderate quality foraging habitat, it is considered **unlikely** that the Proposed Action would have a significant impact on any FRTBC.

The total area of the IDF, representing the maximum potential extent of direct disturbance, is 964.37 ha. Of this 964.37 ha, over 97.48% consists of disturbed and low-quality agricultural land, predominantly absent of native vegetation with some scattered native trees* (approximately 3.7 ha of scattered trees (0.4%) within the IDF). Foraging habitat loss as a result of the Proposal is unlikely to result in a significant impact to FRTBC. The area and quality of foraging habitat proposed to be impacted in the IDF is low due to avoidance of impacts through Proposal design. A total of 3.36 ha of moderate quality foraging FRTBC habitat will be impacted within the IDF. Low quality foraging habitat for FRTBC within the IDF totals 933.45 ha (over 97.30% - 2.23 ha of IDF not accessed).

11.6.3 Listed migratory species

An assessment utilising the significant impact criteria is summarised below in Table 11-10 for the proposed actions within and surrounding the Development Envelope on listed migratory species.

Table 11-10 Significant impact assessment – Listed migratory species

Significant impact criteria	Significant impact assessment – Listed migratory species
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	**Unlikely** ■ The Proposal is not expected to impact or impact significantly through the destruction of critical Listed Migratory Species habitat (forage, roosting, breeding). ■ The marsh or seaside environments generally preferred by long distance flying Listed Migratory Species does not exist within the IDF, on any external boundary or within the surrounding 10 km of the Development Envelope. Therefore, these preferred habitats cannot be disturbed as part of this Proposal.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or	**Unlikely** ■ The Proposal is not expected to impact or impact significantly on the number or variety of feral species (mice, cats, dogs etc) due to the relatively short construction phase and implementation of the waste management section of the CEMP.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**Unlikely** ■ The Proposal is not expected to impact or impact significantly on any Listed Migratory Species through disruption of lifecycle of an individual migratory species (breeding, feeding, migration or resting behaviour). ■ Due to the absence of critical habitat requirements, negligible to no impact or significant impact is expected.

11.6.3.1 Predicted outcome

Given the lack of suitable wetlands within the Development Envelope, and consideration of the potential occurrence of migratory shorebirds it is considered **unlikely** that the Proposed Action would have a significant impact on any listed migratory species.

11.6.4 Banksia Woodlands TEC

An assessment utilising the significant impact criteria for a listed endangered vegetation community is summarised in Table 11-11.

Ingress and egress from the Brand Highway will require new earthwork activities across the existing road reserves. These works will need to be constructed to withstand substantial lengths of proposed deliveries of oversized over mass capital investment infrastructure (turbines, blades, transportable buildings, transformers etc.). These access points will also be utilised for the mobilisation and demobilisation of machinery and equipment to implement the construction phase of this Proposal.

Table 11-11 Significant impact assessment – Banksia Woodlands TEC

Significant impact criteria	Assessment of impact significance – Swan Coastal Plain Threatened Ecological Community
For the reintroduction of populations or recovery of the species or ecological community.	**Unlikely** ■ Under the Offsets mechanism, a portion or like for like Banksia Woodlands TEC may be required.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines Adversely affect habitat critical to the survival of an ecological community Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	**Unlikely** ■ Ingress and egress from the Brand Highway will require new earthwork activities across the existing road reserves. These works will need to be constructed to withstand substantial lengths of proposed deliveries of oversized over mass capital investment infrastructure (turbines, blades, transportable buildings, transformers, etc.). These access points will also be utilised for the mobilisation and demobilisation of machinery and equipment to implement the construction phase of this Proposal. ■ Some potential for invasive weed seeds or soil pathogens from uncleaned equipment or machinery. The CEMP will manage implementation of site hygiene requirements. ■ Water ways present within the Development Envelope will not be impacted by civil or structural engineering, as directional sub surface drilling will be utilised.
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	**Unlikely** ■ The clearing of up to approximately 0.168 ha will result in a permanent change, especially for the site access to the connector substation (approximately 0.153 ha excellent quality). ■ The overall setting where this TEC is located is best described as roadside vegetation, edge effects on both sides from either a highway or farming lands. ■ This impact is considered noticeable, but not a significant change to the rural setting, where other roads connect to the Brand Highway.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: ■ Assisting invasive species, that are harmful to the listed ecological community, to become established, or ■ Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or	**Unlikely** ■ The clearing impact is not considered likely to result in a substantial reduction in quality or occurrence of this community along narrow roadside extent. ■ Transmission line route (option a) equated to a larger footprint of disturbance to TEC, recorded breeding sites (CC) and to potential Aboriginal Cultural Heritage along the Moore River. These combined impacts greatly out way the current option being proposed. ■ And increase or introduction of fertilisers, herbicides or other chemicals or pollutants which may drift through the TEC as these are not related to the construction or a wind farm.
Interfere with the recovery of an ecological community.	**Unlikely** ■ Offsets may be required of potentially larger stand of the same TEC to be managed under conservation for the life of the Proposal. This limiting the actual removal through location and prevention of future clearing.

11.6.4.1 Predicted outcome

Given disturbance is limited to 0.168 ha of TEC, it is considered **unlikely** that the Proposed Action would have a significant impact on the Banksia Woodlands TEC.

11.7 Summary of impact significance

The significance of the proposed impacts on MNES has been considered throughout the planning and design processes supporting this Proposal. Assessment of significant of residual impacts to MNES has been conducted in accordance with the MNES *Significant Impact Guidelines 1.1* (DoE, 2013). The assessment identified that while the Proposal may have residual impacts to MNES, the impacts are considered unlikely to be significant due to the following:

- No high-quality foraging habitat for CC or FRTBC
- Two possible hollow (PNT) impacted, no suitable hollow impacted
- No known black-cockatoo roost sites will be impacted
- The minimum blade tip height is above the typical flight heights for black cockatoos.
- Migratory shorebirds
- TEC clearing will not exceed 0.168 ha.

12 Holistic impact assessment

The EIA process requires consideration of the connections and interactions between parts of the environment to inform a holistic view of impacts to the environment as a whole. The environment is a complex dynamic of connections and interactions, and while an effect on a particular factor(s) may be minor in isolation, its impact across these interconnections may result in a significant impact.

The EPA defines holistic impacts as the "Connections and interactions between impacts, and the overall impact of the proposal on the environment as a whole". The Proponent has sought to understand the environment, using information derived from technical surveys and investigations of the environment and the views and concerns raised through consultation (to date and ongoing) with relevant stakeholders, including the Yued Traditional Owners. The inputs and perspectives of the Traditional Owners continue to be vital in growing this understanding of the whole environment and the balance between its many interconnected elements.

Holistic environmental mitigation measures are not anticipated to be required to address the combined effects of impacts between environmental factors, as each of the mitigation measures detailed in their respective sections of this Proposal will sufficiently avoid, reduce or minimise the potential impacts at the source. This approach is also anticipated to preclude significant residual combined environmental effects.

Where the combination of the environmental effect(s) of two or more environmental factors or values has the potential to result in a significant impact, a holistic impact assessment of the Proposal on the environment is required (EPA, 2024c).

12.1 Assessment approach

The holistic assessment has been undertaken with reference to the following controls and assumptions:

- Where an impact(s) has been completely avoided, it is considered not to contribute to holistic environmental effect(s) and does not require consideration.
- Where an impact is already considered potentially significant and the mitigation hierarchy is applied in relation to one factor, additional mitigation measures to address combined environmental effects are unlikely to be required.
- Where an impact(s) has been considered to likely result in a significant impact across two or more factors, and the mitigation hierarchy has been applied in isolation per factor, consideration has then been given to determine whether further measures are required to mitigate this combined impact to an acceptable level.
- Where there are multiple overlapping minor impacts, or a minor impact affects multiple values and has been assessed as insignificant in the context of an individual factor, these may require further holistic consideration.
- The environmental principles of intergenerational equity, and conservation of biological diversity and ecological integrity are considered the most relevant and have been a foundation when considering potential significance of the holistic effect of the Proposal (Section 4).

12.2 Connections and interactions between environmental factors

A holistic impact assessment focuses on impact(s) potentially resulting from implementation of the Proposal on the receiving environment, including the interconnectedness between the EPA's preliminary key environmental factors (Section 5). The technical studies carried out as part of the environmental impact assessment have been used to inform the holistic assessment of the Proposal.

It is considered important that full understanding of all the Proposal elements is obtained and utilised, as sources of impacts may influence receivers via direct or indirect pathways and that these may change over time.

The preliminary key environmental factors relevant to this Proposal include:

- Flora and vegetation
- Terrestrial fauna
- Social surroundings

At this preliminary stage, these key environmental factors have been considered as part of this holistic assessment due to the potential linkages and interactions between factors during construction and operations. The potential interactions between these factors are illustrated in Figure 12-1.

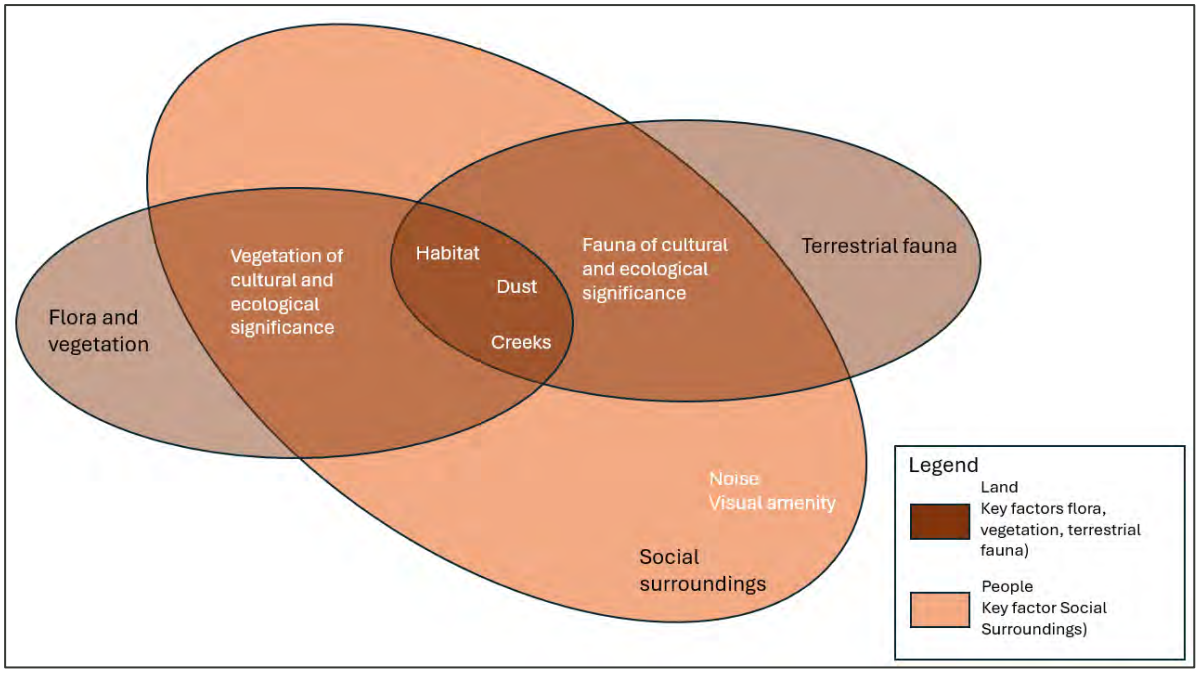


Figure 12-1 Holistic impact assessment

12.2.1 Construction

12.2.1.1 Vegetation and land clearing

Construction of the Proposal is scheduled to take up to three years. To facilitate construction and commissioning of the Proposal components, the proposed works will result in the permanent clearing of approximately 0.168 ha of Banksia Woodland of the Swan Coastal Plain (EPBC TEC, BC Act PEC P3) and a total of 7.02 ha of remnant native vegetation in 'Very Good to Excellent' condition. The combined impacts associated with proposed works include:

- Construction activities including all ground clearing actions can directly affect the local vegetation communities and flora species resulting in complete removal or a level of disturbance to terrestrial fauna habitat.
  - Loss of conservation significant vegetation and supporting sub layer flora species and fauna habitat (Flora and Vegetation, Terrestrial Fauna).
  - Loss of habitat for conservation and culturally significant sub layer flora and terrestrial fauna including short range endemic species (Terrestrial Fauna, Social Surroundings).

If present within the Indicative Disturbance Footprint, threatened fauna or priority flora may be directly impacted through habitat removal or further fragmentation of remaining vegetation stands (i.e., habitat). Other impacts may include negative effects to surface water quality or natural flow paths, visual amenity, cultural heritage and/or social values, and temporary effects on ambient air quality (mobilisation and volume of dust particulates during construction).

- Vegetation clearing for construction can increase the risk likelihood of invasive weed species being introduced or, if already present, increase the localised population within the immediate area. Over time this may lead to impacts to the surrounding area, thus directly impacting on native flora species and vegetation quality, condition or structure. Terrestrial fauna species may also be impacted by a reduced condition of available habitat should the ability to forage on native flora decline, or their supporting habitats degraded by weed invasion.

12.2.1.2 Social surroundings

Holistic impacts on social surroundings (flora and vegetation and terrestrial fauna) sensitive receptors may arise from combined disturbances during the construction phase, including noise, vibration, artificial lighting or increased dust emissions. Noise and light emissions can cause fauna to avoid certain areas. However, with the implementation of a detailed CEMP developed prior to construction, potential impacts will be minimised to a level where they are not considered significant, either individually or holistically (light intensity, lighting types and shields).

Any impacts during construction would be temporary and intermittent. No long-term significant holistic impacts on surrounding sensitive receptors are considered likely.

During construction of the Proposal, temporary impacts to social surroundings are anticipated primarily through noise, visual amenity changes, and associated disturbances. Construction related activities such as vegetation clearing, earthworks, and equipment mobilisation may cause increased noise levels and visual alterations that could affect nearby communities' perception and enjoyment of the landscape. In particular, local residents and culturally connected groups, including the Yued Traditional Owners, may experience these temporary disturbances.

As the construction period is scheduled to take up to three years, the impacts will be limited in duration and intermittent. A CEMP will be developed that captures the proposed comprehensive management and mitigation measures to be employed to minimise noise emissions, control dust and managing visual impacts through appropriate work scheduling and industry site management practices.

Consultation with stakeholders and Traditional Owners has informed the development of these mitigation strategies to address cultural heritage sensitivities and social values effectively. As such, while temporary disruptions are acknowledged, the implementation of best practice environmental and social management procedures is expected to reduce potential impacts to an acceptable level, ensuring no long term or significant holistic effects on social surroundings arise from construction activities.

12.2.2 Operational and maintenance phases

The Proposal is anticipated to initially operate for a period of up to 35 years. This will be achieved through regular maintenance activities and operation of all equipment in accordance with manufacture guidance. The life of the Proposal may be extended at some future time. This may be due to more efficient technologies being developed and being more readily available and cost effective (option(s)). A separate approval for the extension of the Proposal will be sought at the appropriate time.

Wind farms during the operational phase may increase potential for volant fauna (e.g., bird and bat) collisions, based on evidence from other Australian and Northern Hemisphere operations. Such direct impacts on terrestrial fauna (injury or death), are being mitigated under this Proposal by optimising design preference for taller turbines, to place the rotational sweep area above the preferred flight height range of species known to inhabit the surrounding area.

Additionally, operational procedures guiding cut-in speeds to be slightly faster can also assist avoiding volant fauna impacts (instinct and reaction times, as supported by scientific studies). Ongoing monitoring and an

adaptive management approach may be required to ensure an effective and responsible site-specific operational process is developed over time.

These measures are to be captured in Bird and Bat Management Plan (BBMP) for the Proposal.

Separately, operation of the Proposal has the potential to impact on social surroundings due to potential visual amenity impacts and noise disturbance.

12.3 Conclusion

The Proposal, as described seeks to develop and enhance the availability of renewably generated energy available to consumers, to support the transition away from coal fired energy production. A summary of the holistic impacts associated with the preliminary key environmental factors during the Proposals construction, then operational and maintenance phases is presented in Table 12-1.

Overall, it is considered that implementation of the proposed mitigation and management measures should ensure the minimisation of residual impacts associated with the Proposal.

Through the committed application of mitigation measures it is possible that the EPA's environmental factor objectives, can be met by this Proposal.

Table 12-1 Holistic considerations of impacts to environmental factors

Proposal activities	Impacts to environmental factors			Potential combined effects of each phase	Proposed mitigation measures
	Flora and vegetation	Terrestrial fauna	Social surroundings		
Construction - vegetation and land clearing	■ Loss of conservation significant vegetation and supporting habitat. ■ Potential introduction of weeds or declared pests. ■ Potential indirect degradation of remnant native vegetation condition.	■ Loss of habitat for conservation significant fauna species. ■ Potential introduction of declared pests. ■ Potential indirect degradation of terrestrial fauna habitat.	■ Loss of amenity – noise, visual. ■ Potential introduction of weeds or declared pests – impact to agricultural activity.	■ Construction activities including ground clearing activities can directly affect local vegetation communities and flora species resulting in removal or disturbance to terrestrial fauna habitat. ■ Vegetation clearing for construction can increase the risk of weeds being introduced or spread in the immediate area, leading over time to impact the surrounding area, thus directly impacting on native flora and vegetation condition or structure.	■ Implementation of a detailed management plans including the CEMP, BBMP and TMP. ■ Scheduling works to minimise disturbance periods. ■ Engagement and ongoing consultation with local communities and Traditional Owners to address concerns.
Construction – Social Surroundings	■ Loss of social perception and cultural connection of local communities to the natural environment. ■ Loss of amenity – temporary visual changes to the immediate landscape due to vegetation clearing.	■ Loss of social perception and cultural connection of local communities to culturally significant fauna species.	■ Loss of amenity – temporary, traffic, noise and visual changes to the immediate landscape due to construction equipment, vegetation clearing, and site activities. ■ Socioeconomic impact due to construction of turbines.	■ Temporary noise and visual disturbance may affect local residents and culturally connected groups, including Traditional Owners. ■ Potential short-term disruption to community well-being and cultural values during construction activities. ■ Possible perception impacts relating to changes in landscape character and vegetation loss.	
Operations and maintenance	■ Potential introduction of weeds or declared pests ■ Potential indirect degradation of remnant native vegetation condition.	■ Potential loss of individual fauna. ■ Potential introduction of declared pests. ■ Potential indirect degradation of terrestrial fauna habitat.	■ Loss of culturally significant fauna species. ■ Potential introduction of weeds or declared pests – impact to agricultural activity.	■ Wind farms during the operational period increase the potential for volant fauna (e.g., bird and bat) collisions, which may be considered a direct impact on terrestrial fauna. ■ Operational impact through introduction of weeds, loss of amenity, increased noise, shadow flicker and visual impacts.	

13 Cumulative impacts

Cumulative environmental impact assessment includes the successive, incremental and interactive impacts on the receiving environment posed by implementing the Proposal with one or more past, present and reasonably foreseeable future activities (EPA, 2023b). Where other activities in the region may apply additional pressure to the preliminary key environmental factors relevant to this Proposal, the impacts should be considered.

The regional setting in which the Development Envelope is located has been and continues to be utilised for agricultural cropping. Utilisation of land throughout the surrounding shire also includes extensive agricultural cropping, transport corridors, urban development and numerous nature reserves in areas deemed unsuitable for agriculture. The region does however include patches of remnant vegetation which offer habitat for fauna. The majority of the areas of remnant vegetation within the Development Envelope have been avoided by the Proposal.

The preliminary key environmental factors relevant to the cumulative environmental impact assessment are:

- Flora and vegetation
- Terrestrial fauna including avifauna
- Social surroundings

13.1 Flora and vegetation, terrestrial fauna

When considered in combination with past, present or reasonable foreseeable projects, cumulative impacts to flora species, vegetation types, terrestrial fauna including avifauna species and habitats within the Development Envelope are not expected to be greatly increased. This is, in part, due to the Proposal's utilisation of cleared (agricultural) land which minimises the requirement for additional clearing. Where clearing has been required every effort has been made through the incremental design process to select areas for clearing where vegetation is the most degraded (i.e., in the poorest condition). Where the clearing of vegetation in better condition is required, for example to provide access to the substation site, the extent of clearing has been minimised as far as reasonably possible.

Clearing for the Proposal includes:

- Clearing of native vegetation (excluding completely cleared agricultural land, including degraded agricultural land with scattered native vegetation) within the Development Envelope will not exceed 7.02 ha (of currently surveyed areas) or occur outside of the Proposed Indicative Footprint.
- Clearing of approximately 0.168 ha (Priority 3, TEC), of which approximately 0.153 ha is excellent quality and approximately 0.015 ha of very good condition vegetation

The successive, incremental and interactive changes proposed are considered unlikely to cumulatively impact on the resilience of regional flora and vegetation aspects providing effective weed management is implemented and rehabilitation outcomes achieved.

Similarly, potential cumulative impacts to terrestrial fauna and associated habitats are expected to be minimal to negligible regionally, given consideration that the majority of the Indicative Disturbance Footprint is already cleared and being repurposed. Local impacts will require careful adhesion to the CEMP and continued environmental monitoring programs to ensue measurable and lasting environmental outcomes are achieved and remain self-rejuvenating.

Once operational, the Proposal will occupy an area of 462.92 ha for the full operation life expectancy, as disturbed areas utilised during construction will be returned back to pre-existing land use.

13.2 Social surroundings

Aesthetically, the visual view of the landscape will be changed for the foreseeable future, due to placement of wind turbines into the landscape. Acceptance of tall structures within the viewshed is generally greater now than in previous decades. This is partly due to the transition to renewable energy gathering momentum and the establishment of ever-increasing number of renewable energy facilities becomes more common and integrated into the way of life. This includes the existing and proposed renewable energy projects as identified within the 50 km cumulative impact assessment area (Table 13-1).

Engagement with stakeholders and community members will continue for the life of the Proposal with management measures periodically reviewed to ensure they continue to be effective.

The cumulative impacts resulting from the proposed change to land use within the Indicative Disturbance Footprint are not considered likely to negatively impact on local industry or businesses. This is due to large areas of viable agricultural land remaining under production, maintaining jobs and creating revenue within the greater Shire of Dandaragan area.

Whilst the initial construction of this Proposal will create disturbance, it is envisaged that by maintaining a reasonably small footprint, prioritising already cleared areas and prolonging the operational life through regular maintenance and upgrades, instead of a new future development(s), the Proposal, with effective mitigation measures will meet the objectives of the EPA's environmental factors (flora and vegetation, terrestrial fauna and social surroundings).

13.3 Assessment approach

A desktop review of past, present and reasonably foreseeable future activities within approximately 50 km of the Development Envelope identified a series of renewable energy and other projects including mining that would result in potential significant impacts to flora and vegetation, terrestrial fauna and social surroundings more so over time as shown in Table 13-1.

This table and section should be read in conjunction with the relevant cumulative impacts in relation to the preliminary key environmental factors (Section 5). Where possible an assessment of the significance of the cumulative impact has been provided (minimal, negligible, potential).

Table 13-1 Projects within 50 km of the Proposal

Project title	Distance from Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
Windfarms						
Yandin Wind Farm Proponent: Yandin Wind Farm Pty Ltd	15 km to the north	Commenced operation in October 2020. Consists of 51 wind turbines (operational capacity 214 MW)	Operational Approved under CPS 7925/5 (22 February 2019 to 28 July 2024)	Approximately 4 ha of native vegetation to be cleared within the indicative disturbance footprint. Pre-clearance flora surveys were required, with no clearing within specified buffers of conservation significant flora.	Project in a similar landscape with similar species expected to occur. No clearing permitted of habitat trees showing evidence of use by Carnaby's Black Cockatoo. There may be increased bird collision risk due to an increase in the number of turbines. Impact anticipated to similar species.	Noise impacts typically do not extend beyond 1.5 km from wind turbines and 1 km from BESS facilities, therefore no cumulative noise impact anticipated. Modelling for noise (Section 8) indicates that there is no interaction with the Yandin Wind Farm. The LVIA presents the findings of the cumulative visual impact assessment. Whilst there is potential for combined cumulative impacts with the Yandin Wind Farm, this is limited to locations along Brand Highway as the main thorough fare. Impacts are considered to be negligible or marginal (GIP, 2011) (Prospect, 2011)
Waddi Wind Farm Proponent: Waddi Wind Farm Pty Ltd	45 km north and approximately 15 km northwest of the Dandaragan township	18 wind turbines (each standing 220 m high) with generation capacity up to 108 MW. The Waddi project includes up to 40 MW solar array located	In development. Timing for construction: 2025 to 2030 Approved under CPS 10418 (22 June 2025 to 22 June 2055)	Approximately 5.5 ha of native vegetation to be cleared within an indicative disturbance footprint is 134 ha. The project is located on land cleared for agricultural activity. Clearing impacts for the project are low and to be authorised through CPS 10418.	Clearing will remove 5.5 ha of native vegetation, of which 5.4 ha provides significant foraging habitat for Carnaby's Black Cockatoo. Offset required for the revegetation and rehabilitation of 17.6 ha of foraging habitat for Carnaby's Black Cockatoo. There may be increased bird collision risk due to an increase in the number of turbines.	Noise impacts typically do not extend beyond 1.5 km from wind turbines and 1 km from BESS facilities, therefore no cumulative noise impact anticipated. Modelling for noise (Section 8) indicates that there is very limited overlap with the Waddi Wind Farm. The LVIA presents the findings of the cumulative visual impact assessment. Whilst there is potential for combined cumulative impacts with the Waddi Wind Farm, this is limited to locations along Brand Highway and Dandaragan Road as the main thorough fares.
Yathroo Wind Farm: Proponent: Neoen	Immediately north and adjacent to the Proposal	Up to 80 wind turbines generating up to 500 MW	In development. Timing for construction: 2026 to 2030	The extent of native vegetation clearing not defined. However, a Vegetation Conservation Notice for unauthorised clearing of 10,192 ha and 686 trees was issued to Yathroo Property Pty Ltd in 2020 (CPS 8806/1)	Extent of fauna habitat removal not defined (in publicly available documents). There may be increased bird collision risk due to an increase in the number of turbines. Impact anticipated to similar species. Project in a similar landscape with similar species expected to occur.	Extent of noise impacts not defined or available. Proposal noise impacts typically do not extend beyond 1.5 km from wind turbines and 1 km from BESS facilities, therefore no cumulative noise impact anticipated. Modelling for noise (Section 8) indicates that there is very limited overlap with the Yathroo Wind Farm and sensitive receivers. May need to consider adaptive response in relation to future impacts to sensitive receivers. The LVIA presents the findings of the cumulative visual impact assessment. Whilst there is potential for combined cumulative impacts with the Yathroo Wind Farm, this is limited to locations along Brand Highway and Dandaragan Road as the main thorough fares.
Mining						
Atlas Project Proponent: Image Resources NL	44 km northwest	Greenfields mineral sands project. The project includes the progressive development of mine pits, processing facilities, groundwater bores and water management infrastructure, temporary waste dumps, solar drying ponds and associated infrastructure.	In development Assessed by PER and approved under MS 1220 (22/05/2024)	Potentially cumulative. MS 1220 allows for clearance of up to 272.2 ha of native vegetation within the mine envelope and 16.2 ha within the external envelope. This includes disturbance of no more than: ■ 206.4 ha of the Banksia woodlands of the Swan Coastal Plain TEC (Endangered under EPBC Act and BC Act) Priority flora: ■ *Levenhookia preissii*: 3 individuals ■ *Grevillea cooljarloo* (Keighery & Olde): 697 individuals ■ *Jacksonia carduacea*: 1 individual ■ *Schoenus pennisetis*: 3 individuals ■ *Anigozanthos humilis* subsp. chrysanthus: 1 individual ■ *Conospermum scaposum*: 570 individuals	Potentially cumulative. MS 1220 allows for clearance of up to 257.3 ha of foraging habitat for Carnaby's Black Cockatoo. Offsets are required.	There are no cumulative impacts (noise, visual, landscape) anticipated with the project operations due to the separation distance from the Proposal being greater than 10 km.

Project title	Distance from Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
				▪ *Hensmania stoniella*: 32 individuals ▪ *Isopogon panduratus* subsp. palustris: 944 individuals ▪ Stylidium aceratum: 710 individuals ▪ population of the *Jacksonia aff. floribunda*: 194 individuals Offsets are required.		
Bidaminna Project Proponent: Image Resources NL	Mine envelope is 12.6 km southwest Supporting infrastructure (e.g., road) is 2 km south	Construction and operation of a mineral sands mine, including mine dredge pond, processing plant, solar drying ponds and supporting infrastructure over an estimated mine life of 10 years. Mining and progressive rehabilitation is planned in stages using dredge mining methods.	Proposed. Currently under a PER level of assessment with ESD approved (08/03/2024)	Potentially cumulative. The project involves disturbance of up to 1,000 ha and the mine envelope comprises remnant native vegetation with previous records of conservation significant flora and has been mapped as including Endangered '*Banksia attenuata* woodland over species rich dense shrublands' TEC (Endangered under EPBC Act and EP Act) and 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region' PEC (P3). No flora and vegetation survey reports for the project are publicly available yet. Offsets are expected to be required.	Potentially cumulative. Clearing of habitat and indirect impacts. Surveys recorded conservation significant fauna including Carnaby's Black Cockatoo and potential SRE invertebrates. The mine envelope has very high-quality foraging habitat for Carnaby's Black Cockatoo and 45 trees were identified with DBH >500 mm (i.e., potential to become breeding trees), however the closest known roosting and breeding sites are approximately 14.5 km and approximately 16.5 km from the mine envelope respectively. Offsets are expected to be required.	Potentially cumulative for noise during construction of the project (if approved). There are no cumulative impacts (noise, visual, landscape) anticipated with the Bidaminna mining operations due to the separation distance from the Proposal being greater than 10 km.
Boonanarring Mineral Sands Mine Proponent: Image Resources NL	19.4 km south	Open cut dry mining of mineral sands and the processing of mined material through primary and secondary concentration plants and dry minerals separation.	Operational Assessed by PER and approved under MS 981 (22/08/2014)	Minimal. Clearing up to 50 ha of native vegetation within a 400 ha disturbance area. The development envelope has been extensively cleared for agriculture, with small areas of vegetation exhibiting low species richness and vegetation values. No TECs, PECs, or conservation significant flora within the disturbance area. The 50 ha to be cleared is a worst case estimate and includes 1.3 ha in degraded condition, 21 ha in good or better condition, and the remainder comprises individual scattered trees and grazed degraded understorey within paddocks, and a limited area of fringing Banksia woodland vegetation.	Negligible. Approximately 1 ha of potential Carnaby's Black Cockatoo foraging habitat will be cleared and the EPA considers predicted impacts to Carnaby's Black Cockatoos are likely to be low due to minimal loss of habitat and the retention of the potential existing and future nesting trees.	There are no cumulative impacts (noise, visual, landscape) anticipated with the project operations due to the separation distance from the Proposal being greater than 10 km.
Caravel Copper Project Proponent: Caravel Minerals Limited	13.5 km east	Copper mining and processing, including mine pits, waste rock landforms, ore processing, wastewater treatment, renewable energy, and bore field and pipeline	Proposed. Currently under a PER level of assessment with ESD approved (14/03/2024)	Minimal. The project would disturb up to 6,767 ha within a 17,726 ha envelope. Majority (85%) of the area to be disturbed has been previously cleared for agricultural use. A minor proportion of this disturbance may be native vegetation.		There are no cumulative impacts (noise, visual, landscape) anticipated should the project be approved and implemented due to the separation distance from the Proposal being greater than 10 km.
Cataby Mineral Sands Mine Proponent: Iluka Resources	15 km north	Construction and operation of a mineral sands mine comprising a series of open pits (6 to 199 ha in size and 17 to 60 m in depth).	Operational Approved under MS 720 (18/04/2006) and amended (s.45C approved 30/12/2014). MS 720 was replaced with MS 1017 (01/10/2015) and amended (s.45C approved 14/05/2021 and another s.45C approved 15/09/2025).	Minimal. The vegetation over the area of the Cataby Mineral Sands Mine proposal is variable. It is characterised by cleared pasturelands and minimal vegetated areas. When first approved (18/04/2006), the project comprised clearing of 115 ha of which 34 ha was parkland cleared Marri woodland, 12 ha was parkland cleared Wandoo woodland, 1 ha was York Gums, and the remaining 68 ha was predominantly tagasaste or cleared parkland. Although the clearing has been increased to 162.1 ha, the vegetation is assumed to be similar (i.e., mainly cleared parkland).	Potentially cumulative impacts to Carnaby's Black Cockatoo. The area of vegetation around Cataby Brook known as Oliver Remnants (an area of degraded remnant *eucalypt* woodland) was identified as an area of high conservation value as significant habitat for Carnaby's Black Cockatoos as it supports both nesting hollows and nearby feeding areas, particularly adjacent roadsides. MS 1017 required a Carnaby's Black Cockatoo Management Plan identifying: ▪ An area of cleared parkland of not less than 180 ha to be restored to include native understorey species. ▪ 20 km roadside tree belt to be revegetated with local native species ▪ Vegetation corridor between the project and Eneminga Nature Reserve to be revegetated with local native species. ▪ 62 ha of Oliver Remnants to be excluded from mining, with rehabilitation of any cleared areas ▪ An area of Cataby Brook to be subject to an in-perpetuity Conservation Covenant. On-ground offset activities, including an increase in Black Cockatoo nesting hollows (via repair,	There are no cumulative impacts (noise, visual, landscape) anticipated with the Cataby operations due to the separation distance from the Proposal being greater than 10 km.

Project title	Distance from Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
					provision of providing artificial hollows, and removal of competitor species from hollows).	
Cooljarloo Mineral Sand Mine Proponent: TiO2 Corporation (project now owned by Tronox)	25 km north	Mineral sand mine.	Operational Approved under MS 37 (03/10/1988) Now incorporated into 'Cooljarloo West Titanium Minerals Project '	The extent of native vegetation clearing not defined although assumed to be complete/absolute within disturbance areas.	Extent of fauna habitat removal not defined (in publicly available documents). Project in a similar landscape with similar species expected to occur.	There are no cumulative impacts (noise, visual, landscape) anticipated with the Cooljarloo operations due to the separation distance from the Proposal being greater than 10 km.
Cooljarloo West Titanium Minerals Project Proponent: Tronox Management	21 km northwest	Mineral sand mine. Dredge mining of three orebodies: Woolka, Harrier and Kestrel. The project will require movement of the mining dredge and ore processing plant (concentrator) from the existing Cooljarloo Mine to Cooljarloo West and back again via flotation across an open channel	Operational Approved under MS 1158 (22/01/2021) (replaces previous MS 037, 557, 790 and 977)	MS 1158 requires offsets to counterbalance significant residual impact to: ■ 1,532 ha of Banksia woodlands of the Swan Coastal Plain TEC (Endangered under EPBC Act and BC Act) ■ 167 individuals of the threatened flora species *Andersonia gracilis* (Endangered under the EPBC Act and Vulnerable under the BC Act) or 296 ha of preferred habitat for the species ■ 165 individuals of the threatened flora species *Anigozanthos viridis subsp. terraspectans* (Vulnerable under EPBC Act and BC Act) or 201 ha of preferred habitat for the species ■ 1,511 ha of habitat for the threatened flora species *Macarthuria keigheryi* (Endangered under EPBC Act and BC Act).	MS 1158 requires offsets to counterbalance significant residual impact to 1,884 ha of Carnaby's Black Cockatoo foraging habitat.	There are no cumulative impacts (noise, visual, landscape) anticipated with the project operations due to the separation distance from the Proposal being greater than 10 km.
Mineral Sands Mine, Gingin Proponent: Iluka Resources	38 km south-southeast	Construction and operation of an approximately 2.8 MT/a mineral sands mine and concentrator plant. The site would be subsequently rehabilitated.	Completed Approved under MS 666 (03/11/2004) and amended to increase the disturbance area from 280 ha to 370 ha (s.45C approved 31/10/2006).	Minimal. Project was situated predominantly on farmland, with scattered paddock trees and an area of grass-trees. The grass-trees were to be salvaged and offered for transplanting. The total native vegetation clearing was estimated at approximately 8.1 ha and was classified as belonging to vegetation associations and complexes of which less than 30% remains. Two resource enhancement category wetlands were to be cleared; however, the wetlands vegetation was of poor condition with an absence of understorey due to stock access. Given its poor condition, it did not provide a linkage between the plateau and the coastal plain. MS 666 required fencing and reconstruction of the wetlands using native vegetation to a higher biodiversity condition and improvement of the vegetation biodiversity condition of stream areas up to 1 m upstream, as well as provisions for supporting local land-care and watercourse improvement programs.	Negligible. Vegetation condition of application area was poor and as a result the fauna habitat was degraded and disjunct.	There are no cumulative impacts (noise, visual, landscape) anticipated given the project has been completed and the separation distance from the Proposal is greater than 10 km.
North Kiaka Quartzite Mine (North Kiaka Project). Previously Silicon Project, Kemerton and Mine at Moora Proponent: Simcoa Operations	44 km northeast	The North Kiaka Project would transition mining from the existing Moora Mine to a new pit approximately 2 km north as well as the construction of an abandonment bund at Moora. Mined quartzite will be crushed and screened using existing facilities at the Moora Mine. This portion of the proposal will include the establishment of an above groundwater mine pit, waste rock landform, infrastructure corridor and associated infrastructure. (Stockpiled ore will be transported to Simcoa's existing Kemerton Silicon Smelter in the Kemerton Strategic Industrial Area,	In development Assessed by PER and approved under MS 1254 (12/09/2025).	Moora Mine: Disturbance of 96 ha (including no more than 26 ha of native vegetation) within a development envelope of no more than 239 ha.10 ha. Pit depth not more than 165 m reduced level. North Kiaka Mine: Disturbance of 44.59 ha (including no more than 17.12 ha of native vegetation) within a development envelope of no more than 216.42 ha. Pit depth above groundwater level. Kemerton Smelter: envelope of 115.45 ha Approval conditions required offsets as well as disturbance of no more than: ■ 7.65 ha of the Coomberdale chert hills TEC ■ *Acacia aristulata* (ranked endangered): 17 individuals ■ *Daviesia dielsii* (ranked endangered): 15 individuals ■ *Goodenia arthrotricha* (ranked endangered): 0 individuals ■ *Stylidium* sp. Moora (J.A. Wege 713) (Priority 2): 5 individuals ■ *Diuris recurva* (P4): 65 individuals ■ *Regelia megacephala* (P4): 567 individuals	Clearing of 16.51 ha of foraging habitat for Carnaby's Black Cockatoo. Rehabilitated vegetation is required to achieve a cover and density of foraging species similar to pre-clearing vegetation. Offsets are required.	There are no cumulative impacts (noise, visual, landscape) anticipated given the project has been completed and the separation distance from the Proposal is greater than 10 km.

Project title	Distance from Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
		approximately 17 km north-east of Bunbury, for processing). This portion of the project is included for completeness and is outside the assessment area).				
Sand Quarries within Gnangara Pine Plantation Proponent: Hanson Australia	48.2 km south	Development of 3 sand quarries within the Gnangara Pine Plantation on tenements E70/3279, E70/3275 and M70/1306.	Operational. Not assessed by EPA (5/12/2016). Regulated under *Mining Act 1978* (Mining Proposal) and Part V Division 3 of the EP Act (Works Approval)	Negligible as project would only occur on cleared land following the harvesting of the pine plantations by the Forrest Products Commission.	Minimal as fauna values limited to the pine plantation itself and native vegetation regrowth, which has some value as foraging habitat for Carnaby's Black Cockatoo.	There are no cumulative impacts (noise, visual, landscape) anticipated with project operations due to the separation distance from the Proposal being greater than 10 km.
Gas						
Dampier to Bunbury Natural Gas Pipeline (DBNGP) Stage 5 expansion Proponent: Dampier to Bunbury Natural Gas Pipeline (WA) Nominees Pty Ltd	Intersects	Construction and operation of 11 looping sections adjacent (and connected) to the existing 230 km of underground gas transmission pipeline within the DBNGP corridor	Operational. Approved under MS 735 (13/12/2006)	Temporary clearing within easement of no more than 3,200 ha (inc. not more than 1,300 ha of veg).	Minimal. Temporary clearing with significant habitat trees to be retained unless in direct line of pipeline.	There are no cumulative impacts (existing pipeline and completed works).
Red Gully Gas Pipeline and Production Facility Proponent: Empire Oil Company (WA)	23.5 km south	Gas and condensate rich processing facility. Treats the Gingin West-1 and Red Gully-1 gas and condensate to the specification required for entry into the DBNGP and BP Kwinana Refinery	**Operational** (built in 2012) Approved under CPS 5170/1 (05/10/2012 to 5/10/2017)	Negligible. Clearing of up to 0.1 ha of native vegetation within a 62 ha application area. The vegetation within Wannamal Reserve consists predominantly of *Banksia attenuata* and *B. menziesii* in good to degraded condition, while the vegetation within the private land parcels is completely degraded with a sparse canopy of predominantly *Corymbia calophylla*. Given the degraded condition, it is unlikely any of the conservation significant flora species of the adjacent Boonanarring Nature Reserve would occur in the application area. Mitigation controls to protect the adjacent nature reserve included weed and dieback management.	Negligible. Clearing of up to 0.1 ha of native vegetation within a confirmed roost area of Carnaby's Black Cockatoo. The *Banksia* species may provide feeding habitat, but the clearing is unlikely to significantly reduce feeding habitat within the local area. Roosting habitat for Carnaby's Black Cockatoo is unlikely to be present.	There are no cumulative impacts (noise, visual, landscape) anticipated with the Red Gully Gas production facility operations due to the separation distance from the Proposal being greater than 10 km.
Farming and forestry						
Plantation	Adjacent to the west	Pine plantation	Operational			
Forest Management Plan 2024-2033 Proponent:	200 m south, but plan extends to southern coast of WA	Statutory plan for the management of approximately 2,522,000 ha in south-west WA	Operational Approved 30/11/2023 under MS 1214.	Ecological thinning in State Forest and timber reserves is not to exceed 8,000 ha per year.		There are no cumulative impacts (noise, visual, landscape) anticipated given the large project area and diffuse nature of impacts.
Apiary site establishment and maintenance (Multiple)	Scattered throughout and beyond region	Clearing (typically up to 0.05 ha per site) of collectively hundreds of apiary sites under 18 different NVCPs to different proponents (CPS 4104/1, 4105/3, 4431/1, 4629/1, 4661/2, 4760/1, 5209/1, 5254/1, 5408/1, 5434/1, 5436/2, 7222/1, 7583/2, 7554/1, 8595/1, 8664/1, 8475/1, and 7161/1).	Expired NVCPs, excluding CPS 7161/1 which expires in October 2026 and comprises just 0.4 ha (8 sites)	Negligible cumulative impact given the dispersed nature of the sites, small areas of clearing, and mitigation measures. Collectively the NVCPs total 76.57 ha of native vegetation, however the NVCPs for apiary sites typically allow up to 0.05 ha of understorey clearing per site. Conditions typically include weed and dieback management; buffers of conservation significant flora; no clearing of conservation significant flora without approval; and no clearing of trees where DB is above 10 cm.		No cumulative impacts (noise, visual, landscape) given only one NVCP is current, and the clearing and the clearing would not be visible from the Proposal given the distances, small site sizes, and tree retention.
Seismic surveys						
Raven 2D Seismic Acquisition Survey Proponent: Energy Resources Limited	22 km northwest	2D seismic acquisition survey to map the subsurface geology of the area to identify petroleum reservoir rocks for potential future conventional resource extraction.	Proposed. Currently under an 'Additional Assessment Information (public review)' level of assessment. A request	Temporary disturbance of up to 40 ha of native vegetation including: including 30.86 ha of Banksia Woodland TEC and 25% of recorded conservation significant flora within the surveyed area. Specifically: ■ 2,990 individuals of *Macarthuria keigheryi* (Endangered)	Temporary disturbance of up to 37.6 ha of Black Cockatoo habitat in Excellent to Good quality.	There are no cumulative impacts (noise, visual, landscape) anticipated with the implementation of the Raven 2D Seismic Acquisition Survey (if approved) due to the separation distance from the Proposal being greater than 10 km.

Project title	Distance from Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
		Comprises 125 km of 2D seismic lines.	for further information is still with the proponent (04/09/2020)	▪ 1,300 individuals of *Chordifex reseminans* (P2) ▪ 222 individuals of *Babingtonia urbana* (P3) ▪ 63 individuals of *Banksia dallanneyi subsp. pollosta* (P3) ▪ 248 individuals of *Conospermum scaposum* (P3) ▪ 129 individuals of *Stylidium hymenocraspedum* (P3) ▪ 54 individuals of *Verticordia huegelii var. tridens* (P4) ▪ 143 individuals of *Verticordia lindleyi subsp. lindleyi* (P4)		
Romanesque 3d and Black Cormorant 2D Seismic Acquisition Survey Proponent: Energy Resources Limited	2.5 km south	3D and 2D seismic surveys to further the sub-surface understanding of the potential reservoir and sealing horizons in and around the Red Gully Processing Facility gas plant. The project fits with the previous Gingin and Wannamal 3D seismic surveys undertaken in 2008 and 2013 Comprises 594 km of 3D seismic lines and 153 km of 2D seismic lines.	Completed. CPS 9129/1 (10 April 2021 to 9 October 2022)	Temporary disturbance (low-impact clearing) of 3.73 ha of native vegetation including 2.38 ha of Banksia Woodland TEC. Surveys recorded no conservation significant flora. The majority of the seismic survey is located on cleared farmland. CPS 9129/1 represents the very small portion where the proposed seismic lines traverse small patches of remnant vegetation.	Clearing of 3.33 ha of potential Black Cockatoo foraging habitat, of which 0.97 ha is considered good quality foraging habitat.	There are no cumulative impacts (temporary clearing works which have been completed works).
Other						
Class II Landfill, Wannamal Road South Proponent: Fernview Environmental Pty Ltd	33 km southeast	Construct and operate a landfill accepting Class II-type waste. The project includes a landfill gas collection and utilisation plant.	Operational. Approved under MS 1073 (26/02/2018), altering previous MS 796 and 975.	MS 796 authorises clearing of 61 ha of native vegetation, varying in condition from 'Degraded' to 'Very Good to Excellent'.	Potentially cumulative. Offsets required to counterbalance the significant residual impact to 42.5 ha of foraging habitat for Carnaby's Black Cockatoo.	There are no cumulative impacts (noise, visual, landscape) anticipated with project operations due to the separation distance from the Proposal being greater than 10 km.

13.4 Conclusion

The Proposal will result in the clearing of up to 7.02 ha of native vegetation across the Development Envelope, the majority of which is considered to be in very good or worse condition. With reference to the areas of known and proposed impacts associated with other projects in the cumulative impact assessment area (Table 13-1), the Proposal does not contribute significantly to the cumulative loss of native vegetation and associated habitat of the listed threatened and conservation significant species.

The application of the hierarchy of risk mitigation and the implementation of management plans (CEMP, BBMP, TMP) will ensure that the Proposal impacts are avoided, minimised and appropriately managed through the life of the Proposal.

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Appendix A
Electromagnetic Interference Assessment

Appendix B
Aboriginal and Historical Cultural Heritage Due Diligence Assessment

Appendix C
Landscape and Visual Impact Assessment

Appendix D
Noise Assessment

Appendix E
Shadow Flicker Assessment

Appendix F
Traffic Impact Statement

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Appendix H
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Appendix I
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Appendix J
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Appendix K
Fatal Flaws Desktop Assessment and Reconnaissance Survey

Appendix L
Targeted Flora and Vegetation Survey (Wind Farm)

Appendix M

Targeted Flora and Vegetation Survey (Wind Farm and Transmission)

Appendix N
Additional Vegetation Mapping (Wind Farm and Transmission)

Appendix O
Basic and Targeted Terrestrial Fauna Survey

Appendix P
Targeted Black Cockatoo Survey

Appendix Q
Bird and Bat Management Plan

Appendix R
Social Impact Assessment

Appendix S
Stakeholder Engagement and Communication Plan (SECP)

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