

Marri Wind Farm

Supporting Environmental Referral Document

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

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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 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 approximately 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, supporting 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.

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 EPA Environmental Factors have been identified as preliminary key environmental factors for this Proposal, they include:

- 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	<p>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.</p> <p>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 12,472 hectare (ha) Proposed Development Envelope.</p> <p>A potential future battery energy storage system (BESS) with capacity up to 6,600 MWh is also included within this Proposal.</p> <p>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.</p>

ES Table 2 General Proposal Content Description

General Proposal Content Description		
Proposal elements	Location/description	Maximum extent/capacity/range
Proposed Development Envelope comprising the following features within in the Proposed Indicative Footprint of disturbance:	Refer to: Section 1.4 Figure 1-1: Location Figure 1-3: Site Plan Table 1-5	Proposed Development Envelope of approximately 12,472 ha
		Proposed Indicative Footprint of approximately 10,159 ha
		Proposed Construction Footprint of approximately 964.4ha
Turbines		Up to 82 turbines with a maximum of 275 m height
Turbine foundations		Up to 550 MW Wind Farm
Turbine hardstands		Approximately 137 ha
Wind farm substation		Approximately 3 ha
Connector substation		Approximately 3 ha
Transmission line to Connector substation	Approximately 7.5 km 330 kV overhead transmission spur line up to 60 m in height to export energy to the existing 330 kV Western Power transmission network.	
Battery energy storage system (BESS)	6,600 MWh battery energy storage capacity	
	Approximately 50 ha	
Operational and maintenance area	Approximately 2.2 ha	
Permanent meteorological masts	6 meteorological masts up to 180 m in height over approximately 1 ha	
Permanent communication tower	1 Communication tower up to 85 m in height; approximately 0.5 ha	
External site access	Up to 4 site access points	
Internal access roads or tracks	Approximately 136 km of internal roads or tracks	
Clearing to necessitate site entry	Clearing of no more than approximately 0.153 ha Threatened Ecological Community (TEC) (Banksia Woodland) for site access to connector substation and approximately 0.015 ha for other site access points	

General Proposal Content Description		
Supporting utilities (temporary Infrastructure)		Approximately 501.5 ha including construction buffer for these supporting utilities
Construction elements	Location/description	Maximum extent/capacity/range
Temporary construction compound, laydown areas and hardstands, biosecurity laydown and site security areas.	Refer to: Section 1.4.5 Figure 1-3: Site Plan Table 1-6	Proposed Construction Footprint of approximately 964.4 ha Construction phase expected to take up to 3 years.
Borrow pits/quarries and stockpiles		Approximately 106 ha
Temporary workers accommodation		Up to 450 equivalent persons capacity over approximately 10 ha
Water supply and temporary turkey's nests	Refer to: Section 1.4.5	Approximately 750 ML/yr from existing groundwater bores, up to 10 turkey nests with capacity up to 15,000 m ³ within the Proposed Development Envelope.
Concrete batching plants	Refer to: Section 1.4.5 Figure 1-3: Site Plan Table 1-6	Concrete for the foundations will be mixed at concrete batching plants which are proposed to be part of the laydown areas within the Proposed Development Envelope. Concrete batching material may be sourced offsite and utilise onsite borrow pit material with up to 6 locations. Approximately 30 ha
Transport of turbines and associated infrastructure for site access via existing road network.	Refer to: Section 8 Figure 1-4 and Figure 1-5 Appendix F and Appendix G	Trimming of no more than a 3.1 ha of native vegetation within the Transport Development Envelope.
Operational elements	Location/description	Maximum extent/capacity/range
Wind energy production and battery energy storage.	Refer to: Figure 1-2	Proposed Operational Envelope of approximately 462.96 ha, of which approximately 187.3 ha relates to BESS and Turbine Hardstands
Transmission line and connection substation and wind farm substation.	Refer to: Figure 1-2 and Figure 1-3: Site Plan	Approximately 70.9 ha
Operational maintenance building/s and all permanent roads, structures and fuel storage.	Refer to: Figure 1-2 and Figure 1-3: Site Plan	Approximately 462.96 ha permanent infrastructure of which approximately 275.69 ha relates to these areas.
Proposal Elements with Greenhouse Gas Emissions		
Construction elements	Details	
Scope 1	GHG Scope 1 emission estimate of approximately 12,500 t CO ₂ -e over a 3-year construction phase.	
Scope 2	Immaterial Scope 2 emission estimated during the 3-year construction phase.	
Scope 3	GHG Scope 3 emissions estimate of approximately 200,000 t CO ₂ -e over 3 years. Supply and delivery of essential capital investment componentry (upstream products), machinery and equipment during for the construction phase. These upstream products are dependent on Final Investment Decision (FID); therefore, the precautionary principle has been applied to minimise under estimation.	

General Proposal Content Description		
Operational elements	Details	
Scope 1	An estimate, incorporated for maintenance buildings and other electricity use over the expected 30-year operational life expectancy, for Scope 1 emissions of approximately 750 t CO ₂ -e (total combined estimate, incorporating SF6 and immaterial fuel consumption for maintenance vehicles).	
Scope 2	An estimate, incorporated for maintenance buildings and other electricity use over the expected 30-year operational life expectancy, for Scope 2 emissions of approximately 45,000 t CO ₂ -e (total combined estimate).	
Scope 3	An estimate, incorporated for the supply and replacement of capital parts over an expected 30-year operational life expectancy for Scope 3 emissions of 19,500 t CO ₂ -e (total combined estimate).	
Rehabilitation		
<p>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.</p> <p>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.</p>		
Commissioning		
There are no environmental impacts specific to the commissioning phase.		
Decommissioning		
<p>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.</p> <p>Decommissioning would incorporate the following:</p> <ul style="list-style-type: none"> ■ 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.) <p>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.</p>		
Other elements		
Initial Proposal timeline	Maximum life	The proposed technology is expected to have an economic life of up to 35 years
	Construction phase	Up to 3 years
	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	<p>Prior to the operational phase ending, the Proponent may seek additional approval to extend the initial operation for an additional 35 years.</p> <p>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.</p> <p>If no extension is sought, the decommissioning phase will commence.</p>	

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	<ul style="list-style-type: none"> ■ Direct impact through vegetation clearing. ■ Indirect impact through edge effects, dust mobilisation and deposition during construction phase, introduction or spread of weeds from unclean machinery or equipment.
Mitigation Hierarchy	<p>Avoid:</p> <ul style="list-style-type: none"> ■ Superseding transmission line option A and continuing with the much shorter transmission line option B. This will avoid 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 water ways. <p>Minimise:</p> <ul style="list-style-type: none"> ■ Restricting the volume of native vegetation clearing during the proposed construction phase by opting to trim roadside vegetation (1.8 m and above) as opposed to complete vegetation removal. This minimisation tactic will enable the turbine blades to pass without damage. Trimmed roadside vegetation is expected to recover without rehabilitation requirements. ■ 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. <p>Rehabilitate:</p> <ul style="list-style-type: none"> ■ Post commissioning phase approximately 501.5 ha (52% of Proposed Construction 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. <p>Offsets:</p> <ul style="list-style-type: none"> ■ Offsets for the clearing of approximately 0.170 ha (Priority 3, TEC) to align with EPBC offset guidance if required. <p>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.</p>
Residual Impacts, Including Assessment of Significance	<ul style="list-style-type: none"> ■ Clearing of native vegetation (excluding completely cleared agricultural land, including degraded agricultural land with scattered native vegetation) within the Proposed Development Envelope will not exceed 84 ha (of currently surveyed areas which accounts for 5,871 ha of the Proposed Development Envelope and 668.5 ha of the Proposed Construction Footprint) or occur outside of the Proposed Indicative Footprint. ■ Clearing of approximately 0.170 ha (Priority 3, TEC) (hereafter referred to as Banksia Woodlands TEC), of which approximately 0.153 ha excellent quality, approximately 0.015 ha of very good condition vegetation.

Potential Impacts, Proposed Mitigation and Proposed Environmental Outcomes of Key Environmental Factors	
Proposed Environmental Outcomes	<ul style="list-style-type: none"> ■ All clearing and ground disturbing activities will be limited to details 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 of the Swan Coast Plan TEC of excellent condition.
Key Environmental Factor 2: Terrestrial Fauna	
Potential Impacts	<ul style="list-style-type: none"> ■ Direct impact of fauna habitat loss through clearing. ■ Direct impact through potential loss of fauna individuals. ■ Direct loss of critical breeding habitat or habitat critical to survival of a species. ■ Indirect impact habitat fragmentation, loss of fauna habitat connectivity, further spread of pest fauna or weeds.

Potential Impacts, Proposed Mitigation and Proposed Environmental Outcomes of Key Environmental Factors

<p>Mitigation Hierachy</p>	<p>Avoid:</p> <ul style="list-style-type: none"> ■ Avoid 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 Proposed Development Envelope and survey vicinity) (Pheonix, 2025). ■ Carnaby’s Black Cockatoo preferred foraging, roosting and nesting habitats are confirmed as being located external to the Proposed Construction Footprint. ■ No clearing of Rank 1 and Rank 2 Black Cockatoo nesting trees will occur. ■ Wind farm 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. ■ 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. ■ 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. <p>Minimise:</p> <ul style="list-style-type: none"> ■ Avoid turbine locations that impact habitat with high foraging value for Black-cockatoos. Clearing of approximately 0.170 ha potential foraging habitat within the Proposed Indicative Envelope. ■ Undertake additional species specific studies over 24 months, including but not limited to the following: <ul style="list-style-type: none"> ■ Bird and bat observation and utilisation surveys (in progress) ■ 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 Proposed Construction Footprint placement over existing fauna habitat that is of good or higher value. <p>Rehabilitate:</p> <ul style="list-style-type: none"> ■ Post commissioning phase, all disturbed areas not required for day to day operations (501.5 ha) will be returned to landholders in a manner suitable for agricultural land use practices to continue. ■ Post commissioning phase, up to 41.33 ha of the 501.5 ha, identified as potential foraging or roosting habitat 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. <p>Offsets:</p> <ul style="list-style-type: none"> ■ Potential offsets for the clearing of approximately 0.170 ha (Priority 3, TEC) to align with EPBC offset guidance.
<p>Residual Impacts, Including Assessment of Significance</p>	<p>The Proposal will result in the permanent removal of approximately 0.153 ha of Banksia Woodlands Priority 3 (TEC) in excellent condition, and approximately 0.015 ha in very good condition (approximately 0.170 ha total). Banksia Woodlands are also considered to provide high quality foraging and potential roosting habitat for Carnaby’s Black Cockatoo.</p>
<p>Proposed Environmental Outcomes</p>	<ul style="list-style-type: none"> ■ Fauna habitat removal will be limited and contained to the Proposed Construction 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.

Potential Impacts, Proposed Mitigation and Proposed Environmental Outcomes of Key Environmental Factors

Assessment of Offsets
(if relevant)

Offsets for potential terrestrial fauna habitat of approximately 0.170 ha 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 >89% (Pheonix 2025) of the Proposed 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.

Potential Impacts, Proposed Mitigation and Proposed Environmental Outcomes of Key Environmental Factors

<p>Mitigation Hierachy</p>	<p>Avoid:</p> <ul style="list-style-type: none"> ■ Early consultation and involvement with the Yued Aboriginal Corporation (Yued Heritage Protection Agreement). ■ 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. ■ Identify dwellings where there is the potential to exceed the <i>Environmental Protection (Noise) Regulations 1997</i>, 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. <p>Minimise:</p> <ul style="list-style-type: none"> ■ 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. ■ 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). <p>Rehabilitate:</p> <ul style="list-style-type: none"> ■ 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.
<p>Residual impacts, including Assessment of Significance</p>	<p>Refinement of the Proposed Development Envelope and infrastructure layout to reduce and mitigate residual impacts identified through worst-case scenario assessments.</p> <p>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.</p>
<p>Proposed Environmental Outcomes</p>	<ul style="list-style-type: none"> ■ 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.
<p>Assessment of Offsets (if relevant)</p>	<p>Not considered relevant to this factor.</p>

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Abbreviations

Abbreviations	Definitions
AMC	Australian Marine Complex
BBUS	Bird and Bat Utilisation Survey
BC Act	<i>Biodiversity Conservation Act 2016 (WA)</i>
BESS	Battery energy storage system
BOM	Bureau of Meteorology
CASA	Civil Aviation Services Authority
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
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DDA	Due Diligence Assessment
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environment Regulation
EIA	Environmental Impact Assessment
EMI	Electromagnetic interference
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
FID	Financial Investment Decision
GDE	Groundwater dependent ecosystems
GHG	Greenhouse Gas Emissions
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)
kL	Kilolitre
km	Kilometres
m	Metres
agl	above ground level
bgl	below ground level
mm	millimetres
MNES	Matters of National Environmental Significance
MW	Megawatt
MWh	Megawatt hour
NVCP	Part V Native Vegetation Clearing Permit
OSOM	Oversized over mass

Abbreviations	Definitions
PD Act	<i>Planning and Development Act 2005 (WA)</i>
PEC	Priority Ecological Community
PEP	Project Execution Plan
PMST	Protected Matters Search Tool
PNT	potential nesting trees
RIWI Act	<i>Rights in Water and Irrigation Act 1914 (WA)</i>
SM4	Songmeter 4
SRE	Short range endemic
Stakeholders	Major key entities who may have contractual or regulatory interest
SWIS	Southwest Interconnected System
TEC	Threatened Ecological Community
The Proponent	Marri WF Pty Ltd
The Proposal	The Marri Wind Farm
TMP	Traffic Management Plan
WAPC	Western Australian Planning Commission
YAC	Yued Aboriginal Corporation

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 2021 (EPA, 2024); Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures (EPA, 2016) and the Instructions – Referral of a proposal to the Environmental Protection Authority (EPA) under Section 38 of the EP Act (EPA, 2021).

In addition to this Proposal under the EP Act, 2 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 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 South West Interconnected System (SWIS), consisting of up to 82 turbines with supporting infrastructure designed to generate up to 550 megawatts (MW) of renewable energy.

In addition, the Proposal makes provision for a potential 6,600-megawatt hour (MWh) 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 Proposed Development Envelope consisting of approximately 12,472 hectares (ha). Up to 4 site entry points transversing the adjacent road reserves are planned to support the construction phase. The total ground disturbance of the Proposed Construction Footprint is estimated as 964.4 ha with an estimated Operational Footprint reducing to 462.96 ha.

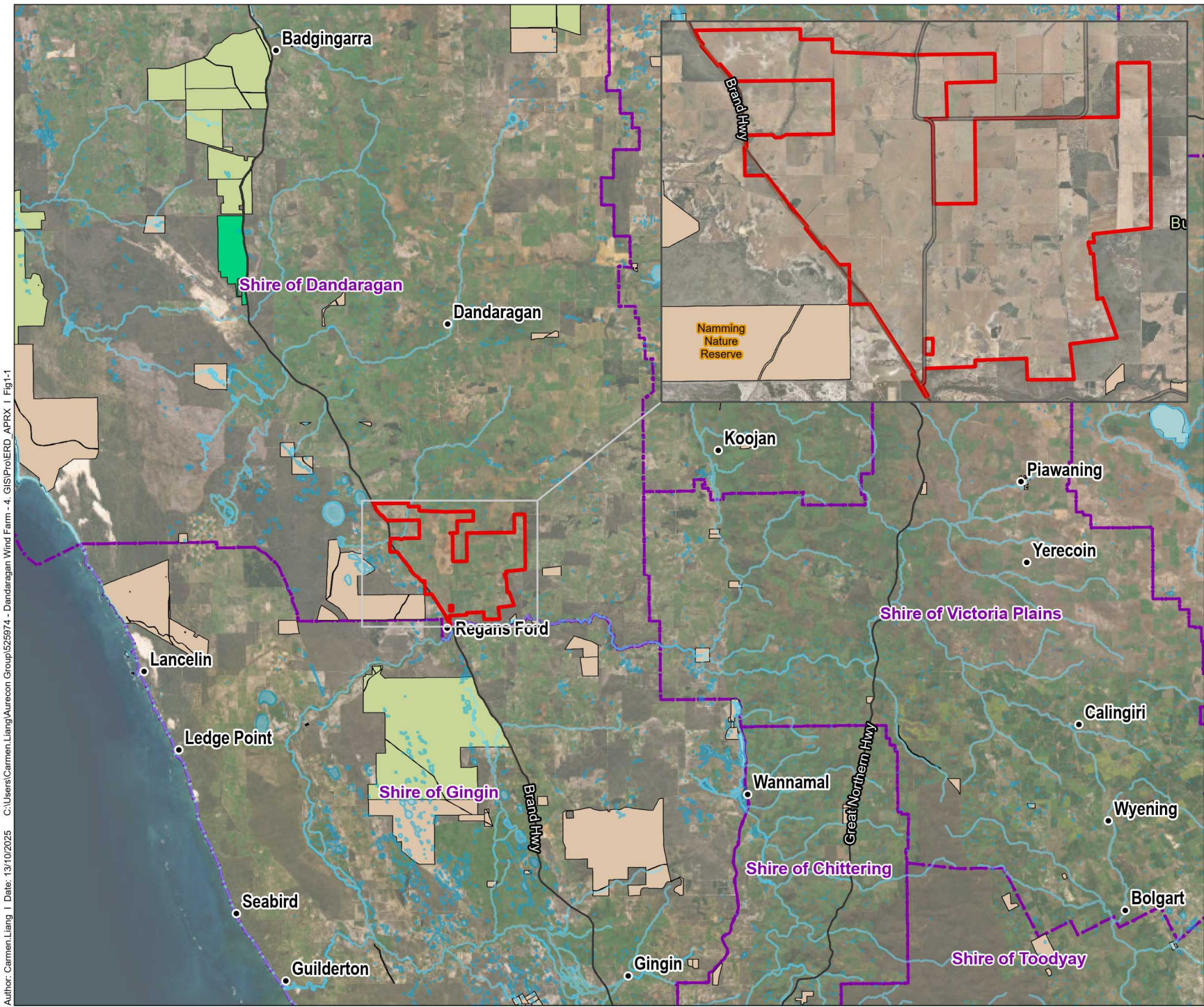
Location of the Proposal has been carefully selected, and placement of individual infrastructure has been undertaken to take advantage of land areas that are not highly populated or trafficked and have already been cleared of native vegetation and associated fauna habitat. This highly modified landscape 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 Proposal 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, 2023) and "*consider Aboriginal Cultural Heritage values through understanding significance of the physical or biological surroundings*" (EPA, 2023).

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 Proposal 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.

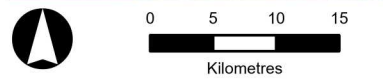


- Watercourses (DWER-031)
 - Waterbodies (LGATE-016)
 - LGA Boundaries (LGATE-233)
 - Proposed Development Envelope
- DBCA - Legislated Lands and Waters (DBCA-011)**
- Conservation Park
 - National Park
 - Nature Reserve

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



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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 for 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 under the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2021* (EPA, 2024) 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 social surroundings (including Aboriginal Cultural Heritage), Flora and Vegetation and Terrestrial Fauna (including short-ranged endemic species). 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 content

The Proponent is proposing to develop the Proposal on freehold land which is currently utilised for agricultural production. The Proposed Development Envelope comprises of up to 12,472 ha. A Proposed Construction Footprint of approximately 964.4 ha will support all construction activities including site access points.

The following sections define the Proposal content elements. A summary of the general Proposal content description has been provided in ES Table 1.

For the purposes of this Proposal, the terms presented in Table 1-2 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.
Proposed Development Envelope	The defined spatial boundary within which all elements of the Proposal are expected to occur and used to assess the environmental impacts for this referral. The Proposed Development Envelope is wholly located within the Shire of Dandaragan (Figure 1-1).
Proposed Indicative Envelope	The largest outer boundary within which all Proposed Activities associated with the Proposal will occur. Not all land surface areas within the Proposed Indicative Envelope will be disturbed. The purpose of the Proposed Indicative Envelope is to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure (i.e., turbines, roads, laydown areas and other infrastructure). Micro-siting is a method employed to maximise avoidance of impacts to environmental values (ability to navigate around an aspect or surprise find). The Proposed Indicative Envelope sits wholly within the Proposed Development Envelope.
Proposed Construction Footprint	The maximum land surface area required to deliver the Proposal construction outcomes where vegetation clearing and/or soil disturbance will occur. This includes areas of temporary impact such as laydown areas, batch plant pads and temporary site office buildings. The Proposed Construction Footprint sits wholly inside of the Proposed Indicative Envelope. 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 (see below).
Proposed Operational Footprint	This is the land surface area which will remain in use by the Proponent for the operational life of the Proposal (>35 years). The impacts or disturbances within the Proposed Operational Footprint will remain largely unchanged following completion of all construction and commissioning elements.
Progressive Rehabilitation Areas	The land surface areas required to deliver the construction elements of the Proposal and are not required for the operational elements (i.e., areas of temporary clearing and/or disturbance). These areas will be progressively returned to the landholders for preconstruction use.
Proposed Activity	A general term to describe any physical construction or commissioning activity or collection of activities (structural, civil, electrical or logistics) required to enable the delivery of on-groundwork deliverables or milestones.
Transport Development Envelope	The defined spatial boundary within which the transport route from the selected port to the site will be located (Figure 1-4 and Figure 1-5).

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 and 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.

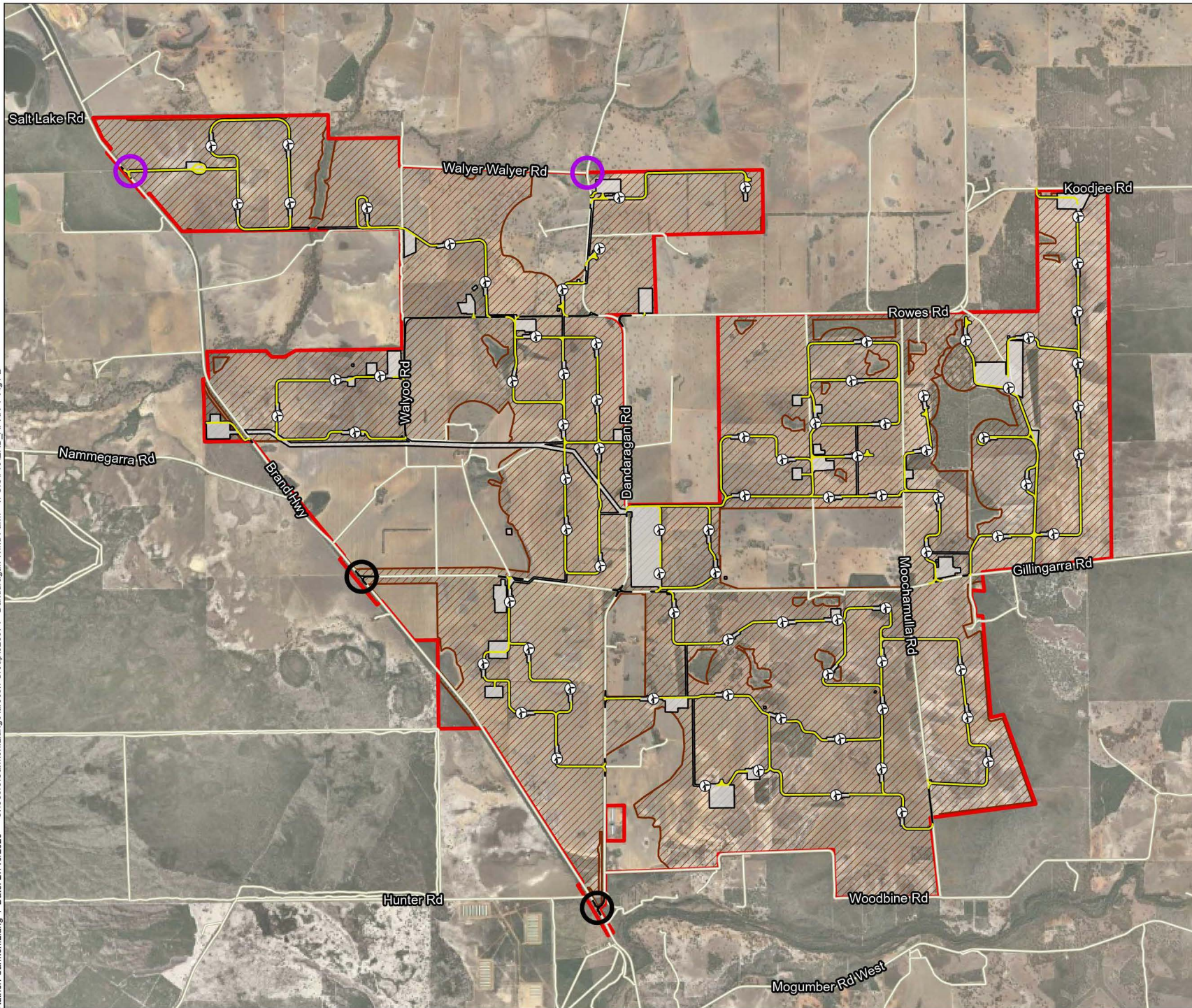
A separate fully operational wind farm, registered in the Wholesale Electricity Market as Yandin_WF1, is located approximately 15 km to the north of the Proposal. The Yandin Wind Farm has been operational since October 2020 and consists of 51 turbines with a total generation capacity of approximately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

All Proposed Activities required to deliver the Proposal are to be implemented within the Proposed Development Envelope of approximately 12,472 ha. All construction activities including those that will cause land disturbance will only occur within the Proposed Construction Footprint (approximately 964.4 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 Proposed Indicative Footprint and Proposed Construction Footprint. During all phases, the Proposed Development Envelope completely encapsulates the Proposed Indicative Footprint, Proposed Construction Footprint and Proposed Operational Footprint as presented in Figure 1-2. This approach will enable, as necessary, on the ground refinement during the construction phase to the Proposed Construction Footprint to effectively manage unexpected findings of an environmental, social or cultural nature. Any such unexpected find will be assessed during on-ground delivery to determine the necessary alternate design requirements to ensure, the find can be protected in a manner where impacts are avoided or minimised.

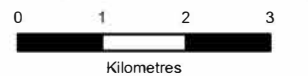
Environmental constraints, findings from specialised environmental studies, outcomes from stakeholder and community engagement and financial considerations have all influenced and shaped several amendments to the Proposal's original design. These amendments are discussed in Section 1.4.8.

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.



- Proposed Development Envelope
- Proposed Indicative Envelope
- Proposed Construction 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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1.4.2 Site details

To support on ground activities, 4 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 1-3.

Table 1-3 Proposed site details

Term	Description
Basic site amenities	<ul style="list-style-type: none"> ■ 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 call up points ■ Directional signage to laydown areas
Local and state roads	<ul style="list-style-type: none"> ■ Approximately 16 km of the western boundary will follow the Brand Highway ■ The Brand Highway intersects the Proposed Development Envelope at 2 locations ■ Smaller local roads including Dandaragan Road, Gillingarra Road and Rows Road all intersect the Proposed 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	<ul style="list-style-type: none"> ■ 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 3 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:	<ul style="list-style-type: none"> ■ 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 Proposed 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 Proposed Development Envelope are presented in Table 1-4.

Table 1-4 Land Tenure Within the Proposed Development Envelope

Land parcel number	Area (ha)	Percentage of the Proposed 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	8.33
141/173A	247.80	1.99
1446/945	1259.88	10.10
1646/980	354.21	2.84
1648/342	1245.00	9.98
1660/217	532.76	4.27
1669/387	880.69	7.06
1669/388	16.22	0.13
1669/389	121.48	0.97
1669/390	429.67	3.45
1669/390	106.14	0.85
1669/390	273.08	2.19
1669/390	76.86	0.62
2192/613	779.28	6.25
2219/597	832.60	6.68
261/49A	497.94	3.99
2680/230	313.91	2.52
2803/442	524.36	4.20
Other areas (roads)	276.24	2.2
Total	12,471.86	100.00

1.4.4 Permanent infrastructure

The Proposal will include a range of permanent key infrastructure elements as presented in Table 1-5 and Figure 1-3.

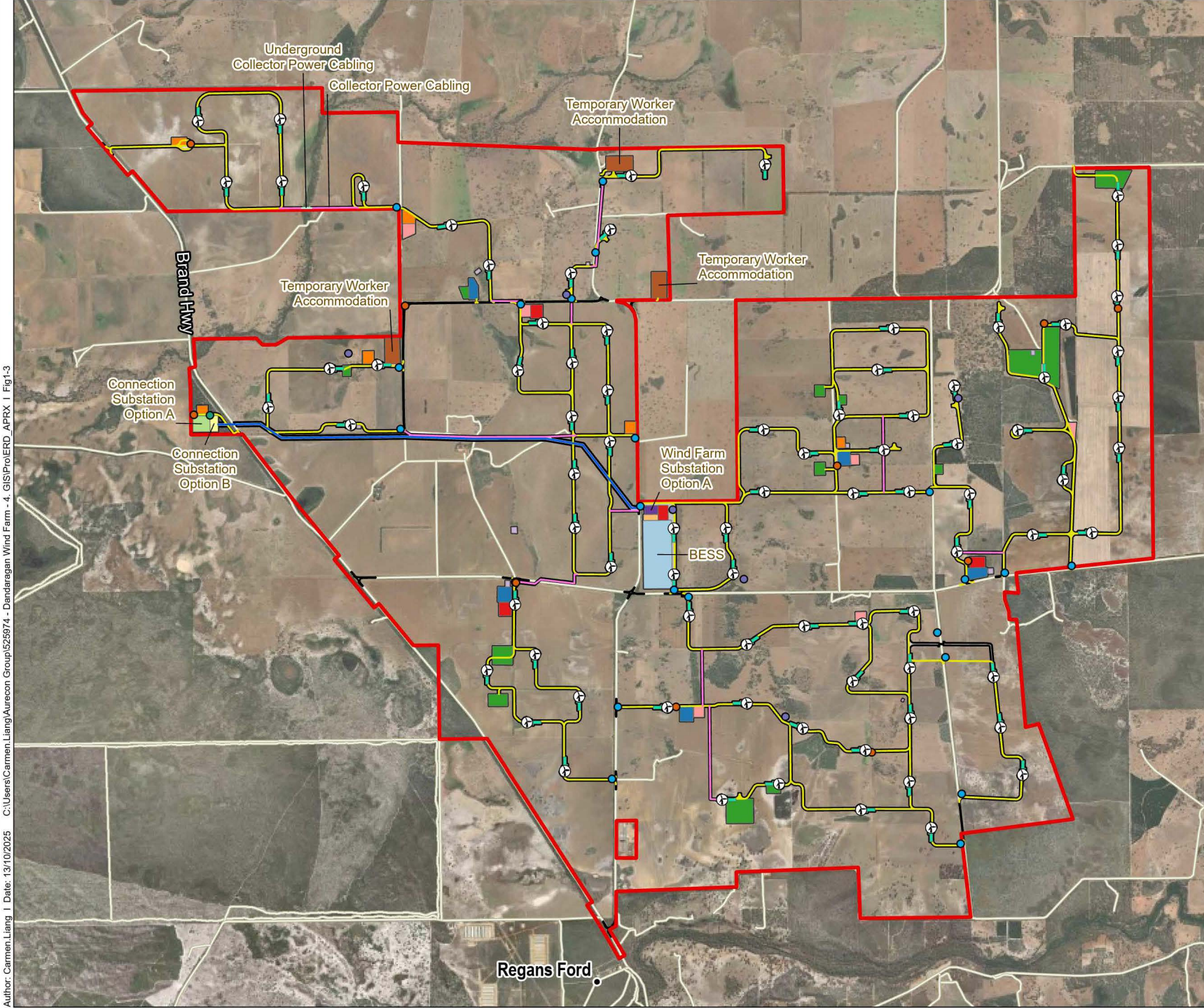
Table 1-5 Permanent infrastructure elements and specifications

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

Infrastructure element	Key features	
	All turbines will be the same make and model	
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 hectares per turbine
Underground collector power cabling	Total length	Approximately 13 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	<ul style="list-style-type: none"> ■ Battery containers ■ Inverters ■ Transformers ■ Control and switchgear ■ Lightning protection masts ■ Security exclusion fencing
Wind farm substation	Approximate area	3 ha
	Equipment	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Offices ■ Control rooms and servers ■ First aid room, ■ Toilets and showers ■ Locker room ■ Warehousing ■ Workshop

Infrastructure element	Key features	
		<ul style="list-style-type: none"> ■ Outdoor storage and parking ■ Security exclusion fencing
	Water supply	Rainwater collection supplemented by trucked or piped water
	Sewage	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Steel lattice ■ Self-supporting or guy-wired
	Equipment	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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

Infrastructure element	Key features	
	Corridor width	Up to 60 m wide
	Maximum vegetation/permanent structure height within corridor	Approximately 3 m agl



Proposed Development Envelope
 Proposed Construction Footprint

Permanent Infrastructures :

- Turbine Layout
- Communication Towers
- 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 A
- Operations & Maintenance Facilities
- Wind Farm Substation Option A
- Connection Substation Option B
- Turbine 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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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 1-6 Temporary construction infrastructure specifications

Infrastructure element	Approximate sizes/ area	Key features/description
Main Compound - Temporary	Up to 4 areas Each up to 4 ha	<ul style="list-style-type: none"> ■ 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 <i>Health Act (Miscellaneous Provisions) 1911</i> 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 6 areas Up to 3 ha each	<ul style="list-style-type: none"> ■ Portable toilets ■ Potable water tanks ■ Site office ■ Hardstand area ■ Security fencing
Temporary Laydown Areas	Up to 6 laydown areas each up to 3 ha	<ul style="list-style-type: none"> ■ Hardstand areas ■ Stockpiles ■ Security fencing ■ Portable toilets ■ Site office
Temporary Concrete Batching Plants	Up to 6 batching plant locations Each Batch Plant total capacity of 240 m ³ /hr Each Batch Plant pad up to 5 ha	<ul style="list-style-type: none"> ■ Truck loading hardstands ■ Loading bays ■ Hoppers ■ Silos ■ Water tank ■ Stockpiles ■ In-ground water recycling/first flush pit (<i>Contaminated Sites Act 2003</i> 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	<ul style="list-style-type: none"> ■ Gravel for roads, access tracks, laydown areas and other construction requirements is proposed to be sourced from existing borrow areas located across the Proposed Development Envelope. The final locations of borrow pits to be used for the Proposal is 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	Approximately 750 ML/yr	<ul style="list-style-type: none"> 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 <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act)
Temporary Turkey's Nest Dams	Up to 10 turkey nests, each Each with capacity up to 15,000 m ³	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Temporary security exclusion fencing is to be utilised in line with standard construction codes of practice and the <i>Work Health and Safety (general) Regulations 2022</i> 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.	<p>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 Proposed Development Envelope, to provide flexibility for the Proponent to strike the right balance, in consultation with local stakeholders.</p> <ul style="list-style-type: none"> 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 Proposed Development Envelope.

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 2 potential transport route options are being considered:

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

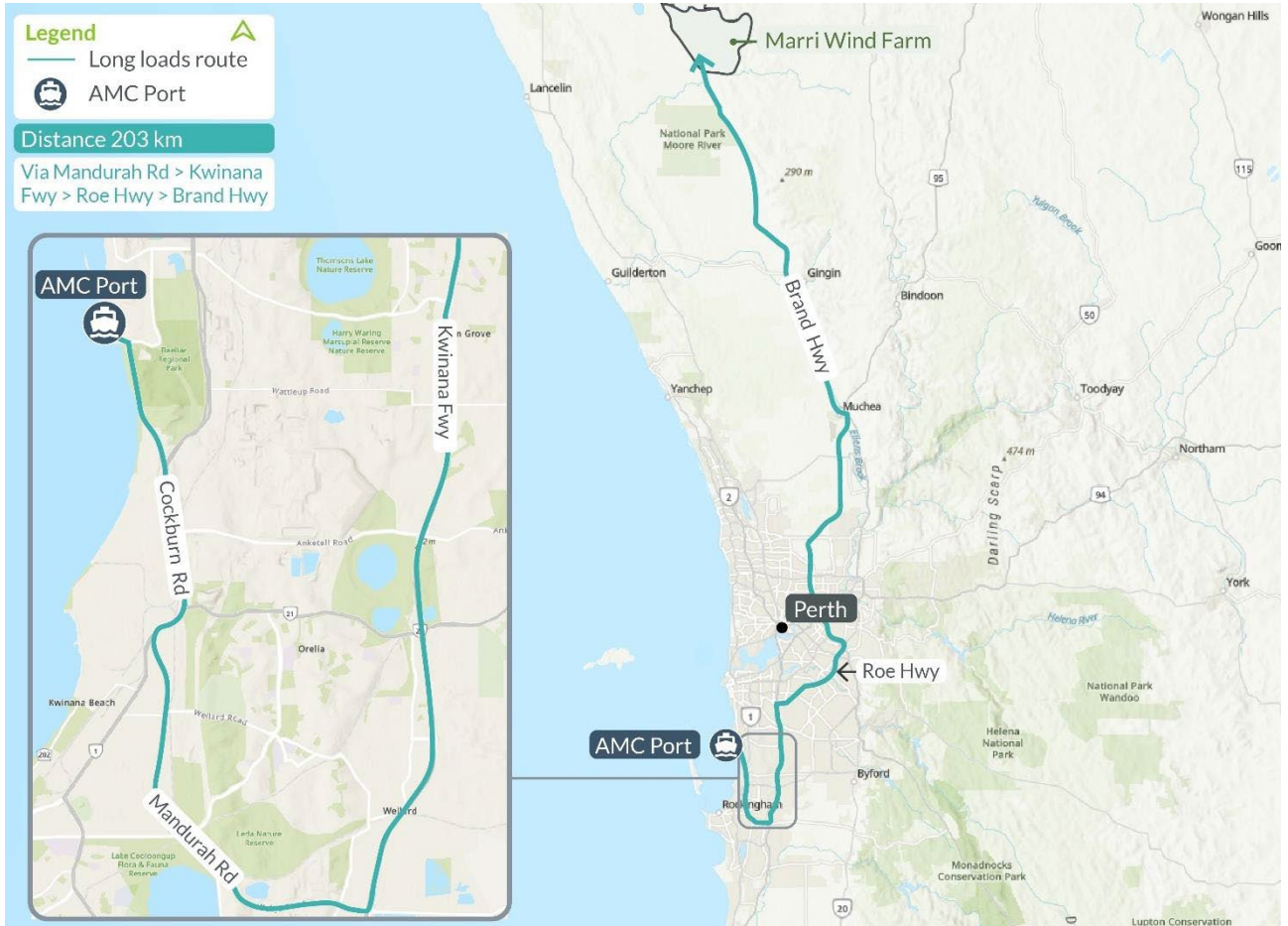


Figure 1-4 Potential Transport Route Option #1: AMC Port to the Proposed Development Envelope

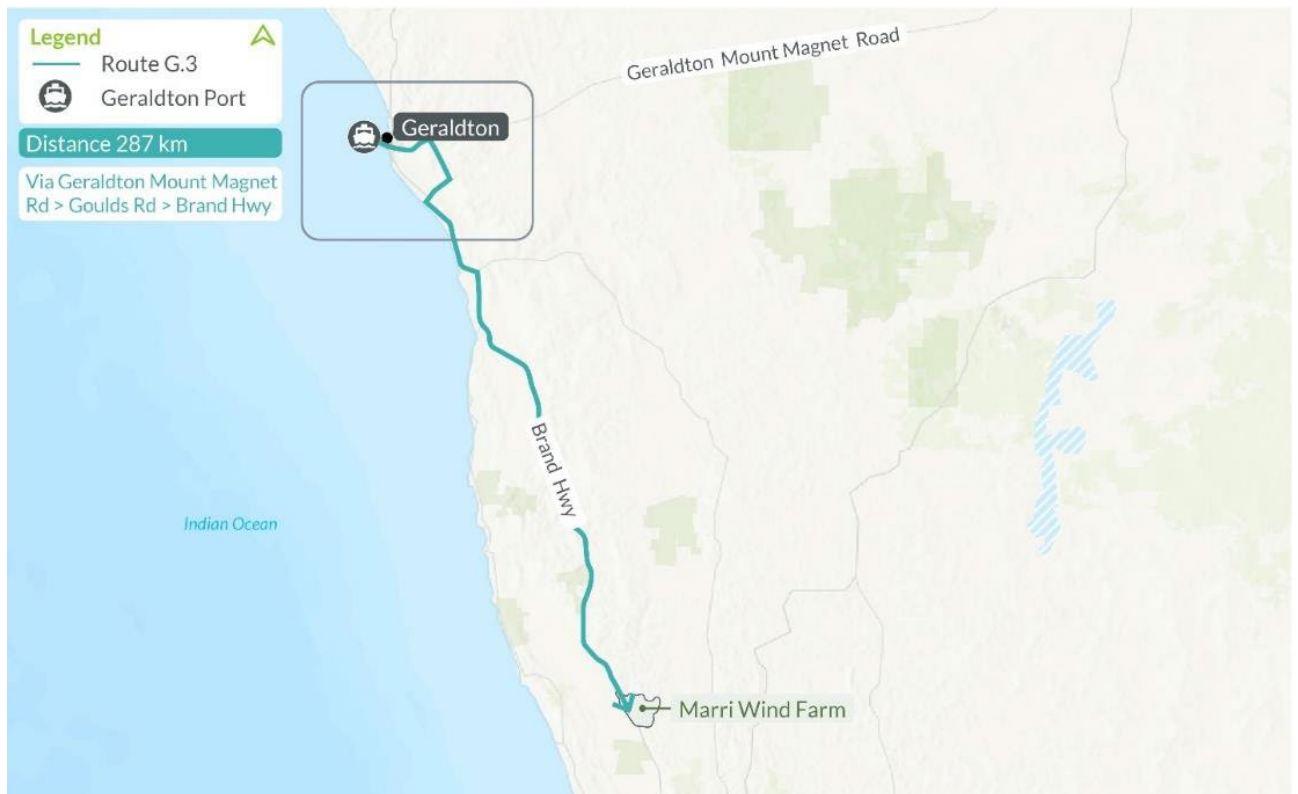


Figure 1-5 Potential Transport Route Option #2: Geraldton Port to the Proposed Development Envelope

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 3 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 1-7 Proposal timing

Phase	Details
Pre-construction Phase	<p>Planning for the Proposal commenced in early 2024 with:</p> <ul style="list-style-type: none"> ■ An Environmental Constraints Assessment ■ Commencement of consultation with key stakeholders ■ Commencement of community consultation and information events <p>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.</p> <p>A Financial Investment Decision (FID) is scheduled for late-2026 on the basis that regulatory approvals can be obtained in a timely manner.</p>
Construction Phase	<p>Construction is scheduled to commence in 2027 for a duration of up to 3 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.</p>

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	<p>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.</p> <p>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.</p> <p>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).</p>
Decommissioning Phase	<p>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.</p> <p>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.</p> <p>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.</p> <p>If the operational life of the Proposal is extended decommissioning is expected to be postponed up to approximately 2096.</p>

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 4 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.

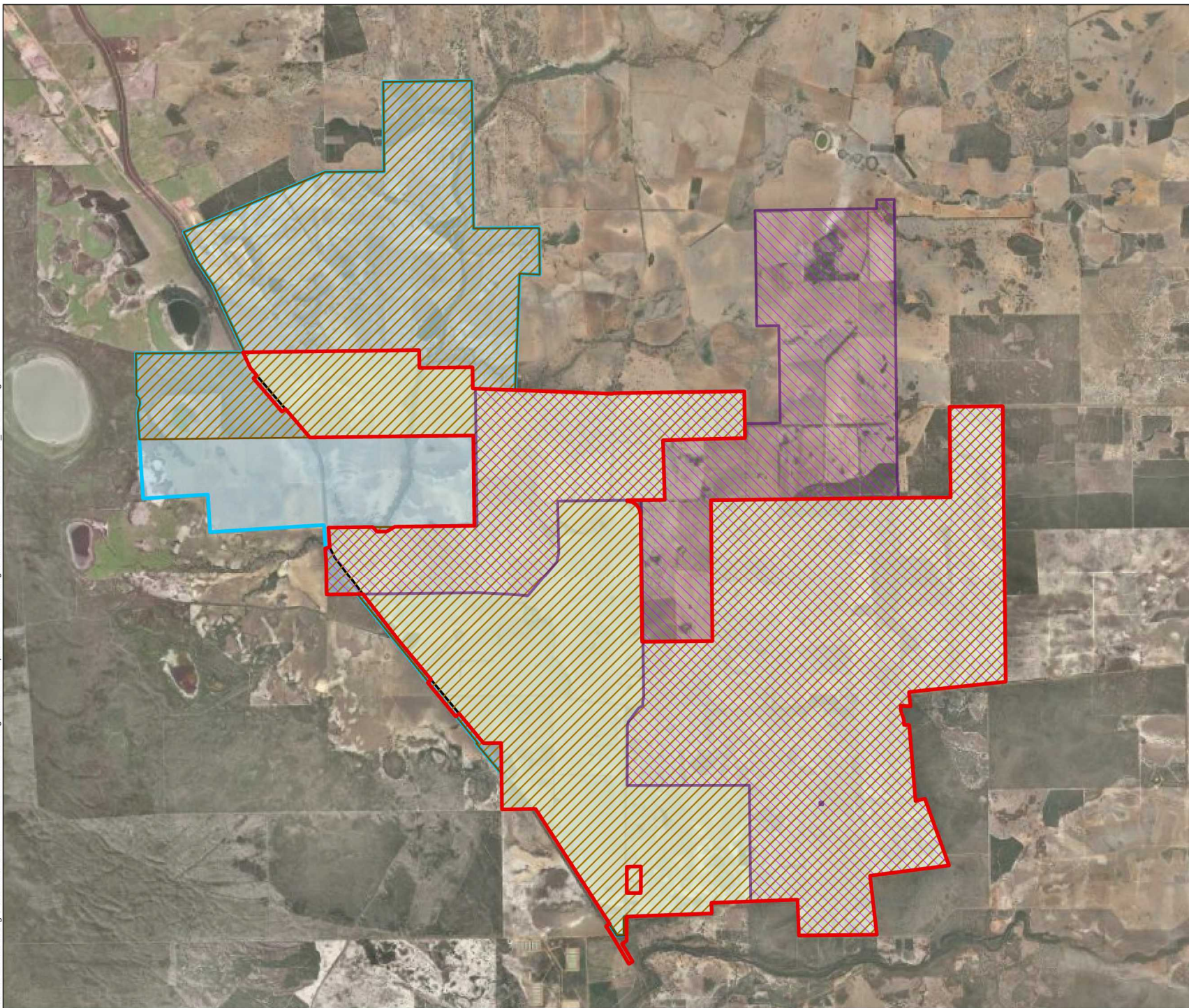
The Proposed Indicative Envelope was developed in mid-2025 and represents the outer most boundary of where all Proposed Activities will occur. Inside this envelope sits the Proposed Construction Footprint. Any land disturbance during the construction phase of this Proposal will only occur within the Proposed Construction Footprint (964.4 ha area). The Proposed Indicative Envelope (10,159.14 ha) 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.

Table 1-8 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 <i>Biodiversity Conservation Act 2016</i> (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 Proposed Indicative Envelope 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 Proposed Development Envelope.

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-  Proposed 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



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 ley environmental factor sections (Sections 6 to 8).

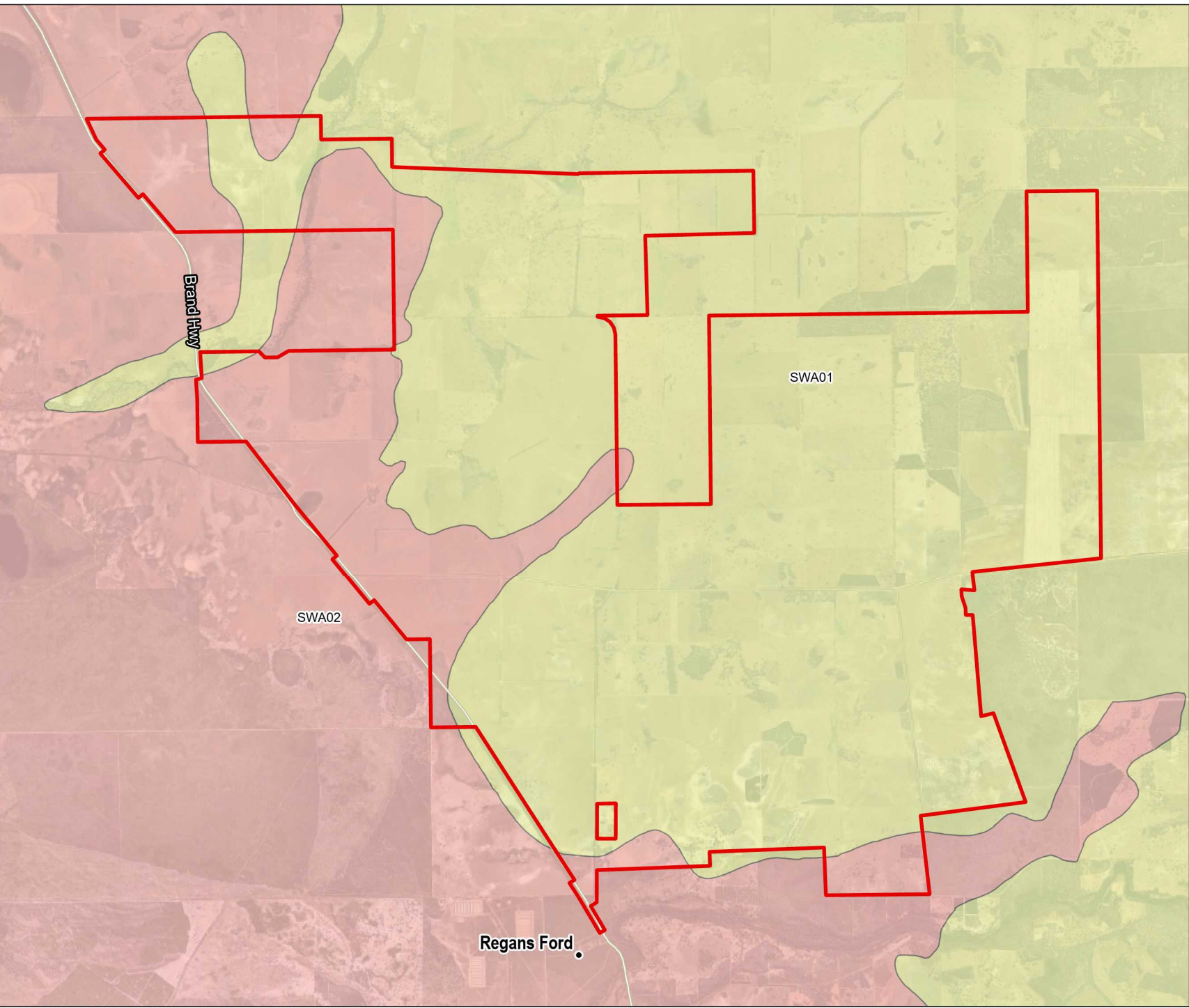
1.5.1 Bioregion

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, 2016). The Proposed 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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- Proposed Development Envelope
- Interim Biogeographic Regionalisation for Australia (IBRA) Subregions**
- SWA01 - Dandaragan Plateau
- SWA02 - Perth

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



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, 2025).

Pre-European vegetation mapping for Western Australia (Phoenix, 2025) has identified 4 vegetation associations within the Proposed Development Envelope (Table 1-9). The conservation status of these associations was evaluated at various levels: statewide, Swan Coastal Plain bioregion, and the 2 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 Proposed Development Envelope is based on surveys completed for the Proposal are provided in Section 6.

Table 1-9 Extent of pre-European vegetation associations present in the Surveyed 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 DECA 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	6,466.76	52
1030, Low woodland; <i>Banksia attenuata</i> & <i>B. menziesii</i>	139,012.86 8	88,949.55	63.99	63.81	69.66	31.36	19.24	1,676.10	13.48
1031, Mosaic: Shrublands; <i>Hakea</i> scrub-heath/Shrublands; <i>Dryandra</i> heath	269,490.91	88,668.30	32.90	19.3	9.27	21.37	42.66	1,307.10	10.51
1035, Mosaic: Medium open woodland; marri/Shrublands; <i>Dryandra</i> heath	5,018.34	492.93	9.82	10.47	44.3	10.24	53.78	2,986.45	24.01
Total	274,509.25	191,135.22	117.97	102.91	144.29	72.21	139.59	12,436.41	100

Source: (Phoenix, 2025))

1.5.3 Surface geology and land systems

The Proposed Development Envelope intersects 7 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 1-10 Regional surface geology and extent within the Proposed Development Envelope

Surface geology	Lithography abbreviation	Description	Total area within Proposed Development Envelope (ha)	% of Proposed 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	5,740.54	46.03
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	5,718.26	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	101.40	0.81
Poison Hill Greensand	Kscp	Glauconitic sand and clay	353.34	2.83
Guildford Formation	Qag	Alluvial sand and clay with shallow-marine and estuarine lenses and local basal conglomerate	20.07	0.16
Total			12,471.87	100

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.

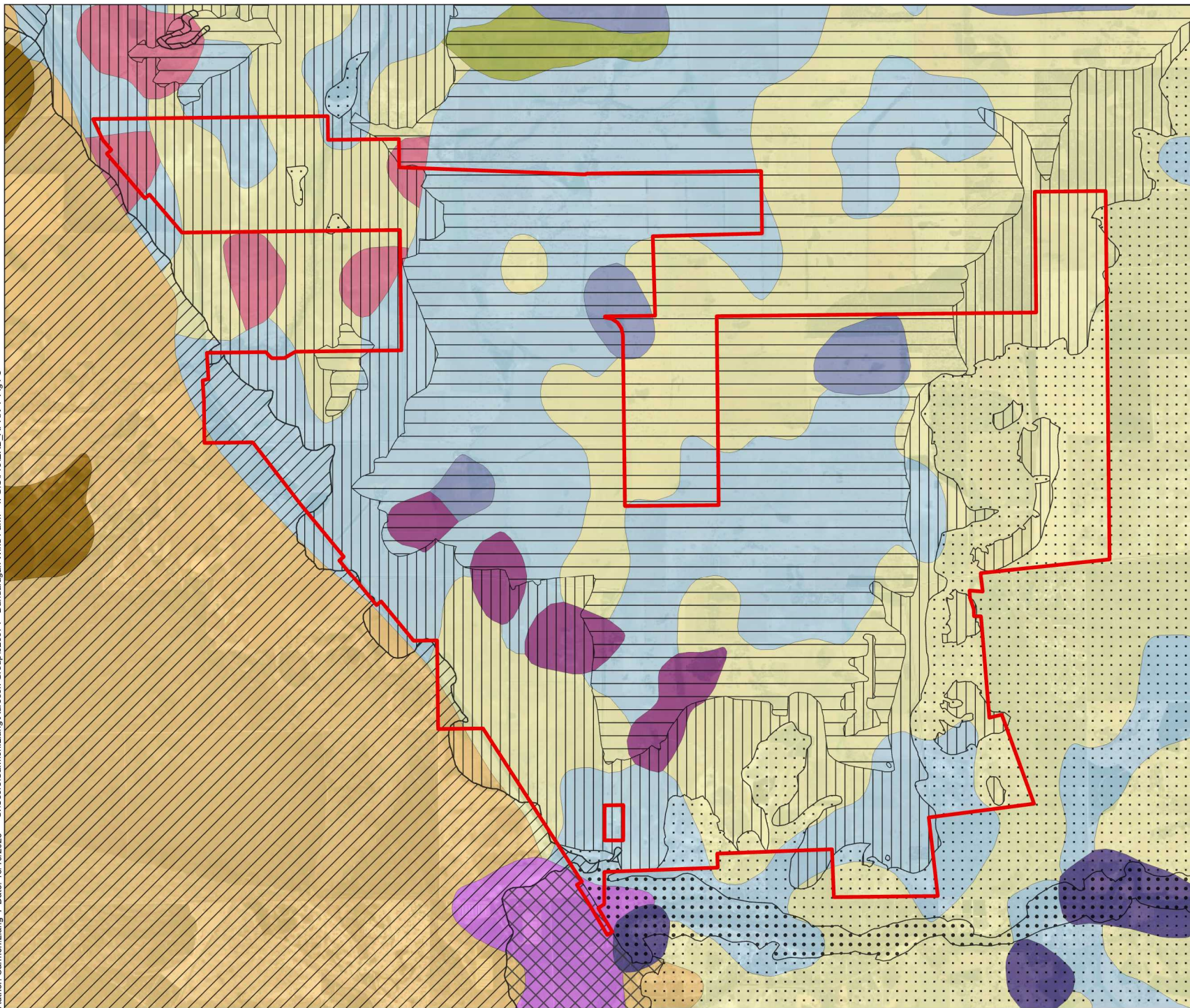
Under this hierarchy, land systems are defined as areas with recurring patterns of landforms, soils, vegetation and drainage (Payne & Leighton, 2004). The Proposal intersects 5 land systems as shown in Table 1-11.

Table 1-11 Land systems and extent within the Proposed Development Envelope

Land systems	Description	Total area within Proposed Development Envelope (ha)	% of Proposed 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	4,520.63	36.25
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	5,902.44	47.33
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	1,717.51	13.77

Land systems	Description	Total area within Proposed Development Envelope (ha)	% of Proposed 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	294.85	2.36
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		12,462.04	99.92

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Proposed 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
- Rows System

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



1.5.4 Surface water

The Proposed 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, 2020).

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 Proposed Development Envelope. Both surface drainage systems form part of the Nambung/Catuby Coastal Tributaries Surface Water Area and are lined with riparian vegetation.

These water systems intersect 2 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 Proposed 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, 2025).

An active stream gauging station is located approximately 1 km south of the Proposed Development Envelope, servicing the Moore River, known as Quinns Ford (station number 617001) (DWER, 2025). 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 Proposed 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, 2025).

The Proposed 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 Proposed Development Envelope, several groundwater bores and sampling sites exist, many of which are privately owned (DWER, 2025).

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 Proposed 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 Proposed 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).

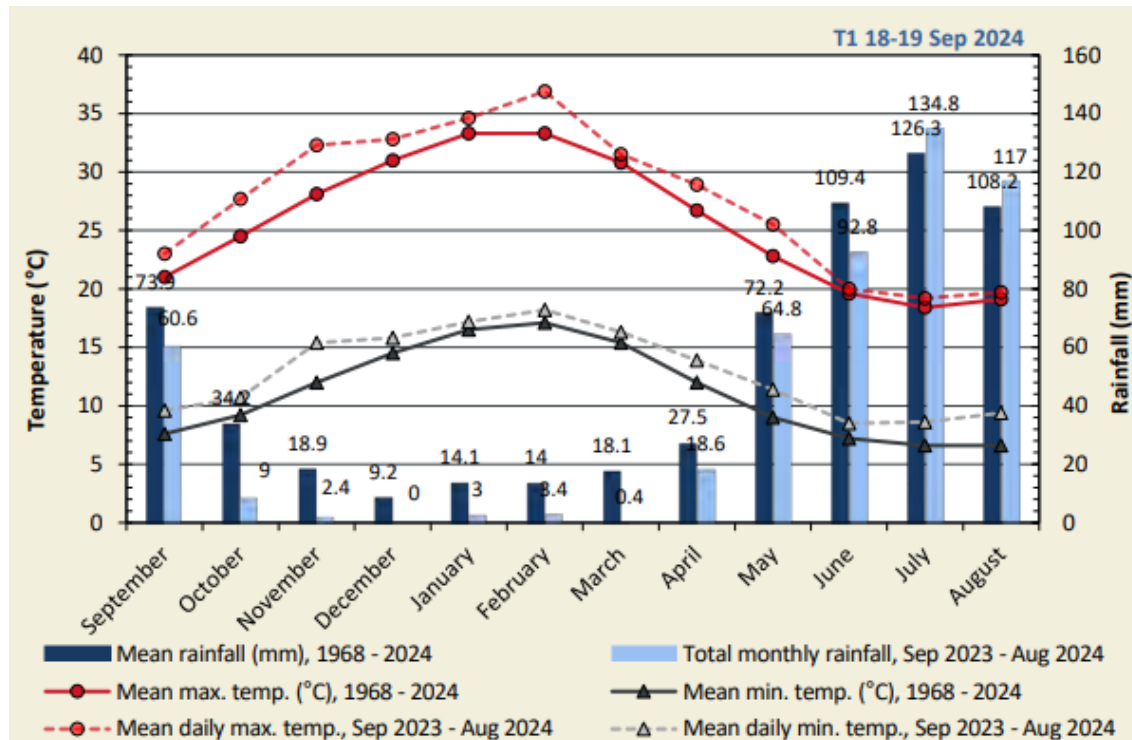


Figure 1-9 Annual Climate and Weather Data for Gingin Aero Station (no. 009178)

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





1.5.8 National parks, state forests and reserves

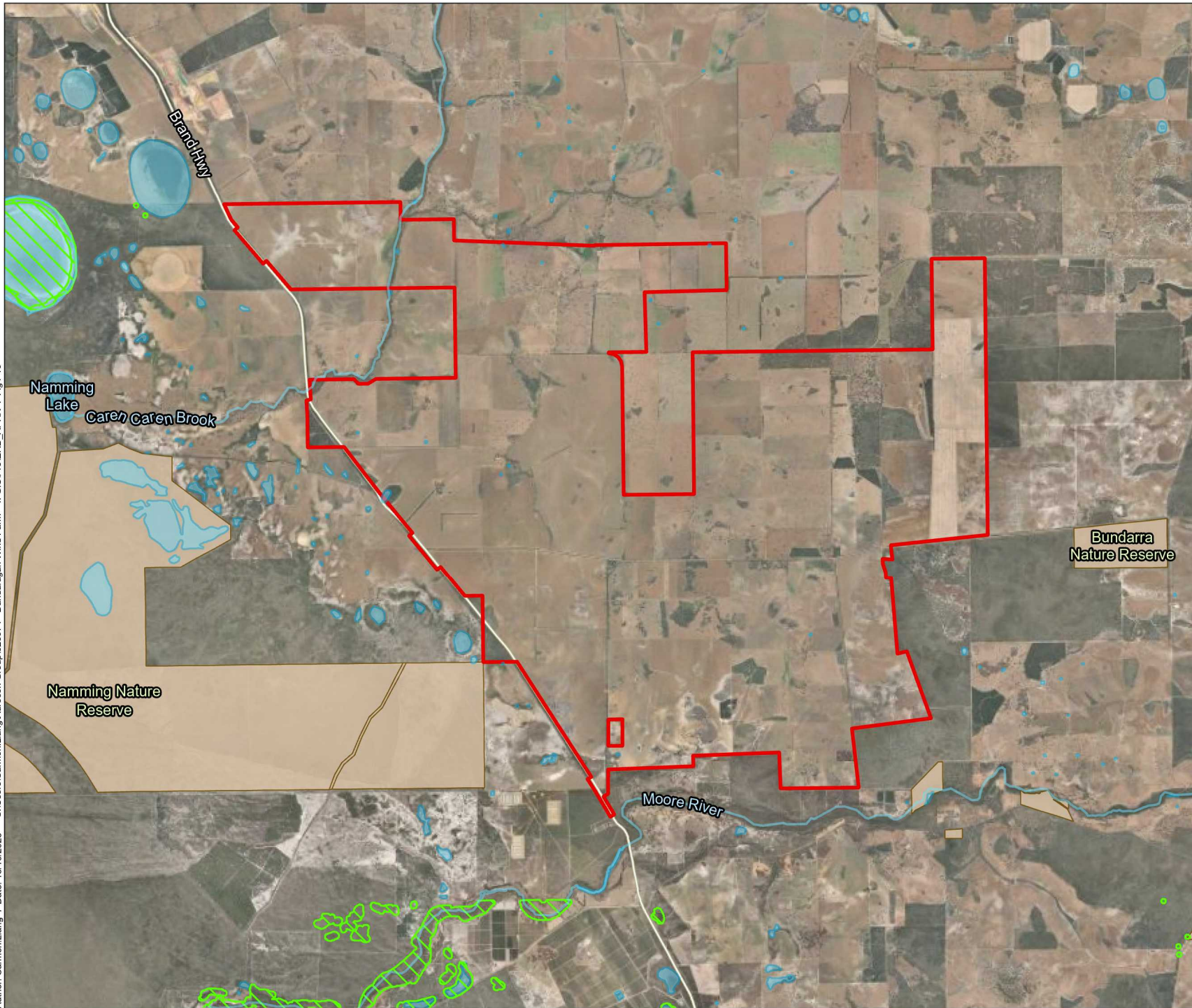
Within a 30 km radius from the Proposed Development Envelope the following conservation areas exist:

- 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 2 closest nature reserves are (Figure 1-10):
 - Namming Nature Reserve, which borders the western side of the Proposed Development Envelope.
 - Bundarra Nature Reserve, located approximately 2 km to the east.

None of the above areas intersect the Proposed Development Envelope or Proposed Construction Footprint (Phoenix, 2025).

No RAMSAR Wetlands are mapped within the Proposed 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.

-  Proposed 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



Author: Carmen Liang | Date: 13/10/2025 | C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\ProJRD_APRX | Fig1-10



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 Proposed 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, 2 Lodged Cultural Heritage Places and one Historical Cultural Heritage Place registered within the ACHIS that intersect with the Proposed Development Envelope as seen in Table 1-12 (Archae-aus, 2024). Further details on Aboriginal heritage within the Proposed Development Envelope based on surveys completed for the Proposal are provided in Section 8.

Table 1-12 Aboriginal Cultural Heritage Sites Intersecting the Proposed 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 Proposed 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 Proposed Development Envelope. A review of the Inherit database identified 2 historical heritage places within approximately 12 km of the Proposed Indicative Envelope:

- 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 Proposed Development Envelope has primarily been utilised for dry land agriculture, with lesser areas of conservation (Phoenix, 2025). Other uses visible in surrounding areas includes residential and recreational use. Yandin Wind Farm is located approximately 15 km directly north of this Proposed 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 may 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 and Instructions: How to prepare an environmental review document (EPA, 2024a).
- 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, 2023d).

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)	<i>Environmental Protection Act 1986</i> (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	<i>Rights in Water and Irrigation Act 1914</i> (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	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

Decision making authority	Key legislation	Approval required	Ability to mitigate environmental impact	Impact/phase	Environmental factor
		(DWER, 2015) is required for water allocation trading or purchase.			
Department of Biodiversity, Conservation and Attractions (DBCA)	<i>Biodiversity Conservation Act 2016</i> (BC Act)	Authorisation under Section 40 of the BC Act may be required if there is potential for impact to individuals during the construction phase.	<p>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.</p> <p>Design of the turbines exceeds the preferred flight height range of the Carnaby's Black Cockatoo and observed bat species.</p> <p>Mitigation measures will be applied due to increased ground activity through the Traffic Management Plan.</p>	<p>Impacts: Injury or entrapment of any wildlife.</p> <p>Phase: Construction Operation Decommissioning</p>	Terrestrial Fauna Social Surroundings
Department of Planning, Lands and Heritage (DPLH)	<i>Planning and Development Act 2005</i> (PD Act)	<p>Development Application (via Part 11B Significant Development Pathway).</p> <p>All elements of the Proposal</p>	<p>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.</p> <p>Lodgement will occur under the Part 11B Significant Development Pathway. Any conditions related to management and mitigation of environmental impacts will be implemented.</p> <p>Mitigation measures will be applied to all phases.</p>	<p>Impacts: Land clearing Social amenity</p> <p>All phases</p>	Flora and Vegetation Social Surroundings
Department of Health (DoH)	<i>Health Act 1911</i> Health (Treatment of sewage and disposal of effluent and liquid waste) Regulations 1974	<p>Application to construct or install an apparatus for the treatment of sewage</p> <p>Temporary accommodation</p>	<p>If progressed the 450 equivalent persons temporary camp facility and worker facilities will require a wastewater treatment system.</p> <p>Licensing will be sort from local Shire of Dandaragan and/or the Department of Health.</p> <p>Mitigation measures will be applied to prevent, abate and mitigate pollution, environmental harm or harm to site personnel.</p>	<p>Impacts: Pollution of soil and groundwater</p> <p>Phase: Construction</p>	Inland water Terrestrial Environmental Quality Social Surroundings

Decision making authority	Key legislation	Approval required	Ability to mitigate environmental impact	Impact/phase	Environmental factor
Department of Energy, Mines, Industry Regulation and Safety	<p><i>Dangerous Goods Safety Act 2004</i></p> <p>Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007</p>	<p>Dangerous Goods Licence</p> <p>Volumes and storage of combustible liquids (diesel) are to be self-bunded, placed on impervious flooring (AS 1940).</p>	<p>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.</p> <p>AS 1692 Steel tanks for flammable and combustible liquids</p> <p>AS 1940 The storage and handling of flammable and combustible liquids</p>	<p>Impacts:</p> <p>Pollution of soil and groundwater</p> <p>Phase:</p> <p>Construction</p> <p>Operation</p>	<p>Inland water</p> <p>Terrestrial Environmental Quality</p> <p>Social Surroundings</p>

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 3,300 across 4 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:

1. Desktop analysis

The process begins with a comprehensive desktop assessment to understand the project's regional and social context. This includes:

- a. Reviewing the proposed project footprint and surrounding land uses.
- b. Mapping property boundaries to identify impacted landholders and near neighbours.
- c. Reviewing existing land tenure, infrastructure, and environmental values.
- d. Reviewing local and regional planning documents, government policies, and recent development activity in the area.

2. Tiered stakeholder identification

Stakeholders are categorised into 3 tiers based on their level of interest, influence, or potential impact from the project.

- a. Tier 1 – Key and impacted stakeholders:
 - i. **Impacted landholders** (those whose land or property is directly affected).
 - ii. **Government stakeholders**, including relevant State and Commonwealth departments and agencies.
 - iii. Local Members of Parliament and local government representatives (Councillors, CEO, Mayor).
 - iv. **Traditional Owner Groups** with recognised or potential interests in the area.
- b. Tier 2 – Community of interest:
 - i. **Near neighbours** who may experience visual, noise, construction, or other localised impacts.
 - ii. **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).
- c. Tier 3 – Broader Community:
 - i. Residents and businesses in the wider region.
 - ii. The general public who may have an interest in renewable energy or regional development.

3. Identification through engagement

Following the desktop assessment:

- a. Engagement commences with **Tier 1 stakeholders**, to inform them of the Proposal, gather initial feedback, and identify any local values, sensitivities or additional stakeholders.
- b. Engagement then expands to **Tier 2 stakeholders**, using insights gained from earlier discussions to tailor communication materials.
- c. Finally, the **Tier 3 broader community** is engaged through open public channels.

Throughout engagement, the project team:

- d. Seeks input from stakeholders, particularly local government, Traditional Owner groups, and regional representatives, on whether additional individuals or groups should be engaged.
- e. Continuously refines the stakeholder list to ensure inclusivity and local relevance.

4. Public Participation Opportunities

To enable open participation, the project hosts:

- a. Drop-in information sessions and public office hours for the community and residents to drop-in.
- b. These sessions are widely advertised through local newsletters, local newspaper, community and online.
- c. 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 Proposed 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 Proposed 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Proposal impacts ■ Community benefit fund ■ Economic and job opportunities
Traditional Owners and Aboriginal Corporations	Yued Aboriginal Corporation Southwest Aboriginal Land and Sea Council	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Proposal impacts ■ Economic development and job opportunities ■ Community benefits (for those within eligibility range)
Local Government	Shire of Dandaragan	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Proposal layout, transport routes and expected weights ■ Road use, maintenance or upgrade options ■ Local employment opportunities during construction

Stakeholder group	Stakeholder identity	Stakeholder primary area of interest
State Government	Department of Water and Environmental Regulation (DWER)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Planning approval in accordance with State Planning Framework Land tenure Aboriginal Cultural Heritage European Heritage
	Main Roads WA (MRWA)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Biodiversity aspects, including Black cockatoos and Banksia Woodland of the Swan Coastal Plain Threatened Ecological Community Offset options
	Western Power (WP)	<ul style="list-style-type: none"> Connection to existing Western Power infrastructure at designated location Commitment of energy supply into the future
	Department of Energy, Mines, Industry Regulation and Safety	<ul style="list-style-type: none"> Dangerous goods storage licence for the BESS (if required) Containment and storage of combustible liquid (diesel, if required)
	Department of Health	<ul style="list-style-type: none"> Worker's accommodation facility and potential for sewage management licence (if required)
	Emergency Services (Police, Fire, Ambulance)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Employment opportunities and economic development Benefit sharing and maximising local opportunities Cumulative Proposal impacts to community
	Mid West Ports Authority	<ul style="list-style-type: none"> Potential use of the Port of Geraldton for receivable elements of Proposal infrastructure
	Development WA/ Australian Marine Complex	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Referral of this Proposal under the EPBC Act Impacts to MNES Traditional Owner engagement approach and feedback
	Civil Aviation Safety Authority (CASA)	<ul style="list-style-type: none"> Proposal impacts Locations and maximum possible heights of all tall structures Potential communication system interference (if any) Flight path clearance
	Bureau of Meteorology (BOM)	<ul style="list-style-type: none"> Proposal impacts Locations and maximum possible heights of all tall structures to assess any projected interference from radar
	Department of Defence	<ul style="list-style-type: none"> Proposal impacts Locations and maximum possible heights of all tall structures in the case of retaining public safety during planned exercises

Stakeholder group	Stakeholder identity	Stakeholder primary area of interest
		<ul style="list-style-type: none"> Potential communication system interference (if any)
	Air Services Australia	<ul style="list-style-type: none"> Proposal impacts Locations and maximum possible heights of all tall structures
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	<ul style="list-style-type: none"> 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 S).

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 6 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	<ul style="list-style-type: none"> ■ Establish a Community Benefit-Sharing Fund, with representation from local stakeholders ■ Ensure funding remains local to the community ■ Consider larger, strategic funding initiatives instead of smaller grant programs for long term lasting impacts ■ Ensure community benefit fund amount meets best practice 	<ul style="list-style-type: none"> ■ Community benefit fund commitments are in line with best practice guidance ■ Engagement continues, all feedback recorded 	<ul style="list-style-type: none"> ■ Prior to construction, commence engagement to co-design the benefit sharing fund
Layout and design	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ Ensure layout is compliant with environmental and planning approvals
Accommodation	<ul style="list-style-type: none"> ■ Shire and community raised concerns about the number of construction workers and potential negative impact on housing/ accommodation availability 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Concern about turbine and construction and operation noise levels near dwellings 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ Ongoing compliance monitoring post-construction ■ Offer voluntary noise audits to potentially affected residences during operations and establish a responsive complaints management system.

Theme	Consultation feedback to date	Proposal response to date	Future action
Visual Impact	<ul style="list-style-type: none"> Concerns about visual changes and visibility from roads and nearby properties 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Confirm screening and visual mitigation measures through planning approvals and final design
Shadow Flicker	<ul style="list-style-type: none"> Concerns about moving shadows affecting dwellings 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Reassess shadow flicker as part of final turbine selection and confirm mitigation as required
Bushfire Risk	<ul style="list-style-type: none"> Concerns about bushfire risk from turbines and construction works 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Finalise Bushfire Management Plan prior to construction Ongoing consultation with Department of Fire and Emergency Services (DFES) and local fire authorities
Telecommunications	<ul style="list-style-type: none"> Concerns about potential interference to internet, phone or broadcast signals 	<ul style="list-style-type: none"> Electromagnetic interference (EMI) assessment identified 2 nearby towers possibly affected Working with licence holders on mitigation such as new towers or signal boosters 	<ul style="list-style-type: none"> 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, 3 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 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	<ul style="list-style-type: none"> ■ Establish processes and procedures to support engagement ■ Map stakeholders, interests and concerns ■ Introduce key stakeholders to the Proposal ■ Secure land access 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Door knocking ■ Meetings/briefings with key stakeholders ■ Letterbox drops ■ Phone calls ■ Emails 	<ul style="list-style-type: none"> ■ Drop in sessions ■ Meetings ■ Newsletters ■ Emails ■ Phone calls ■ Briefings ■ Site visits ■ Workshops ■ Website updates 	<ul style="list-style-type: none"> ■ Meetings/briefings with key stakeholders ■ Letterbox drops ■ Phone calls ■ Emails ■ Newsletters ■ Website updates ■ Drop-in sessions ■ Reference Group meetings 	<ul style="list-style-type: none"> ■ Check-ins with key stakeholders ■ Phone calls ■ Emails ■ Newsletters ■ Website updates 	<ul style="list-style-type: none"> ■ Meetings/briefings with key stakeholders ■ Letterbox drops ■ Phone calls ■ Emails ■ Newsletters ■ Website updates ■ Drop-in sessions ■ Workshops

	Phase one: feasibility and concept development	Phase two: development	Phase three: construction	Phase four: operations and maintenance	Phase five: decommissioning
Stakeholders	<ul style="list-style-type: none"> ■ Government bodies and regulators ■ Council ■ Directly affected landowners ■ Traditional Owners ■ Neighbours 	<ul style="list-style-type: none"> ■ Government bodies and regulators ■ Council ■ Directly affected landowners ■ Traditional Owners ■ Neighbours ■ Neighbouring communities ■ Training providers ■ Broader community 	<ul style="list-style-type: none"> ■ Government bodies and regulators ■ Council ■ Directly affected landowners ■ Traditional Owners ■ Neighbours ■ Neighbouring communities ■ Training providers 	<ul style="list-style-type: none"> ■ Government bodies and regulators ■ Council ■ Directly affected landowners ■ Traditional Owners ■ Neighbours ■ Neighbouring communities 	<ul style="list-style-type: none"> ■ Government bodies and regulators ■ Council ■ Directly affected landowners ■ Traditional Owners ■ Neighbours ■ Neighbouring communities ■ Training providers
Outputs	<ul style="list-style-type: none"> ■ Key risks and opportunities list ■ CSEP ■ Stakeholder map ■ Landowner access agreements 	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ Communications and Stakeholder Engagement Construction Management Plan 	<ul style="list-style-type: none"> ■ Communication materials as required. ■ Regular reporting on social value impact for Community Benefits Sharing program 	<ul style="list-style-type: none"> ■ 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	Meetings, written correspondence	<ul style="list-style-type: none"> ■ 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. 	<ul style="list-style-type: none"> ■ The information was noted. ■ Alinta Energy will continue to provide updates as the Proposal progresses.
	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	<ul style="list-style-type: none"> ■ Proposal overview and progress updates. ■ Alinta Energy approach to community engagement and community benefit sharing. ■ Grid connection process. 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Proposal overview and progress updates. ■ Green Energy Approvals Initiative and policy considerations. 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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	Meetings, ongoing correspondence	<ul style="list-style-type: none"> ■ Proposal overview and progress updates 	<ul style="list-style-type: none"> ■ The information was noted.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
		13/03/25		<ul style="list-style-type: none"> Approval pathways including SDAU 	<ul style="list-style-type: none"> Alinta Energy will continue to provide updates as the Proposal progresses.
	Mid West Ports Authority	15/12/25 12/06/25	Meetings, ongoing correspondence	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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, storage areas on site and trucks capacity on site. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Proposal overview and progress updates. Grid connection process. Clean Energy Link North program Critical Projects Framework Connection point and transmission routes. 	<ul style="list-style-type: none"> Fortnightly meetings are ongoing in relation to grid connection process. Assessment of potential EMI impacts in progress.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				<ul style="list-style-type: none"> Facilitation of Clean Energy Link Moora Letter sent for consultation on EMI impacts. 	
	Department of Energy and Economic Diversification (DEED)	28/07/25	Meeting	<ul style="list-style-type: none"> Proposal overview and progress updates. Challenges facing timely wind farm development in WA Cumulative impacts assessment. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Letter sent for consultation on potential EMI impacts 	<ul style="list-style-type: none"> No response to date.
	Water Corporation	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on potential EMI impacts. No EMI impacts identified. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Proposal overview. AIPP process and SmartForm process. 	<ul style="list-style-type: none"> Alinta Energy to use new SmartForm for submissions as part of AIP process.
	Bureau of Meteorology (BOM)	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts. 	<ul style="list-style-type: none"> Screening completed indicates potential impact on Watheroo weather radar, detailed assessment in progress.
	Geoscience Australia	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> Confirmed no impact.
	Department of Defence	11/07/25	Letter	<ul style="list-style-type: none"> Copy of the Aviation Impact Assessment report provided for comment 	<ul style="list-style-type: none"> Confirmation of receipt, no further response to date.
	Airservices and Civil Aviation Safety Authority	11/07/25	Letter	<ul style="list-style-type: none"> Copy of the Aviation Impact Assessment report provided for comment 	<ul style="list-style-type: none"> Confirmed no objections
	Powering WA	01/11/24 to present	Meetings, written correspondence, submissions	<ul style="list-style-type: none"> Proposal overview as part of Alinta Energy's SWIS development pipeline. Project Community Benefit Sharing framework. Powering WA Community Benefits Guideline. 	<ul style="list-style-type: none"> Coordinator of Energy provided letter of support.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				<ul style="list-style-type: none"> Proposal overview and progress updates. Wholesale Electricity Market rules to support additional wind projects. 	
	Economic Regulation Authority Western Australia (ERA)	21/2/25 25/2/25-13/08/25 11/3/25	Meeting, written correspondence	<ul style="list-style-type: none"> Proposal overview and progress updates. Electricity Generation Licence process, timelines and costs. 	<ul style="list-style-type: none"> The information was noted.
	AEMO	26/08/24 01/11/24	Meetings	<ul style="list-style-type: none"> Proposal overview as part of Alinta Energy's SWIS development pipeline. Anticipated capacity entry years. 	<ul style="list-style-type: none"> The information was noted.
	Wheatbelt Development Commission	29/05/25 25/08/25	Meetings, written correspondence	<ul style="list-style-type: none"> Proposal overview and progress updates. Invited WDC to September community session and sent Proposal updates. Benefit Sharing, Accommodation and housing, Employment and local content. 	<ul style="list-style-type: none"> 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.
Ministers	Minister for Wheatbelt Chief of Staff for the Minister for Wheatbelt	30/04/25 22/08/25	Meeting, written correspondence	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> No action required.
	Minister for Energy; Environment; Climate Action Reece Whitby	20/02/24 22/11/24	Meetings	<ul style="list-style-type: none"> Alinta Energy indicated we are committed to continue our growth in WA with ambitious plans for the 	<ul style="list-style-type: none"> No action required.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	Chief of Staff Sherrie Wilson Principal Policy Advisor Amy Tait			energy sector's transition to a lower-emission future.	
	WA Ministerial Roundtable: Energy Competitiveness Consultative Group. Clean Energy Council WA Renewable Energy Developers WA Government representatives Coordinator of Energy	06/08/25	Meeting	<ul style="list-style-type: none"> Measures to facilitate new investment in cost-competitive electricity supply and ensure that WA remains an attractive place for industries to invest. 	<ul style="list-style-type: none"> No action required.
	Minister for Local Government; Disability Services; Volunteering; Youth; Gascoyne - Hon Hannah Beazley	22/08/25	Meeting	<ul style="list-style-type: none"> Proposal overview Potential for harmonised local government rates framework for renewable projects. 	<ul style="list-style-type: none"> No action required.
	Deputy Premier; Treasurer; Minister for Transport; Sport and Recreation – Rita Saffioti	22/08/25	Meeting	<ul style="list-style-type: none"> Transmission buildout to support energy transition. 	<ul style="list-style-type: none"> No action required.
	Minister for Local Government and Minister for Energy	01/09/25	Written Correspondence	<ul style="list-style-type: none"> Proposal overview and progress updates. 	<ul style="list-style-type: none"> No action required.
Traditional Owners	South West Aboriginal Land and Sea Council (SWALSC)	19/07/24	Written correspondence and phone call	<ul style="list-style-type: none"> Alinta Energy enquired with SWALSC about the cultural heritage and appropriateness of the Proposal's name. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Continue providing Proposal updates. Signed Heritage Protection Agreement. Provided Desktop Cultural Heritage Assessment. Signed Negotiation Protocol. Commenced agreement making.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Introduce Proposal from concept stage. Presented Proposal to Executives and Councillors providing 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. 	<ul style="list-style-type: none"> 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. Alinta Energy confirmed community benefit fund meets best practice. Alinta Energy attended the local park opening event in Dandaragan.
		November 23 to present	Correspondence	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Information will continue to be provided.
		20/05/25 15/07/25	Meetings and correspondence	<ul style="list-style-type: none"> Discussion on bushfire and emergency management: 	<ul style="list-style-type: none"> Alinta Energy will continue to provide updates

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Input went into the traffic impact assessment. Discussions to continue as Proposal progress.
	Shire of Gingin	28/08/24 04/06/25	Written correspondence	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> No further action required.
	Shire of Moora	09/06/25	Written correspondence	<ul style="list-style-type: none"> Alinta Energy offered the Shire of Moora a Proposal briefing and invited them to have input into the Social Impact Assessment. 	<ul style="list-style-type: none"> No response to date.
Landholders	Host landowners	August 23 to present	In person meetings, phone call, written correspondence	<ul style="list-style-type: none"> Landholder engagement and Proposal concept Wind farm and transmission hosting overview Commercial offers and agreements Proposal layout and design consultation 	<ul style="list-style-type: none"> Multiple iterations of Proposal layout and consultation to maximise co-existence with existing land use while respecting other constraints, including changes such as: <ul style="list-style-type: none"> Roads aligned with cropping operations or existing fence lines where possible.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				<ul style="list-style-type: none"> Notice of onsite surveys and other activities Facilitate participation in social impact assessment Planning for construction, access, biosecurity management. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Asking about possible impacts: noise, shadow flicker Proposal timing Concerns around devaluation of property Environmental concerns Shadow flicker impacted neighbours provided information from assessment. 	<ul style="list-style-type: none"> Alinta Energy's response to date: <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Alinta Energy introduced the Proposal to AGIG and showed the Proposal's internal road plan. Discussions around internal roads crossovers with the Dampier to Bunbury Natural Gas Pipeline. AGIG identified the main risk with pipeline and wind farm interactions 	<ul style="list-style-type: none"> Proposal layout was adjusted to minimise overlap with gas pipeline infrastructure. 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

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				<p>and preferred mitigations to these risks.</p> <ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<p>infrastructure crossings over the pipeline.</p>
	APA Parmelia Gas Pipeline	07/08/25	Meetings, written correspondence	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts and infrastructure located on leased land within the Proposed Development Envelope. 	<ul style="list-style-type: none"> No response to date.
	Iluka Resources	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
Community Groups	Advance Dandaragan	November 24 to present	Emails and meetings	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
				<ul style="list-style-type: none"> 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 	
	Dandaragan Primary School	28/03/25 to present	Emails and meetings	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Dandaragan Golf Club engaged with Alinta Energy regarding their need for funding for a new mower for the club. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Discussion with Dandaragan Heritage and Cultural Centre Inc about funding opportunities and future Community Benefit Sharing. 	<ul style="list-style-type: none"> Provided information on Alinta Energy Grants Fund Ongoing discussion on the community benefit sharing fund.
	Badgingarra community	01/12/24	In person event	<ul style="list-style-type: none"> Attended the Badgingarra Christmas Market stall to introduce Alinta Energy to the community and discuss the development pipeline, including Marri Wind Farm. 	<ul style="list-style-type: none"> 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	November 24 to present	Emails, phone, face to face.	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
				Resource Centre for a fortnightly pop-up office.	
	Local Community	April 25 to present	Survey, interviews, emails	<ul style="list-style-type: none"> A range of community members, stakeholders, landowners and neighbours participated in the social impact assessment process 	<ul style="list-style-type: none"> Feedback and insight was used in the development of the social impact assessment
		10/04/25	Drop-in information session	<ul style="list-style-type: none"> Alinta Energy hosted a community information session at Dandaragan Club where the Proposal team delivered an open community engagement 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. 	<ul style="list-style-type: none"> Post consultation report summarises the feedback received.
		04/09/25	Drop-in information session	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Post consultation report summarises the feedback received.
Industry/ Service Providers	Clean Energy Council WA Renewable Energy Developers	10/10/24	Meeting	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> No action required.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	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	<ul style="list-style-type: none"> Industry roundtable to discuss what is needed to ensure new renewable generation can reach FID. 	<ul style="list-style-type: none"> No action required.
	MEGT	29/07/25	Meeting	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Alinta Energy agreed to continue to work with MEGT where appropriate regarding skills, training and workforce development.
	Bamford Consulting Ecologists	11/07/25	Meeting	<ul style="list-style-type: none"> Black Cockatoo flight behaviour and flight height data, adaptive management plan 	<ul style="list-style-type: none"> Increase to turbine minimum tip height Sourcing of additional regional black cockatoo flight height data Development of bird and bat adaptive management plan
	WA Police	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	Dunn Aviation	27/08/25 30/09/25	Letter Meeting	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Meeting scheduled on to discuss.
	St John Ambulance	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	Starlink Australia Pty Ltd (Starlink)	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	Optus	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.

Stakeholder category	Organisation	Dates	Engagement type	Topics raised/discussed	Response/outcome
	TPG Telecom	27/08/25	Letter/ email	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	NBN Co	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	BAI Communications	27/08/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	Lawson Grains	25/9/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	AFGRI	25/09/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	Karakin Wind Farm	14/10/25	Letter	<ul style="list-style-type: none"> Letter sent for consultation on EMI impacts 	<ul style="list-style-type: none"> No response to date.
	ICN WA (Industry Capability Network)	01/08/25 23/09/25	Meeting Presentation	<ul style="list-style-type: none"> Set up a Proposal ICN Gateway webpage to allow local suppliers to register interest. Alinta Energy presented the Proposal to ICNWA <i>Setting up for Success</i> supplier workshop, providing overview of the Proposal and its procurement strategy, work packages, local content and employment opportunities. 	<ul style="list-style-type: none"> 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
<p>1. The precautionary principle</p> <p>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.</p> <p>In the application of the precautionary principle, decisions should be guided by:</p> <ul style="list-style-type: none"> ■ Careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and ■ An assessment of the risk-weighted consequences of various options. 	<p>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).</p> <p>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:</p> <ul style="list-style-type: none"> ■ Flora and vegetation ■ Terrestrial fauna ■ Aboriginal heritage ■ Traffic impact assessment ■ Visual impact assessment ■ Bushfire risk and management <p>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.</p> <p>Targeted and further studies are in progress or scheduled for completion as outlined in Sections 6 through to 9.</p>
<p>2. The principle of intergenerational equity.</p> <p>The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.</p>	<p>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.</p> <p>When decommissioned, the Proposal site will be rehabilitated in line with previous land use, in consultation with the relevant landowners.</p>
<p>3. The principle of the conservation of biological diversity and ecological integrity.</p> <p>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</p>	<p>The conservation of biological diversity and ecological integrity is a fundamental consideration in the assessment of this Proposal.</p> <p>Wherever possible:</p> <ul style="list-style-type: none"> ■ 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.

Principle (s.4A of EP Act)	Application of the principle
<p>4. Principles relating to improved valuation, pricing, and incentive mechanisms</p> <ul style="list-style-type: none"> ■ 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. ■ 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. 	<p>Environmental constraint of avoidance and management costs will be considered in the planning and design phases of the Proposal.</p> <p>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.</p>
<p>5. The principle of waste minimisation</p> <p>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</p>	<p>Waste will be minimised by adopting the hierarchy of waste controls: avoid, minimise, reuse, recycle, and safe disposal.</p> <p>If required, additional licences or permits will be obtained.</p>

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 5 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 Proposed 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 Proposed Development Envelope or within the vicinity of. No impact expected.

Themes	Factor	Objectives	Considerations
	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 Proposed 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 so that environmental values are protected.	Not relevant to this Proposal The Proposal is not anticipated to significantly impact Inland Waters (surface waters) within the Proposed Development Envelope or within the vicinity of. 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 Proposed 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/s and objective/s

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

In addition to the legislative context outlined in Section 2, the policies and guidance relevant to this key environmental factor have been listed in Table 6-1.

Table 6-1 Policy and guidance – flora and vegetation

Author, Year	Title	Consideration
Legislation		
(DCCEEW, 1999)	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)</i>	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.
(DWER, 1986)	<i>Environmental Protection Act 1986 (WA) (EP Act)</i>	This Act provides for the EPA, for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.
(DBCA, 2016)	<i>Biodiversity Conservation Act 2016 (WA) (BC Act)</i>	This Act provides for the conservation and protection of biodiversity in Western Australia, ecological sustainable use of biodiversity components in WA.
(DPIRD, 2007)	<i>Biosecurity and Agriculture Management Act 2007 (WA)</i>	Declared pests under this Act will be considered and managed during the construction and operational phases of the Proposal.
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.

Author, Year	Title	Consideration
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 ecological community.
(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 of the Swan Coastal Plain ecological community.
(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 Surveys and survey efforts

Multiple flora and vegetation assessments have been completed within the Proposed Development Envelope and surrounding areas. These have included desktop reviews, reconnaissance surveys, and targeted field studies. Majority of these surveys have been conducted with consideration of with the *Technical Guidance* (EPA, 2016b), as well as supplementary and out-of-season surveys.

As a result of reiterative design refinements, the Proposal study area was split into 2 subareas: the windfarm footprint (MWF) and the transmission footprint (TX).

Originally, the transmission line had a southward alignment (Option A). Following further design optimisation to avoid potential environmental impacts, the Proposed Transmission line now represents an east to west alignment (Option B). These additional areas are included within the survey effort (Phoenix Technical Memorandums, as summarised in Table 6-2).

6.3.1 Baseline studies

The Proposed Development Envelope is surrounded by land greatly modified over the past 200 years for agricultural purposes; it is noted that >92% of the Proposed Development Envelope surface area has been utilised for agricultural production. Agriculture is the most predominant current land use within the Dandaragan Plateau.

Due to the absence of historical flora and vegetation survey data, and given historical land use, information from within a 30 km radius of the Proposed Development Envelope has been utilised to inform this flora and vegetation assessment as shown in Table 6-2.

Since September 2024, additional in field surveys have been completed to further support this Proposal. Reconnaissance surveys followed by targeted flora and vegetation mapping surveys were completed across a total area of approximately 14,000 ha. In total, 17 relevés and 41 site descriptions were recorded (Figure 6-1) across the Proposed Development Envelope (Phoenix, 2025).

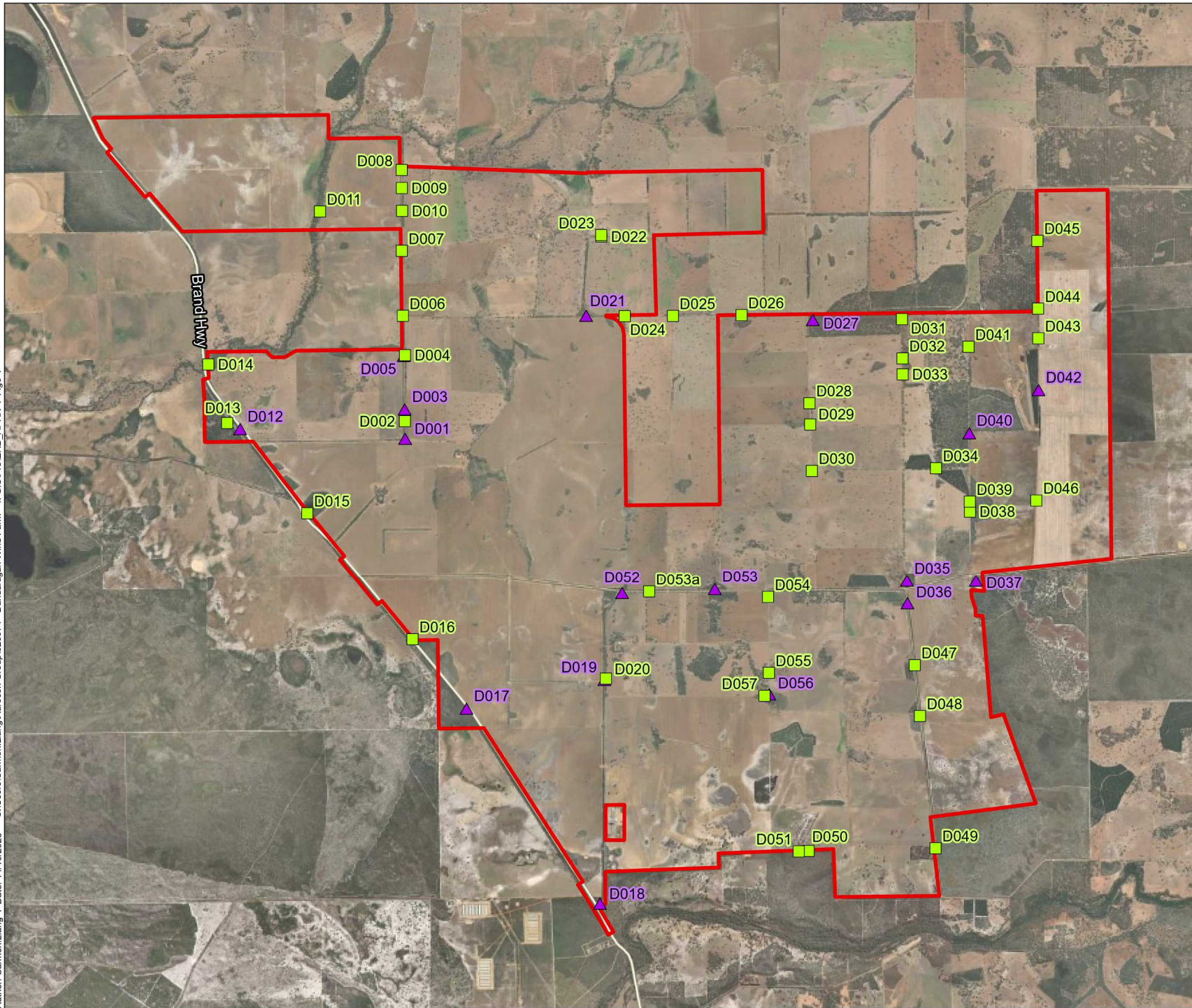
A summary of the flora and vegetation environmental studies which support this Proposal is provided below in Table 6-2.

Table 6-2 Flora and vegetation surveys informing the Proposal

Consultant / year	Report title	Report No.	Survey type	Survey area
Phoenix Environmental Sciences (September 2025)	Technical Memo: Additional vegetation mapping of the Transmission and Wind Farm study areas for the Proposal	1738	Flora and vegetation mapping	MWF Proposed Development Envelope
Phoenix Environmental Sciences (July 2025)	Technical Memo: Targeted flora and vegetation survey of the Transmission and Wind Farm study areas for the Proposal	1738	Targeted flora and vegetation survey Field survey undertaken July 2025 (supplementary survey season)	TX Footprint, south of Proposed Development Envelope
Phoenix Environmental Sciences (February 2025)	Technical Memo: Targeted flora and vegetation survey for the Proposal	1707	Targeted flora and vegetation survey Field survey undertaken February 2025 (out of season)	MWF Proposed Development Envelope
Phoenix Environmental Sciences (September 2024)	Fatal flaws desktop assessment and reconnaissance survey for the Proposal - Report 1674	1674	Desktop and Reconnaissance survey Field survey undertaken September 2024 (primary survey season)	MWF Proposed Development Envelope
Terratree (2019)	Yandin Road Area		Targeted flora and vegetation survey	9.3 km N
Ecologia (2018)	Yandin Wind Farm Supplement flora and vegetation survey		Detailed flora and vegetation survey	8.8 km N
360 (2018)	Mogumber Poultry Farm II Development		Detailed flora and vegetation survey	22.8 km SEE
Astron (2016)	Brand Highway, Regans Ford		Detailed flora and vegetation survey	Next to Proposed Development Envelope

Source: Phoenix Environmental Sciences Pty Ltd Fatal flaws desktop assessment and reconnaissance survey for the Marri Wind Farm Project, March 2025.

- Proposed Development Envelope
- Sampling Sites**
- ▲ Relevé
- Site description



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



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6.4 Receiving environment

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, 2016).

The Proposed Development Envelope is located across the Perth and Dandaragan Plateau subregions, both within the Swan Coastal Plan IBRA bioregion (Phoenix, 2025a). These subregions are defined as follows:

- Perth subregion (Mitchell, Williams, & Desmond, 2002):
"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".
- Dandaragan Plateau subregion (Desmond, 2001):
"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".

Several nature reserves occur within 5 km of the Proposed Development Envelope. Most notably, Namming Reserve lies adjacent to the southwest. Other nearby reserves include Moochamulla, Bundarra, Quins Hill and 2 unnamed reserves (Phoenix, 2025a). Lake Guraga is located 5 km west (listed in the Directory of Important Wetlands) and 2 small areas along the Moore River system are located approximately 2.1 km to the west of the Proposed Development Envelope.

No Environmentally Sensitive Areas are intercepted by the Proposed Development Envelope (Phoenix, 2025a).

6.4.1 Land systems and surface geology

The surface land within and surrounding the Proposed Development Envelope have been historically cleared and modified, with the Dandaragan Plateau commonly been used for agriculture. Land and surface and geology mapping primarily informs pastoral and agricultural land capabilities, but also aids biological assessments by defining with recurring patterns of landforms, soils, vegetation and drainage (Tille, 2006). Regional geology types and regional land systems influence the types of flora communities and fauna habitats (Section 7) most likely to occur in such an area. A summary is provided in Section 1.5.3.

6.4.2 Vegetation

6.4.2.1 Pre-European vegetation

Pre-European vegetation in Western Australia was broadly characterised by Beard (1990) and reassessed and updated by Shepherd et al. (2002).

As discussed in Section 1.5.2, the Proposed Development Envelope intersects 4 Beard Vegetation Associations (Table 1-9 and Figure 6-2). These comprise a medium Marri woodland, low Banksia woodland, mosaic Hakea and Dryandra shrublands and mosaic medium open Marri woodland and Dryandra shrubland.

6.4.2.2 Local vegetation types

A total of 16 vegetation types were defined and mapped by Phoenix (2025) within the Proposed Development Envelope.

Among these, the most prevalent native vegetation types are Banksia woodlands:

- BaXpHcMp (129.11 ha, representing 1.03% of the Proposed Development Envelope)
- CcJsHh (286.21 ha, representing 2.29% of the Proposed Development Envelope).

Five of the sixteen identified vegetation types are broadly characterised and summarised in Table 6-3. The overall assessed vegetation condition is presented in Figure 6-5.

The BaXpHcMp vegetation type mapped within the Proposed Development Envelope represents a TEC. Further details on this TEC are provided in Section 6.5.2.

In addition to vegetated areas, the Proposed Development Envelope also contains non-vegetated or cleared land, including paddocks, pastures, and roads.

Table 6-3 Vegetation types, description, extent and direct impact area within the Proposed Development Envelope

Mapped vegetation types	Total surveyed area (ha)	Vegetation health classification	Individual classification area (ha)	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Footprint	
				Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
Ag: Agricultural land absent of native vegetation	6,064.943	Completely Degraded	6,064.359	4,440.58	35.60%	572.58	59.37%	4,433.44	43.6%
		Degraded	0.584	0.00	0.00%	0.00	0.00%	0.00	0.00%
Ag(Cc): Agricultural land with low to mid isolated trees to open woodland of <i>Corymbia calophylla</i> (occasionally <i>E. todtiana</i>), over low sparse to closed grassland of non-native crop or pasture species.	1,055.673	Completely Degraded	1,026.396	747.51	5.99%	77.64	8.05%	746.72	7.35%
		Degraded	29.277	21.47	0.17%	0.06	0.01%	21.35	0.21%
Ag(Cc)/Ag: Complex; mix of units Ag(Cc) and Ag	1.977	Degraded	1.977	1.45	0.01%	0.35	0.04%	1.45	0.01%
AsSpp: Tall open shrubland to shrubland of <i>Acacia saligna</i> and <i>Jacksonia sternbergiana</i> , over low sparse to closed grassland of non-native weed species.	5.127	Good	5.127	0.00	0.00%	0.00	0.00%	0	0.00%
BaXpHcMp: Low open woodland to woodland of <i>Banksia attenuata</i> , <i>B. prionotes</i> , <i>B. menziesii</i> , over mid to tall sparse to open shrubland of <i>Xanthorrhoea preissii</i> , <i>Allocasuarina humilis</i> ,	593.64	Degraded	0.671	0.49	0.00%	0.03	0.00%	0.47	0.00%
		Excellent	487.11	87.06	0.70%	0.15	0.02%	50.32	0.49%
		Good	2.378	0.40	0.00%	0.00	0.00%	0.39	0.00%
		Not Assessed	15.889	1.74	0.01%	0.00	0.00%	0	0.00%
		Very Good	87.592	39.42	0.32%	0.02	0.00%	31.99	0.31%

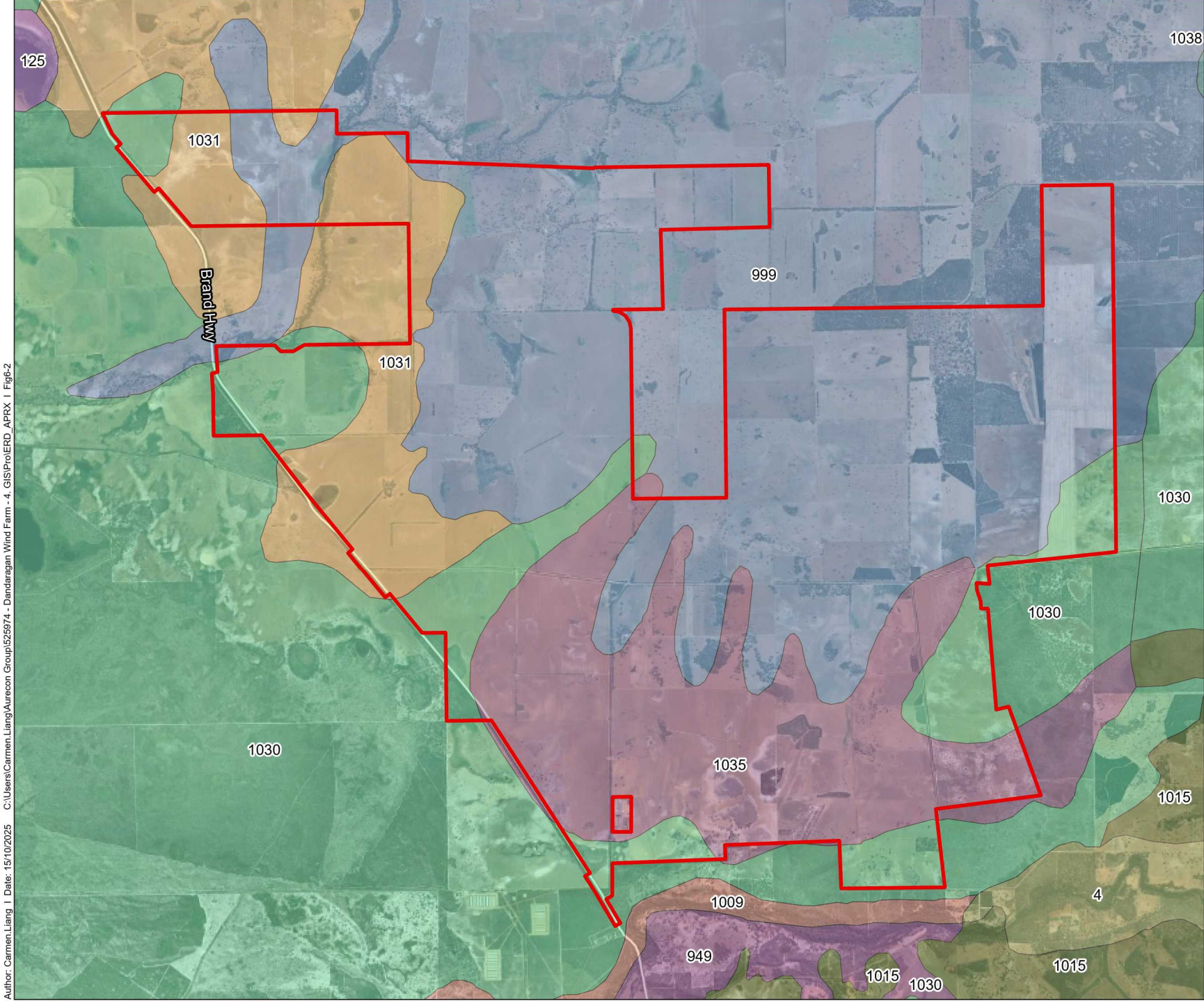
Mapped vegetation types	Total surveyed area (ha)	Vegetation health classification	Individual classification area (ha)	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Footprint	
				Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
Calothamnus quadrifidus subsp. quadrifidus, over low sparse shrubland to shrubland*									
BhSpp: Mid to tall shrubland of <i>Banksia hewardiana</i> , <i>Xanthorrhoea preissii</i> , over low sparse to closed grassland of non-native crop/pasture/weed species.	31.596	Degraded	23.457	17.21	0.14%	1.18	0.12%	17.21	0.17%
		Very Good	8.139	5.97	0.05%	0.25	0.03%	5.97	0.06%
CcJsHh: Low to mid open woodland to woodland of <i>Corymbia calophylla</i> occasionally with <i>Eucalyptus tottiana</i> , over mid to tall sparse to open shrubland variably of <i>Jacksonia sternbergiana</i> , <i>Xanthorrhoea preissii</i> , <i>Macrozamia fraseri</i> , over variably present low sparse *	414.84	Degraded	17.243	12.65	0.10%	0.29	0.03%	12.11	0.12%
		Excellent	311.34	221.81	1.78%	0.14	0.01%	73.26	0.72%
		Good	40.057	24.65	0.20%	0.93	0.10%	24.59	0.24%
		Pristine	2.461	1.80	0.01%	0.00	0.00%	1.80	0.02%
		Very Good	43.739	25.30	0.20%	0.02	0.00%	23.07	0.23%
CcXd: Low to mid open woodland to woodland of <i>Corymbia calophylla</i> , over mid to tall open shrubland to shrubland of <i>Xanthorrhoea drummondii</i> and <i>Banksia carlinoides</i> .	31.509	Degraded	11.689	8.57	0.07%	0.00	0.00%	8.57	0.08%
		Excellent	12.356	9.06	0.07%	0.00	0.00%	3.70	0.04%
		Good	7.464	5.47	0.04%	0.00	0.00%	5.47	0.05%

Mapped vegetation types	Total surveyed area (ha)	Vegetation health classification	Individual classification area (ha)	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Footprint	
				Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
ChPbMp: Mid shrubland of <i>Calothamnus hirsutus</i> , <i>Gastrolobium calycinum</i> , occasional <i>Allocasuarina humilis</i> , over low sparse shrubland of <i>Petrophile brevifolia</i> , over low sparse sedgeland of <i>Mesomelaena pseudostygia</i> with non-native weed species.	54.57	Degraded	1.252	0.29	0.00%	0.05	0.01%	0.29	0.00%
		Excellent	17.827	7.36	0.06%	0.05	0.01%	7.30	0.07%
		Good	0.491	0.00	0.00%	0.00	0.00%	0.00	0.00%
		Very Good	34.91	2.65	0.02%	0.31	0.03%	2.65	0.03%
ChScLb: Mid open shrubland of <i>Calothamnus hirsutus</i> , <i>Xanthorrhoea preissii</i> , over low open to closed heathland of <i>Styphelia conostephioides</i> , <i>Leucopogon oliganthus</i> , <i>Verticordia densiflora</i> var. <i>cespitosa</i> , over low sparse sedgeland of <i>Lyginia imberbis</i> , <i>Chordifex</i>	13.196	Excellent	3.709	0.00	0.00%	0.00	0.00%	0.00	0.00%
		Good	3.743	2.13	0.02%	0.04	0.00%	2.13	0.02%
		Very Good	5.744	3.76	0.03%	0.11	0.01%	3.76	0.04%
Cleared: Areas cleared of native vegetation (inclusive of roads, vehicle tracks).	185.757	Completely Degraded	185.757	63.40	0.51%	12.15	1.26%	61.85	0.6%
EaaGs: <i>Eucalyptus arachnea</i> subsp. <i>arachnea</i> , <i>E.</i>	2.283	Good	2.283	1.67	0.01%	0.00	0.00%	1.67	0.016%

Mapped vegetation types	Total surveyed area (ha)	Vegetation health classification	Individual classification area (ha)	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Footprint	
				Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
<i>wandoo subsp. wandoo</i> , over low isolated shrubs of <i>Gastrolobium spinosum</i> , <i>Hakea lissocarpa</i> , over low sparse grassland of non-native crop/pasture/weed species.									
EcoCoMa: Mid isolated trees of <i>Eucalyptus camaldulensis subsp. obtusa</i> , over low open woodland of <i>Casuarina obesa</i> , over sparse to open sedgeland of <i>Machaerina arthophylla</i> .	1.642	Very Good	1.642	0.09	0.00%	0.00	0.00%	0.00	0.00%
ErrMr: Mid open woodland of <i>Eucalyptus rudis subsp. rudis</i> with occasional <i>Corymbia calophylla</i> , over tall sparse shrubland of <i>Melaleuca raphiophylla</i> , <i>Acacia spp.</i> , over low sparse to closed grassland of non-native crop or pasture species.	17.869	Good	17.869	7.59	0.06%	0.00	0.00%	7.54	0.07%
EtJsCs: Low sparse to open woodland of <i>Eucalyptus todtiana</i> , occasionally with scattered <i>Corymbia calophylla</i> and/or	111.521	Degraded	0.65	0.48	0.00%	0.00	0.00%	0.5	0.00%
		Excellent	61.218	44.23	0.35%	0.00	0.00%	27.56	0.27%
		Good	1.063	0.78	0.01%	0.02	0.00%	0.78	0.01%
		Very Good	48.59	19.88	0.16%	0.47	0.05%	19.83	0.20%

Mapped vegetation types	Total surveyed area (ha)	Vegetation health classification	Individual classification area (ha)	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Footprint	
				Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
<i>Banksia spp.</i> , over variable low to mid sparse to open shrubland of <i>Jacksonia sternbergiana</i> , <i>Calothamnus hirsutus</i> , <i>Allocasuarina humilis</i> .									
JspLa: Tall rushland of <i>Juncus sp.</i> , <i>Typha domingensis</i> , <i>Gahnia sp.</i> , over low sparse forbland of <i>Lobelia anceps</i> , * <i>Vellereophyton dealbatum</i> , <i>Cycnogeton lineare</i> .	14.079	Degraded	5.723	4.20	0.03%	0.02	0.00%	4.13	0.04%
Good		8.357	6.13	0.05%	0.00	0.00%	6.13	0.06%	
N/A: Not assessed	2.126	Not Assessed	2.126	0.00	0.00%	0.00	0.00%	0.00	0.00%
Pssp: Plantings/plantation (non-remnant) composed of mid to tall open woodland to open forest variably of <i>Pinus spp.</i> and <i>Eucalyptus spp.</i> , over low sparse to closed grassland of non-native crop/pasture/weed species.	41.702	Completely Degraded	41.702	30.58	0.25%	1.63	0.17%	30.58	0.03%
Water: Natural water body.	1.268	Not Assessed	1.268	0.00	0.00%	0.00	0.00%	0.00	0.00%
XpLs: Low shrubland of <i>Xanthorrhoea preisii</i> ,	4.972	Excellent	3.222	2.36	0.02%	0.00	0.00%	2.14	0.02%
		Good	1.75	1.28	0.01%	0.00	0.00%	1.28	0.01%

Mapped vegetation types	Total surveyed area (ha)	Vegetation health classification	Individual classification area (ha)	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Footprint	
				Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
Calothambus hirsutus, over low sparse to open forbland of Lepidosperma squamatum, L. tenue, Desmocladus flexuosus.									
Total	8,650.291			5,871.48		668.48		5,642.12	



Proposed Development Envelope

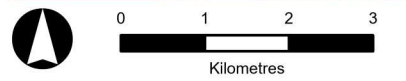
Pre-European Vegetation (DPIRD-006)

- 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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6.4.2.3 Significant vegetation

Threatened and Priority Ecological Communities

Banksia Woodlands of the Swan Coastal Plain ecological community a nationally endangered ecological community listed under the EPBC Act and classified as a Priority 3 PEC by DBCA (hereafter referred to as Banksia Woodlands TEC) was recorded within the Proposed Development Envelope. A total of 427.42 ha of the Banksia Woodlands of the Swan Coastal Plain TEC has been identified within the area surveyed - Proposed Development Envelope and vicinity (refer to Section 6.4 for study area delineations) (Phoenix, 2025b). The majority of the TEC surveyed (352.89 ha) are existing records of the TEC that were visited and confirmed, followed by 62.88 ha represent new records of the TEC (the remainder are pre-existing records of the TEC, not visited during the surveys).

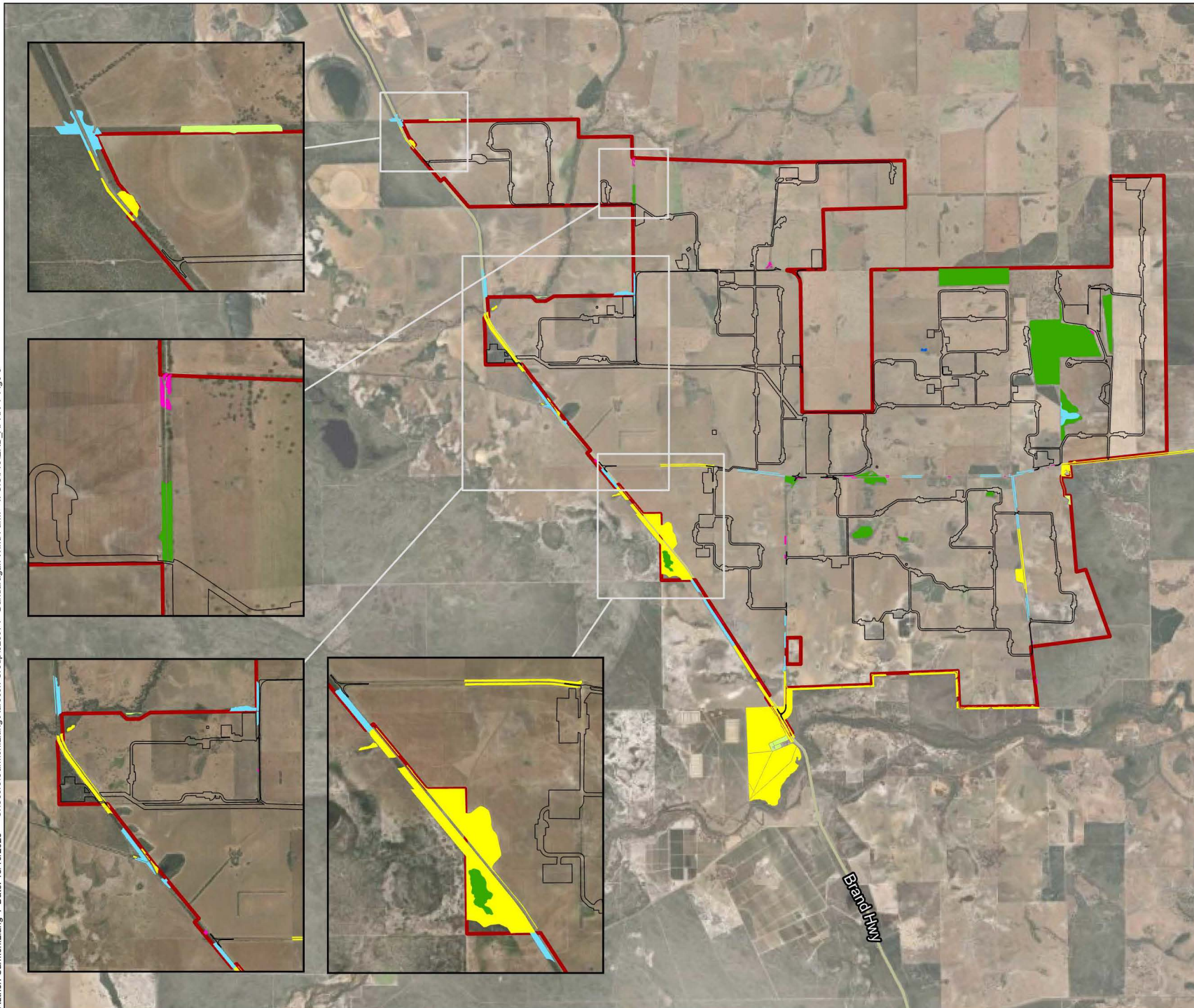
Of the total of 427.42 ha of Banksia Woodlands of the Swan Coastal Plain TEC within the areas surveyed (as outlined above) 186.5 ha (approximately 44%) occurs in the Proposed Development Envelope and immediate surrounds (Phoenix, 2025b). The majority of the Proposed Construction Footprint avoids intersection with the TEC, however approximately 0.170 ha of Banksia Woodlands TEC (approximately 0.153 ha in excellent condition and approximately 0.015 ha in very good condition) is proposed to be impacted by the Proposal (Figure 6-3). This equates to approximately 0.1% of the total surveyed Banksia Woodlands TEC in the Proposed Development Envelope.

Additionally, 2 categories of recognised localised significant flora communities were observed within the study area including:

1. vegetation of high value, and
2. vegetation analogous to Banksia Woodlands of the Swan Coastal Plain TEC (Figure 6-3).

High value habitat is classified as locally significant vegetation due to its high plant species diversity and its potential to support other important flora. These areas are generally too small or degraded to be regarded as TEC, however the in-situ vegetation is analogous to Banksia Woodlands TEC. Vegetation analogous to Banksia Woodlands of the Swan Coastal Plain TEC encompasses 6.13 ha within the Proposed Development Enveloped surveyed. An additional 1.22 ha of locally significant vegetation analogous to Banksia TEC was identified in the survey (Phoenix, 2025b).

No other TEC or PEC identified in the Phoenix (2025) desktop review were observed or deemed to occur within the Proposed Development Envelope. Presence of other conservation ecological communities were discounted by incompatible species composition and/or landform (Phoenix, 2025b).

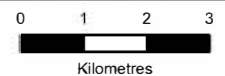


- Proposed Development Envelope
- Proposed Construction Footprint
- Significant Vegetation**
- Analogous to Banksia Woodlands of Perth and surrounding area.
- Previously recorded TEC.
- New recorded instance of TEC.
- Potentially vegetation of high value.
- Pre-existing TEC record
- Vegetation of high value.

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



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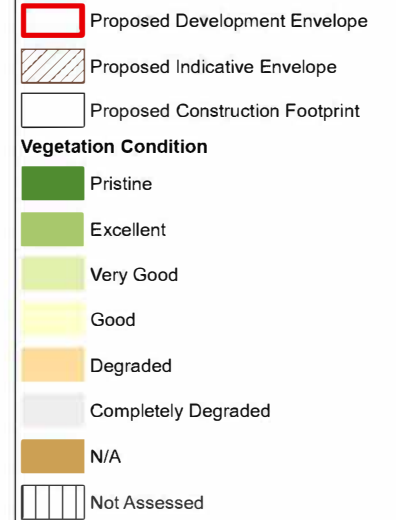
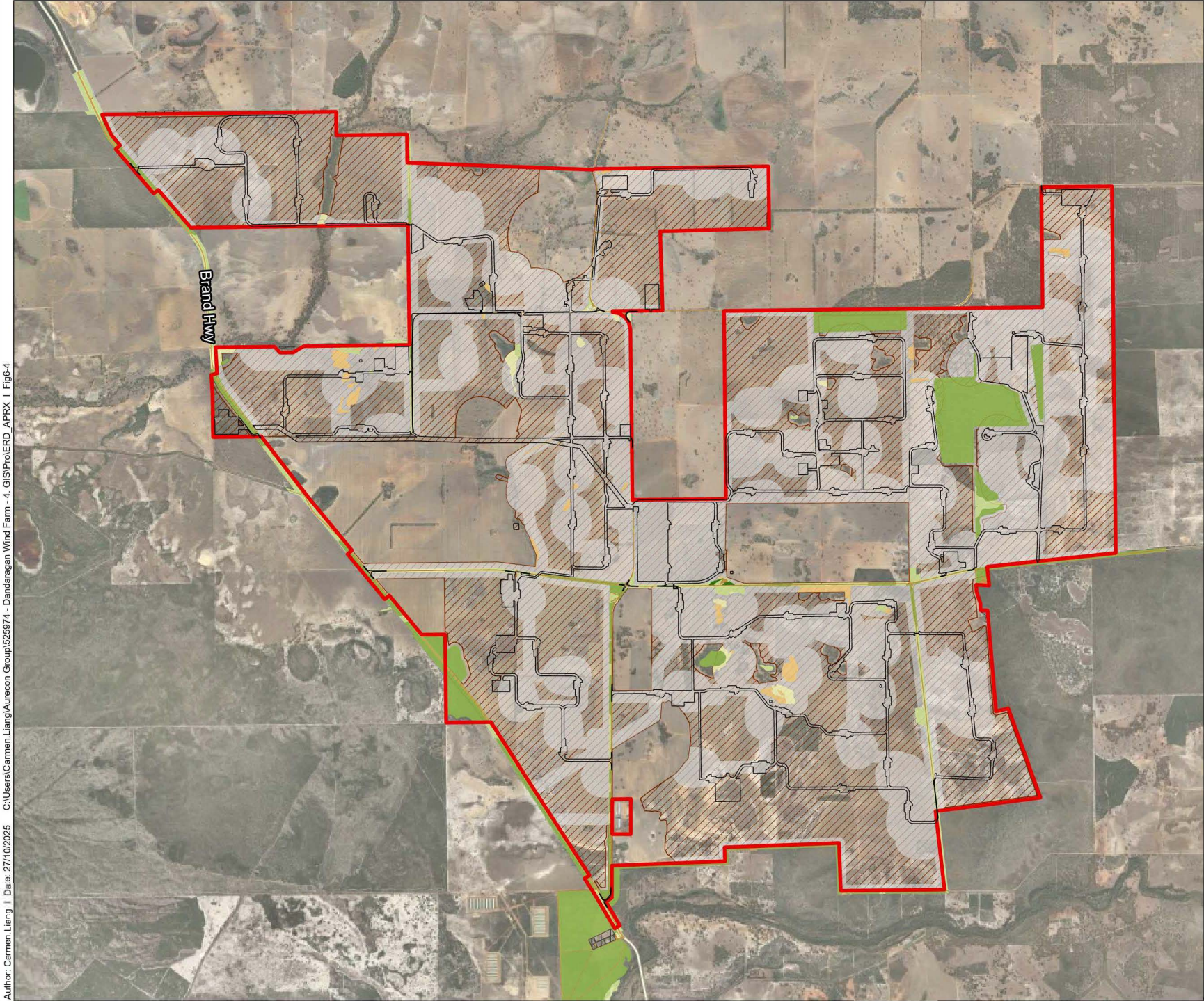


6.4.2.4 Vegetation condition

Vegetation condition within the Proposed Development Envelope ranges from Pristine to Degraded, with the majority (approximately 41%) classified as Completely Degraded. A summary of the surveyed vegetation condition within the Proposed Development Envelope is provided in Table 6-4.

Table 6-4 Vegetation condition of remnant vegetation

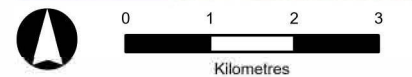
Vegetation condition	Proposed Development Envelope		Proposed Construction Footprint		Proposed Indicative Envelope	
	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)
Pristine	1.80	0.01	0.00	0.00	1.80	0.02
Excellent	371.88	2.98	0.36	0.04	164.29	1.62
Very good	97.07	0.78	1.17	0.12	87.34	0.86
Good	50.10	0.40	0.99	0.10	49.99	0.49
Poor	0.00	0.00	0.00	0.00	0.00	0.00
Degraded	66.80	0.54	1.97	0.20	66.06	0.61
Completely Degraded	5218.68	41.84	651.84	67.59	5210.75	55.54



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



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6.4.2.5 Flora

A total of 72 flora taxa were recorded within the Proposed Development Envelope including 4 significant flora species, consisting of 4 Priority flora, and an additional 3 potential Priority flora species. No Threatened species listed under the BC Act or EPBC Act have been recorded within the Proposed Development Envelope to date (Phoenix, 2025c).

6.4.2.6 Priority flora

Four priority species have been recorded within the Proposed Development Envelope:

- *Banksia dallanneyi* subsp. *pollostata* (P3),
- *Stylidium aceratum* (P3),
- *Platysace ramosissima* (P3) and
- *Verticordia lindleyi* subsp. *lindleyi* (P4).

The latter 2 species were recorded within low heathlands and only *B. dallanneyi* subsp. *pollostata* (P3) was found to occur within the Proposed Indicative Envelope (Figure 6-5).

Banksia dallanneyi subsp. *pollostata* (P3) was widespread within the Proposed Development Envelope and often found to co-occur with the common, non-significant, taxon *B. dallanneyi* subsp. *dallanneyi*. This species was recorded within remnant vegetation on road verges, growing amongst populations of *Banksia*, *Corymbia calophylla* woodlands and low Kwongan heathlands.

6.4.2.7 Unresolved Priority flora

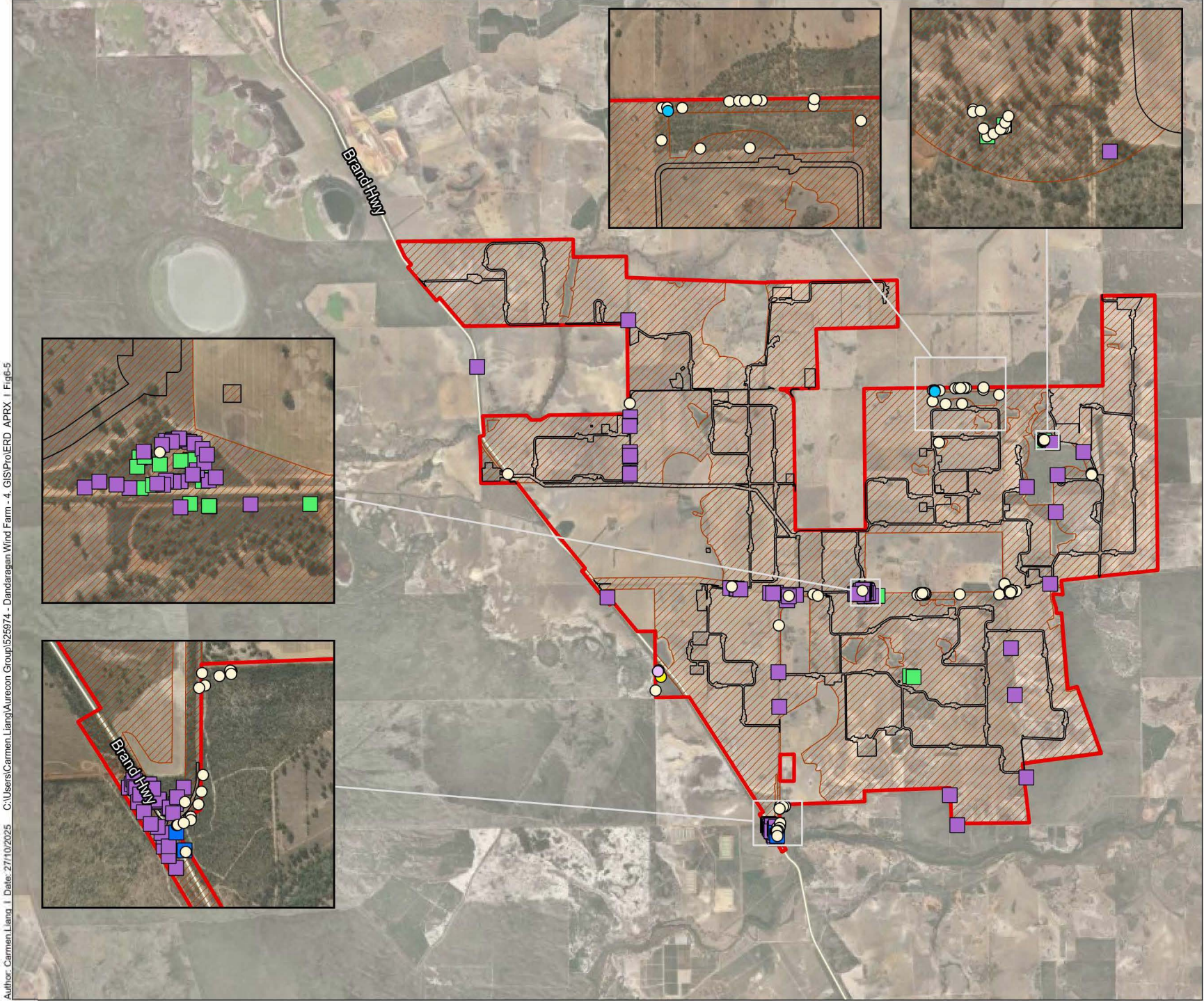
Three potential Priority flora were recorded within the Proposed Development Envelope (Figure 6-5). Potentially Priority flora taxa resemble specimens which could not be clearly identified to species or subspecies level in the field, or due to the lack of reproductive characteristics (absent or previous season and of a decayed and incomplete condition) (Phoenix, 2025d). Each taxon is described in Table 6-5.

Table 6-5 Unresolved Priority flora within the Proposed Development Envelope

Unresolved Taxa	Description
<i>Banksia dallanneyi</i> (sens.lat)	Morphologically similar sub-species co-occur widely across the Proposed Development Envelope; subsp. <i>pollostata</i> (P3) and subsp. <i>dallanneyi</i> (not threatened). Recorded within remanent vegetation on road verges, growing amongst <i>Banksia</i> , and <i>Corymbia calophylla</i> woodlands to low kwongan heathlands.
<i>Synaphea</i> sp.	Potentially represents either <i>Synaphea panhesya</i> (P1) or <i>Synaphea sparsiflora</i> (P2) known to occur in the area. Recorded growing amongst <i>C. calophylla</i> , <i>Banksia</i> spp., <i>Allocasuarina</i> and <i>Xanthorrhoea preissii</i> .
<i>Anigozanthos humilis</i> (sens. lat.)	Encompasses 3 subspecies; Badgingarra (S.D. Hopper 7114) (P2), <i>chrysanthus</i> (P4) and <i>humilis</i> (unthreatened), all of which occur within the Proposed Development Envelope. Recorded within mapped boundaries of the <i>Banksia</i> Woodlands of the Swan Coastal Plain TEC on the road verge.

Source: Phoenix Environmental Sciences Pty Ltd Fatal flaws desktop assessment and reconnaissance survey for the Marri Wind Farm Project, March 2025.

Applying the precautionary principle, these 3 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.



- Proposed Development Envelope
 - Proposed Indicative Envelope
 - Proposed Construction Footprint
- Significant Flora Records**
- DBCA List Species**
- Banksia dallanneyi subsp. pollostata*, P3 (DBCA list)
 - Platysace ramosissima*, P3 (DBCA list)
 - Stylidium aceratum*, P3 (DBCA list)
 - Verticordia lindleyi subsp. lindleyi*, P4 (DBCA list)
- Potential Priority Species**
- Anigozanthos humilis*, Potential Priority species
 - Banksia dallanneyi*, Potential Priority species
 - Synaphea sp.*, Potential Priority species

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



Author: Carmen Liang | Date: 27/10/2025 | C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\ProJRD APRX | Fig6-5



6.4.3 Introduced flora (weeds) and diseases

Three introduced species (**Chamaecytisus palmensis*, **Rumex pulcher subsp. pulcher* and **Vellereophyton dealbatum*), have been recorded within the Proposed Development Envelope (Phoenix, 2025b). None of these are listed as declared pests under the *Biosecurity and Agriculture Management Act 2007* (WA) or a Weed of National Significance on the Western Australian Organism List database.

Phytophthora Dieback has not been recorded in the Proposed Development Envelope or the surrounds (DBCA, 2025). The closest recorded occurrence is the northwest border of Moore River National Park approximately 10 km southwest of the Proposed Development Envelope (DBCA, 2025).

6.5 Potential environmental impacts

Potential environmental impacts on flora and vegetation that may result from implementing this Proposal are summarised in the sections below. Corresponding mitigation measures to address these impacts are provided in Section 6.7.

6.5.1 Potential direct impacts

The potential direct impacts which may result from implementation of the Proposal are detailed in Table 6-6, as per each phase of delivery.

Table 6-6 Potential direct impacts to flora and vegetation

Phase	Activity
Construction	Clearing of native vegetation (excluding completely cleared agricultural land, including degraded agricultural land with scattered native vegetation) within the Proposed Development Envelope will not exceed 84 ha (of currently surveyed areas) or occur outside of the Proposed Indicative Envelope.
	Clearing of approximately 0.170 ha of conservation significant vegetation (including Banksia Woodland TEC)
Decommissioning	Potential ground disturbance
	Compacted ground related to operational use

6.5.2 Potential indirect impacts

The potential indirect impacts which may result from implementation of the Proposal are detailed in Table 6-7, as per each phase of delivery.

Table 6-7 Potential indirect impacts to flora and vegetation

Phase	Activity
Construction	Degradation of vegetation condition due to increased abundance of weed species and cleared areas (edge effect)
	Degradation of vegetation from dust deposition and potential increase in bushfire risk.
Decommissioning	Degradation of vegetation condition due to increased abundance of weed species
	Degradation of vegetation from dust deposition and potential increase in bushfire risk.

6.5.3 Cumulative impacts

Cumulative impacts are defined as “the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities” (EPA, 2021b). The Proposal will contribute to the following cumulative impacts at a regional scale:

- Clearing of native vegetation
- Clearing of Priority flora individuals

- Impacts to regionally significant Banksia Woodlands TEC.

The combined cumulative impact of all relevant factors of the Proposal is considered and presented in Section 13.

6.6 Mitigation

The mitigation hierarchy, as outlined in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2024b) and detailed in Table 6-8, has been applied to this Proposal. Avoidance is considered the most preferred mitigation measure, while offsets are the least preferred. To address the potential direct and indirect impacts identified in Section 6.6, the mitigation measures listed below, in Sections 6.7.1 and 6.7.2, will be implemented.

Table 6-8 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, 2024b)

6.6.1 Potential direct impacts

The following mitigation measures are proposed to address the potential direct impacts outlined in Section 6.6.1.

- As described in Section 1.5.2, numerous design refinements have been applied to avoid and minimise impacts where practicable to sensitive receptors and significant vegetation. The proposed layout of wind turbines and supporting infrastructure, including roads placement was influenced by maximising avoidance of ecological values (conservation significant species, threatened communities and major drainage/creek lines). For example:
 - The Proposal design maximises use of areas previously cleared for agricultural use.
 - Initial Southerly Transmission route (option A) design removed from Proposal to avoid significant vegetation and habitat clearing.
- The Proposal design is predominantly within areas previously cleared for agricultural use. The Proposal-specific CEMP will include management actions to delineate approved ground disturbance areas prior to the commencement of native vegetation clearing activities to prevent clearing outside of approved areas. This includes designating tracks for site access and laydown areas for vehicles and plant to avoid vegetation disturbance.

6.6.2 Potential indirect impacts

The following mitigation measures are proposed to address the potential indirect impacts outlined in Section 6.6.2.

- The edge effect has been reduced to maximise avoidance of native vegetation clearing (Section 1.5.2). A post-clearing vegetation adaptive management monitoring program will be implemented to monitor future impact or recovery of ecological values during operation and following eventual decommissioning.
- Weed management and hygiene protocols will be implemented as part of the CEMP to minimise the introduction and spread of weeds and diseases.
- Dust suppression measures, including water carts and speed limits, will be implemented as part of the CEMP.
- Hot works procedures will be implemented as part of the CEMP including restrictions on hot works during high fire risk conditions and post-work monitoring to minimise the risk of a fire event.
- Sediment controls and implementation of stormwater management systems will be implemented as part of the CEMP to minimise impacts caused by increased impervious surfaces.
- Weed management and hygiene protocols will be implemented as part of the CEMP to minimise the introduction and spread of weeds and diseases.

6.7 Assessment and significance of residual impact

This assessment determines the presence and significance of any residual impact after applying the mitigation hierarchy and evaluates potential effects across all areas influenced by the Proposal's implementation (EPA, 2021b).

6.7.1 Assessment of direct impacts

The design of this Proposal has prioritised the avoidance and minimisation of native vegetation clearing wherever feasible. Majority of the Proposal will utilise areas previously cleared for agricultural purposes. When clearing of native vegetation is unavoidable, clearing areas are to be minimised as far as practicable. The Proposal will clear up to 84 ha of native vegetation (excludes completely cleared agricultural land, however, includes degraded agricultural land with scattered native vegetation) within the surveyed areas of the Proposed Development Envelope (0.36 ha of this 84 ha in excellent condition). All vegetation within the Proposed Development Envelope is represented in the surrounding region.

Any future adjustment of the Proposed Construction Footprint within the Proposed Indicative Envelope, is expected to impact cleared agricultural land only, and this would be verified once the particulars of the adjustments are known.

The transportation of the turbines to the site may necessitate some vegetation management including minor trimming of overhanging roadside vegetation (no more than a 3.1 ha of native vegetation). Wherever possible, vegetation will be trimmed in favour of removal.

6.7.1.1 Clearing of significant vegetation

The Proposal has actively demonstrated application of the Precautionary Principle through design refinements to avoid impacts on the TEC and locally significant vegetation (Section 1.4.8). 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 0.170 ha) of the Banksia Woodlands TEC identified within and immediately surrounding the Proposed Development Envelope will be impacted by this Proposal. This represents 0.04% of the 427.42 ha surveyed extent of TEC within and surrounding the Proposed Developed Envelope (Phoenix, 2025). The impact may be considered potentially significant; therefore, the Proponent has provided for offsetting this clearing (Section 10).

6.7.1.2 Loss of Priority flora

The Proponent has taken measures to avoid and minimise all impacts to Priority flora as practicable. No Threatened, P1 or P2 species have been recorded within the Proposed Development Envelope. Clearing will result in direct impacts to two populations of *B. dallanneyi* subsp. *pollosta* (P3). However, implementation of the Proposal is not expected to significantly impact any Priority flora species or cause change the conservation status of any Priority flora. A summary of impacts to each Priority species is provided in Table 6-9.

Table 6-9 Impacts to significant flora

Species and conservation status	Discussion of anticipated impact	Assessment
<i>Banksia dallanneyi</i> subsp. <i>pollosta</i> (P3)	A total of 2,074 individuals within 10 new populations have been recorded within the Proposed Development Envelope, of which approximately 55 individuals may be impacted by the Proposal. <i>B. dallanneyi</i> subsp. <i>pollosta</i> (P3) was widespread within the Proposed Development Envelope and often found to co-occur with the common non-significant taxon <i>B. dallanneyi</i> subsp. <i>dallanneyi</i> .	Given the extent of the impact and representation of the species regionally, the Proponent does not anticipate that the Proposal will affect the conservation status or viability of the species; therefore, the Proposal is not expected to impact this species significantly through construction and decommissioning.
<i>Stylidium aceratum</i> (P3)	A total of one individual was recorded during a reconnaissance survey within the Proposed Development Envelope. This is a new population for this species.	Given the extent of the impact and representation of the species regionally, the Proponent does not anticipate that the Proposal will affect the conservation status or viability of the species; therefore, the Proposal is not expected to impact this species significantly through construction and decommissioning.
<i>Platysace ramosissima</i> (P3)	A total of 50 individuals within one new population have been recorded within the Development Envelope, none of which will be directly impacted by the Proposal.	Given the extent of the impact and representation of the species regionally, the Proponent does not anticipate that the Proposal will affect the conservation status or viability of the species; therefore, the Proposal is not expected to impact this species significantly through construction and decommissioning.
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i> (P4)	A total of 81 individuals within one new population have been recorded within the Development Envelope, of which none will be impacted by the Proposal.	Given the extent of the impact and representation of the species regionally, the Proponent does not anticipate that the Proposal will affect the conservation status or viability of the species; therefore, the Proposal is not expected to impact this species significantly through construction and decommissioning.

6.7.2 Assessment of indirect impacts

6.7.2.1 Increased abundance and diversity of weeds

The Proponent has established strategies for managing weeds throughout its operations to minimise weeds and spread risks. Weed monitoring and management strategies will be implemented to minimise the risk of weeds. The key actions include the periodic spraying of cleared areas, particularly higher risk areas (such as near sensitive receptors), and the management of vehicle, machinery and equipment hygiene. Any impacts are predicted to be localised to disturbed areas and will not impact vegetation in surrounding areas.

Given this proposed management, the Proposal is not expected to significantly impact the condition of native vegetation through the spread or introduction of weed species through construction and decommissioning.

6.7.2.2 Dust deposition and potential increase in bushfire risk

The Proponent has well-established strategies for managing dust emissions across its operations, supported by environmental management protocols which would be implemented through a Proposal-specific CEMP.

Furthermore, with the proposed management and monitoring of hot works, vehicle movement, personnel training, and the disposal of potential fire-starting waste (e.g., cigarette butts), the Proposal is not expected to change the fire regime in the area once these fire management measures are implemented.

6.7.3 Assessment of cumulative impacts

The combined potential impact to flora and vegetation from the implementation of the Proposal is expected to be low. This is due largely to the preferred use of pre-cleared agricultural land which represents >77 % of the surveyed extent of the Proposed Development Envelope and >78 of the surveyed extent of the Proposed Indicative Envelope. However, some existing areas of vegetation of varying conditions will require clearing.

6.7.3.1 Cumulative impacts on vegetation and flora

The Proposal will clear up to 84 ha of native vegetation, of which approximately 0.36 ha is in excellent condition. Vegetation to be cleared within the Proposed Development Envelope comprises 4 vegetation associations as mapped by Beard; 999, Medium woodland; marri, 1030, Low woodland; *Banksia attenuata* & *B. menziesii*, 1031, Mosaic: Shrublands; *Hakea* scrub-heath / Shrublands; *Dryandra* heath, and 1035, Mosaic: Medium open woodland; marri/Shrublands; *Dryandra* heath (Table 1-9, Table 6-10).

Three current and reasonably foreseeable projects are located in the vicinity of the Proposal. Yandin Wind Farm (approximately 15 km directly north of the Proposed Development Envelope) and Cataby Mineral Sands project (approximately 25 km north of the Proposal) are located within the vicinity of the Proposal. Future proposals may include the Yathroo Wind Farm (located between the existing Yandin Wind Farm and the Proposal).

6.8 Environmental outcomes

In consideration of the proposed avoidance and management measures, and accounting for remaining residual impacts, the following environmental outcomes for flora and vegetation are anticipated:

- Clearing limits will apply to the Proposal, including
 - Up to approximately 84 ha of native vegetation
 - Up to approximately 0.170 ha of the Banksia Woodlands TEC
 - Up to 55 individuals of a P3 species.

Overall, the Proposal is likely to meet the flora and vegetation environmental factor objective to “protect flora and vegetation so that biological diversity and ecological integrity are maintained”.

Table 6-10 Cumulative Impacts on Beard (1975) Vegetation Associations within the Subregion

Pre-European vegetation association		Pre-European extent (ha)	Current extent (ha)	% remaining in bioregion	Within Proposed Development Envelope (ha)	Within Proposed Indicative Envelope (ha)	Within Proposed Construction Envelope (ha)
999	Medium woodland; marri	13,024.44	115,706.59	9.33	6,466.76	5175.50	568.40
1030	Low woodland; Banksia attenuata & B. menziesii	88,949.55	139,012.86 8	63.81	1,698.22	1435.50	89.80
1031	Mosaic: Shrublands; Hakea scrub-heath / Shrublands; Dryandra heath	88,668.30	269,490.91	19.3	1,320.44	817.82	82.67
1035	Mosaic: Medium open woodland; marri / Shrublands; Dryandra heath	492.93	5,018.34	10.47	2,986.44	2730.31	223.50
Total		191,135.22	274,509.25		12,471.86	10,159.12	964.37

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 MNES species is provided in the MNES chapter (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
Legislation		
(DCCEEW, 1999)	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act)	Australia’s main national and environmental legislation, which provides for the government’s role in protecting and preserving the environment and heritage; and enables efficiency between states and territories on protected matters.
(DWER, 1986)	<i>Environmental Protection Act 1986</i> (WA) (EP Act)	Provides for the EPA to regulate the prevention, control and abatement of pollution and environmental harm to enable the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.
(DBCA, 2016)	<i>Biodiversity Conservation Act 2016</i> (BC Act)	Provides for the conservation and protection of biodiversity in WA, and the ecological sustainable use of biodiversity components in WA.
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, 2020)	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, 2016d)	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.

Author, Year	Title	Consideration
Specific Threatened Species Guidance		
(DAWE, 2022)	EPBC Act Referral Guidelines for 3 threatened black cockatoo species: Carnaby's Black Cockatoo (endangered) <i>Calyptorhynchus latirostris</i> , Baudin's Black Cockatoo (vulnerable) <i>Calyptorhynchus baudinii</i> , and Forest Red-tailed Black Cockatoo (vulnerable) <i>Calyptorhynchus banksii naso</i>	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, 2010)	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 Environmental Impact Assessment in the Perth and Peel Region	Details the issues affecting Carnaby's Black Cockatoo, 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.
(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 Surveys and survey efforts

Numerous terrestrial fauna surveys have been conducted, including baseline and targeted fauna surveys across the Proposed Development Envelope and surrounds. A summary of field surveys completed to date are presented in Table 7-2 and Figure 7-1.

Field survey types and active person hours to date are summarised below:

- Active searches for vertebrate fauna were undertaken at 15 sites, with a total of 15 hours combined across the surveys.
- Motion-activated camera trapping to obtain additional day time and nocturnal fauna at 3 locations.
- Bird surveys were undertaken at 21 Bird and Bat Utilisation Survey sites (BBUS) and 11 basic fauna sites, equalling a total of 22.3 person hours to date (ongoing).
- Bird audio recording utilising SongMeter SM4 recording devices deployed at 21 BBUS sites and 2 basic fauna sites to record bird calls over a longer period and to target nocturnal birds, for a total equivalent of 41 nights.
- Bat echolocation recordings utilising SongMeter SM4 recording devices deployed at 21 BBUS sites and 2 basic fauna sites. The equivalent of 41 nights of calls collected.
- Black cockatoo habitat assessment (potential nesting trees and foraging habitat) as part of a 24-month monitoring program (ongoing).
- Malleefowl habitat assessment consistent with national guidance was completed at 36 individual sites.
- Short range endemic (SRE) active searches at 15 sites for one hour each (15 hours total).

Table 7-2 Summary of technical studies for terrestrial fauna

Consultant/year	Report title	Survey type/ timing	approximate Distance from Proposed Development Envelope
Phoenix (2025)	Basic and Targeted terrestrial fauna survey for the Proposal	Basic and Targeted 5-9 Aug 2024 26-30 Aug 2024 11-14 Aug 2025	0 km
Phoenix (2025)	Targeted Black Cockatoo survey for the Proposal	Targeted 11-13 Mar 2025 24-28 July 2025 11-14 Aug 2025	0 km (including surrounding optional footprint areas)
Phoenix (in prep)	Bird and Bat utilisation surveys for the Proposal	Targeted 5-9 Aug 2024 26-30 Aug 2024 11-14 Aug 2025 Ongoing Due mid 2026	0 km (including surrounding optional footprint areas)
Ecologia (2024)	Yandin Wind Farm Avian Fauna Monitoring Program	Monitoring	5 km N
Phoenix (2024a)	Black cockatoo habitat assessment for potential offset site at Lot 2 Orange Springs Road	Targeted	8.5 km SW
Phoenix (2024b)	Black Cockatoo habitat assessment for the northern section of Lot 3832/327 Nammegarra Road, Regans Ford	Targeted	1.5 km W
Phoenix (2023a)	Black cockatoo potential habitat tree survey at potential offset site (confidential report)	Targeted	24.5 km SE
Phoenix (2023b)	Black cockatoo potential habitat tree survey at potential offset site at Lot 1, Indian Ocean Drive	Targeted	36.5 km SW
Eco Logical Australia (2021)	Black Cockatoo Habitat Assessment of Part of Lot 3333 Mimegarra Road, Cataby	Targeted	11.3 km NW
Ecoedge (2019)	Orange Springs Road Fauna Assessment	Basic	2.5 km S
Bamford (2015)	Cooljarloo West Development Envelope Fauna Assessment	Detailed	21 km NW
DEC (2008)	Resource Condition Report for a Significant Western Australian Wetland: Lake Guraga	Desktop	5 km W

Source: Phoenix, 2025 Basic and Targeted terrestrial fauna survey for the Marri Wind Farm Project

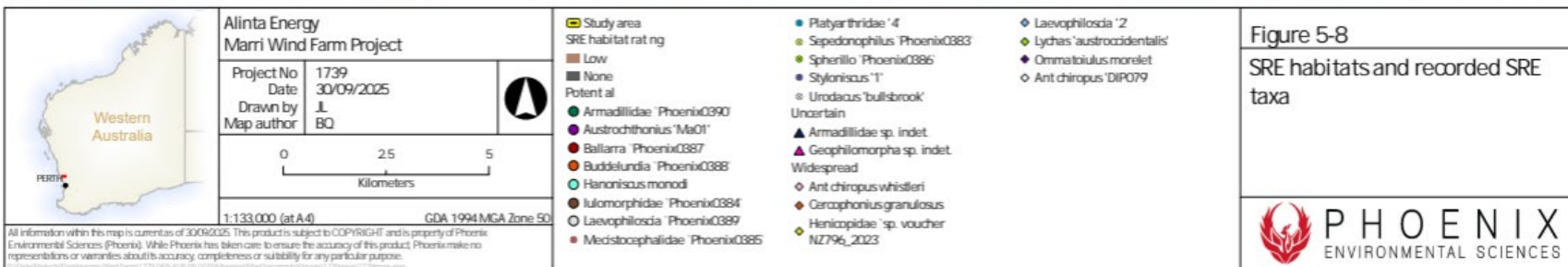
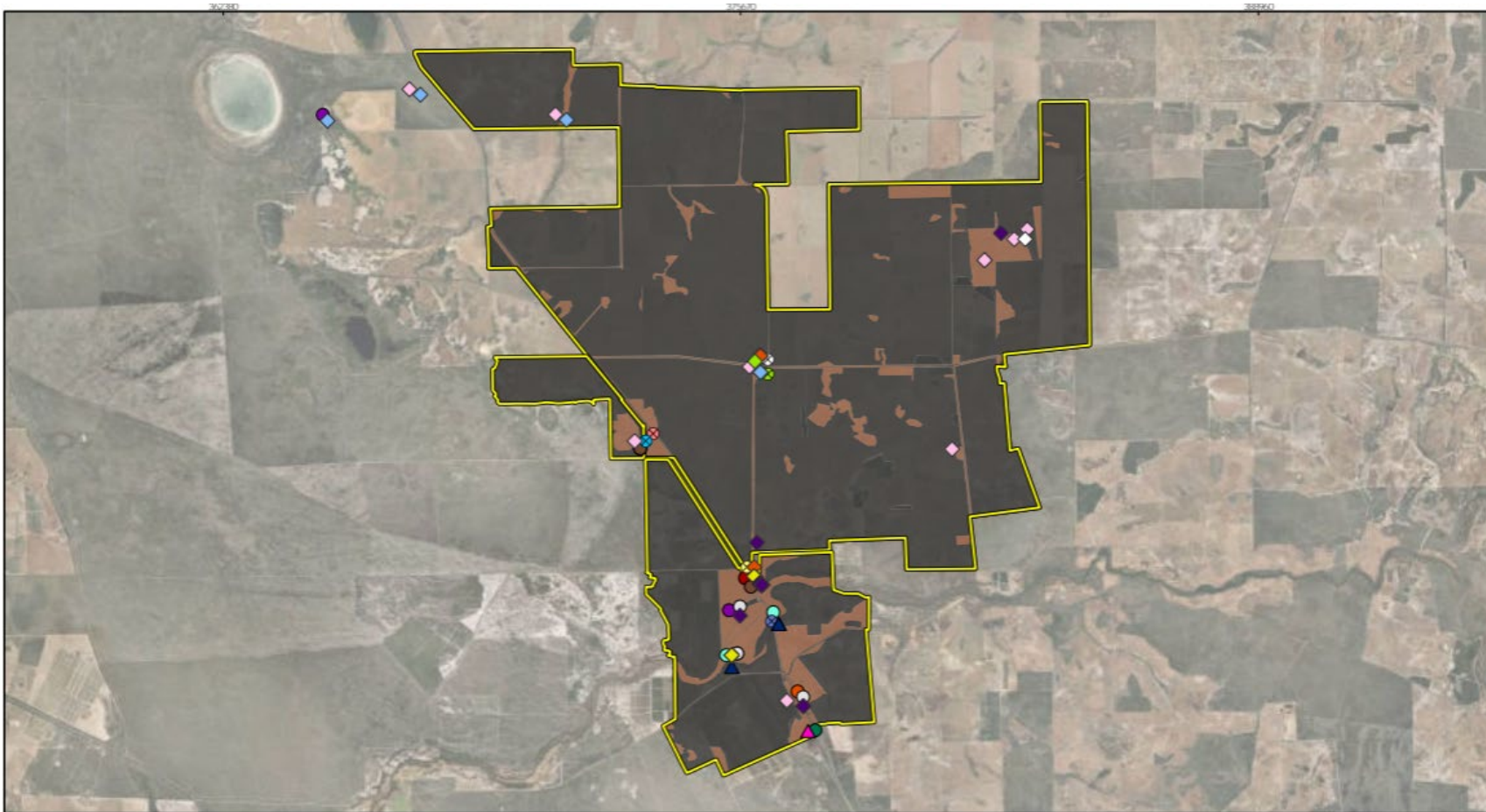


Figure 7-1 Terrestrial fauna and Short Range Endemic sampling effort across fauna habitats within and in the vicinity of the Proposed Development Envelope

7.4 Receiving environment

7.4.1 Regional fauna habitat and land systems

A total of 5 land systems (Table 1-10 and Table 1-11) have been identified within the Proposed Development Envelope (Phoenix, 2025a). These land systems consist of the Bassendean, Capitella, Dandaragan, Moore Rive and Rowes Systems. The most prominent land system within the Proposed 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 Proposed Development Envelope. These formations underpin the geological features summarised in Section 1, Table 1-10 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

Five broad habitat types have been identified within the Proposed Development Envelope and vicinity: Banksia heath and woodland, open Jarrah-Marri woodland, drainage line and riparian, pine plantations and wetlands (Phoenix, 2025a), Table 7-3 and Figure 7-1). These habitats have been mapped based on ground truthing, fauna habitat assessments, vegetation mapping, topographic data and interpretation of aerial photography (Phoenix, 2025a). Disturbed/cleared areas were also mapped.

The majority (89.8%) of the Proposed Development Envelope and vicinity (area covered within the Phoenix, 2025 survey) consists of cleared areas followed by Banksia heath and woodland (5.3%), open Jarrah-Marri woodland (3.0%), drainage line and riparian (1.2%), pine plantations (0.7%) and wetlands (<0.1%) (Phoenix, 2025a). These habitats were restricted to occurring in pockets of agriculture areas and along drainage lines, connected by remnant roadside vegetation Figure 7-2. Habitat condition varied considerably across the Proposed Development Envelope, from completely degraded to excellent condition.

Table 7-3 Fauna habitat extent within the Proposed Development Envelope and vicinity

Fauna habitat type	Description of habitat type	Area (ha) and % within Proposed Development Envelope
Open Jarrah-Marri woodland	Open <i>Marri</i> / <i>Corymbia calophylla</i> woodland over mixed trees and shrubs including eucalypt saplings, <i>Allocasuarina</i> , <i>Xanthorrhoea</i> , <i>Banksia</i> , <i>Acacia</i> , <i>peas</i> , and <i>Hakea</i> . Vegetation condition varies from Completely degraded to Excellent, depending on level of disturbance to understory composition. Provides foraging habitat and potential roosting/breeding habitat for Carnaby's Black Cockatoo.	480.1 ha 3.0%
Banksia heath and woodland	<i>Banksia</i> shrubland including <i>Acacia</i> , <i>Xanthorrhoea</i> , and woolly bush with scattered trees of <i>Eucalypts</i> , <i>Nuytsia</i> and <i>Allocasuarina</i> . Provides foraging habitat for Carnaby's Black Cockatoo.	834 ha 5.3%
Pine plantations	Pine plantations lacking understory. Pine plantations provide foraging and roosting habitat for Carnaby's Black Cockatoo.	103.3 ha 0.7%
Drainage line and riparian	Drainage line and riparian zones of wetlands composed of Marri and/or <i>Melaleuca</i> lacking understory. Marri trees provide foraging habitat and potential roosting/breeding habitat for Carnaby's Black Cockatoo.	195.5 ha 1.2%
Wetlands	Permanently and seasonally inundated areas. Provides drinking habitat for Carnaby's Black Cockatoo.	3.4 ha <0.1%

Fauna habitat type	Description of habitat type	Area (ha) and % within Proposed Development Envelope
Cleared – agriculture and infrastructure	<p>Areas predominantly cleared for agricultural use, roads, or urban developments.</p> <p>Remnant isolated trees were found scattered in agricultural areas, providing foraging habitat and potential roosting/breeding habitat for Carnaby's Black Cockatoo.</p> <p>Farm dams scattered in agricultural areas provide drinking habitat.</p> <p>The species is also known to forage on the seeds of introduced species including canola, which was present as a crop in the study area.</p>	<p>14,206.7 ha</p> <p>89.8%</p>

Source: Phoenix, 2025 Basic and Targeted terrestrial fauna survey for the Marri Wind Farm Project

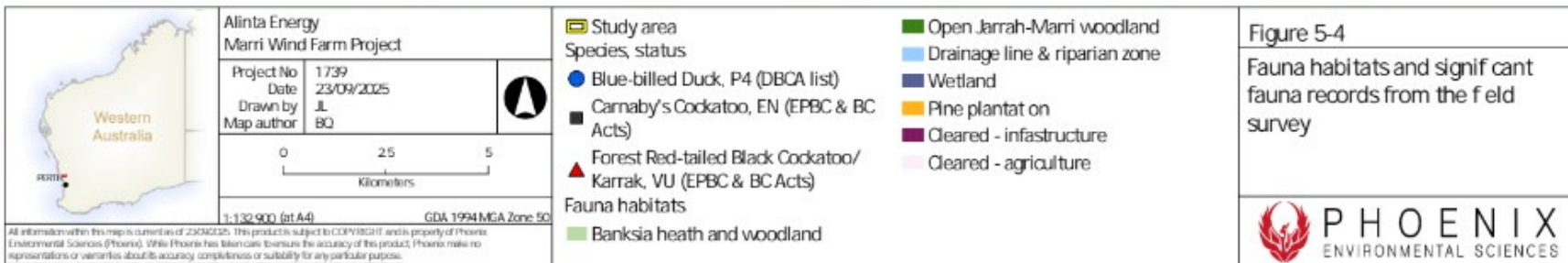
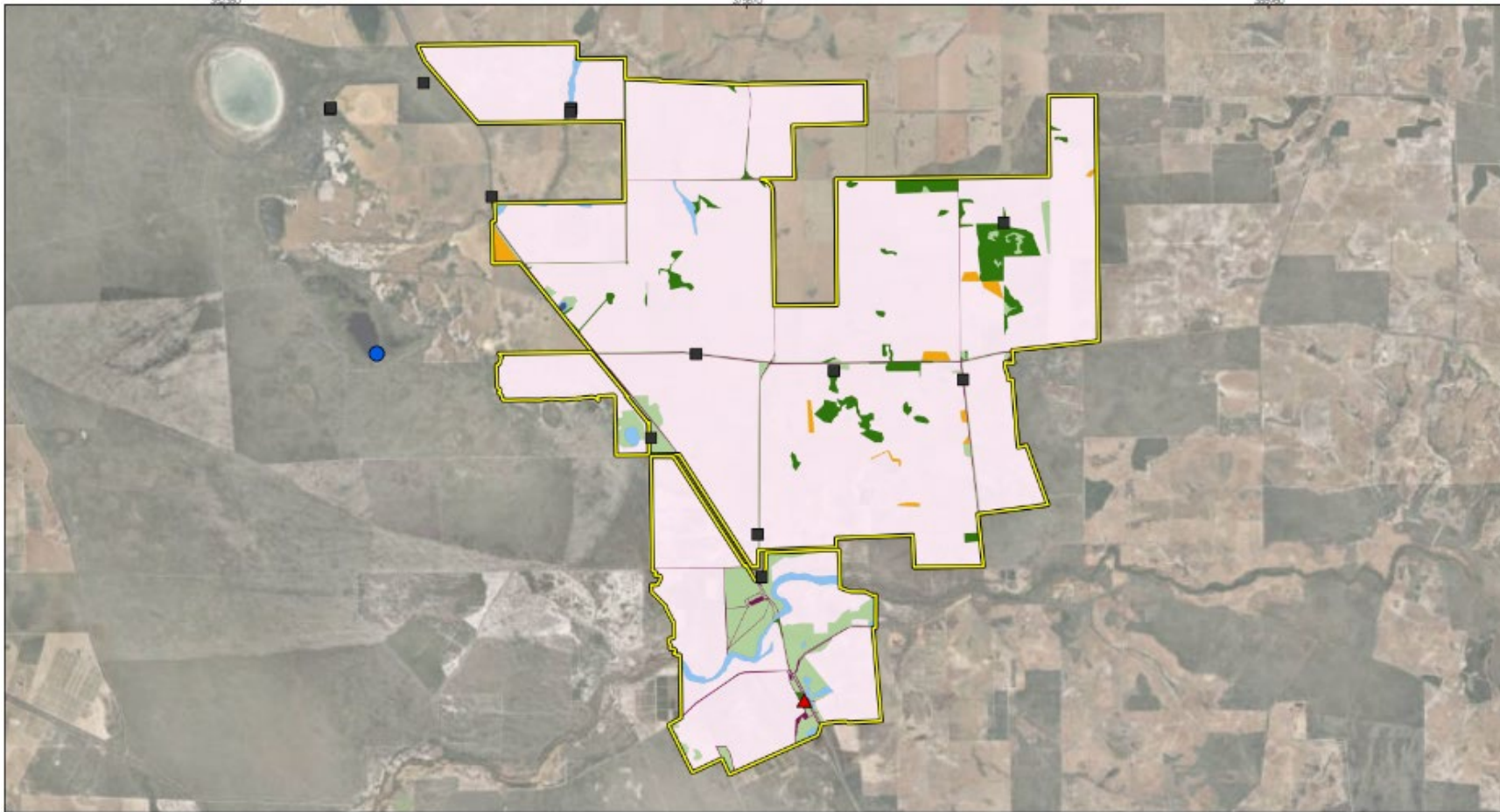


Figure 7-2 Fauna Habitat within the Proposed Development Envelope and vicinity

7.4.3 Habitat value and fauna corridors

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 noted during field surveys in the Proposed Development Envelope include roadside verges, associated drainage line and riparian zones (Phoenix, 2025a). Minimal interconnectivity occurs within the paddocks which are largely cleared with isolated mature individual or small number of trees. Isolated trees may offer refuge points at best whilst fauna transverse the open areas. Fauna species have adapted to the modified environment within predominantly cleared paddocks, providing some value as habitat for aerial species (foraging habitat).

7.4.4 Vertebrate fauna assembly and species diversity

A total of 66 terrestrial vertebrate species comprising 7 amphibians, 4 reptiles, 41 birds, and 14 mammal species have been recorded in the Proposed Development Envelope. Of these, 6 species were recorded during the field surveys that were not previously identified within desktop assessment (Phoenix, 2025a). Evidence of 4 introduced predators (Fox (*Vulpes vulpes*), Cat (*Felis catus*), rabbit (*Oryctolagus cuniculus*) and Dog (*Canis familiaris*)) were recorded within the Proposed Development Envelope.

7.4.5 Significant vertebrate fauna

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 Proposal area), 8 of which have previously been recorded within the Proposed Development Envelope (Phoenix, 2025a):

- Curlew Sandpiper – CR/Mig./CR (EPBC Act; BC Act)
- Red-necked Stint – Mig. (EPBC Act; BC Act)
- Chuditch - VU (EPBC Act, BC Act)
- Western Brush Wallaby – P4 (DBCA)
- Blue-billed Duck – P4 (DBCA list)
- Wood Sandpiper – Mig. (EPBC Act; BC Act)
- Common Greenshank – EN /Mig. (EPBC Act; BC Act)
- Carnaby's Black Cockatoo – EN (EPBC Act; BC Act).

During the field surveys, one Threatened species (Carnaby's Black Cockatoo - EN (EPBC Act and BC Act)) was recorded within the Proposed Development Envelope. One Threatened (Forest Red-tailed Black Cockatoo) and one Priority species (Blue-billed Duck - P4) were recorded within approximately 5 km of the Proposed Development Envelope (Phoenix, 2025a). Records of significant fauna species within the Proposed Development Envelope and surrounds are shown in Figure 7-3. One significant fauna species (Carnaby's Black Cockatoo – EN (EPBC Act and BC Act)) has been recorded in the Proposed Development Envelope during recent surveys and 11 are considered likely to occur (Phoenix, 2025a).

7.4.5.1 Significant vertebrate fauna species recently recorded in or in vicinity of the Proposed Development Envelope

Carnaby's Black Cockatoo (*Zanda latirostris*)

The Carnaby' Black Cockatoo is listed as Endangered under both the BC Act and EPBC Act. Carnaby's Black Cockatoo occurs in uncleared or remnant native eucalypt woodlands of south-west WA. During the breeding season, it occurs mainly 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).

A total of 1,060 Carnaby's Black Cockatoo observations have been recorded visually on 43 occasions, with vocalisations noted on 18 occasions within and around the Proposed Development Envelope to date. Foraging evidence was recorded throughout the Proposed Development Envelope (Phoenix, 2025e). Although restricted, high quality foraging habitat for black cockatoo species occurs within the Proposed Development Envelope and surrounds. Remnant roadside vegetation provides important movement corridors between breeding habitat, night roosting habitat and foraging resources (Phoenix, 2025e). Additional targeted avian surveys are underway (24-month monitoring program) to further define the role of the habitat within the Proposed Development Envelope for the Carnaby's Black Cockatoo (Section 11 and Figure 7-3).

Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*)

The Forest Red-tailed Black Cockatoo is listed as Vulnerable under both the BC Act and EPBC Act. Forest Red-tailed Black Cockatoo occurs in dense Jarrah, Karri, and Marri forests, mainly in the hilly interior, and a range of other forest and woodland types (DCCEEW 2024).

A total of 26 Forest Red-tailed Black Cockatoo have been sighted and heard on 4 occasions during surveys adjacent to the Proposed Development Envelope (Phoenix, 2025a). Although restricted, high quality foraging habitat for black cockatoo species occurs within the Proposed Development Envelope and surrounds. Remnant roadside vegetation provides important movement corridors between breeding habitat, night roosting habitat and foraging resources (Phoenix, 2025a) (see Figure 7-4 and Figure 7-5).

Blue-billed Duck (*Oxyura australis*)

The DBCA lists the Blue-billed Duck as a Priority 4 species. 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.

Blue-billed Duck was recorded on 2 occasions at one site located approximately 5 km west of the Proposed Development Envelope. The occurrence of Blue-billed Duck is consistent with its known distribution. Although the Proposed 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).

7.4.5.2 Significant vertebrate fauna species previously recorded or likely to occur in the Proposed Development Envelope

Migratory shorebirds (Curlew Sandpiper, Red-necked Stint, Wood Sandpiper, Common Greenshank)

Migratory shorebirds (Migratory) consist of four species recorded inside the Proposed Development Envelope during the desktop assessment. These include the Curlew Sandpiper (*Calidris ferruginea*; Critically Endangered/Migratory), Red-necked Stint (*Calidris ruficollis*; Migratory), Wood Sandpiper (*Tringa glareola*; Migratory) and the Common Greenshank (*Tringa nebularia*; Endangered/Migratory). Further desktop investigation notes that there is an 18 km margin of error for each of these sightings. Therefore, explaining the mismatched habitat setting for each of the 4 Migratory species.

The Curlew Sandpiper and Common Greenshank are generally found in coastal habitat but are also known to occur on inland lakes, dams, or other waterbodies. Red-necked Stints also prefer coastal areas but may be found in flooded paddocks. Wood Sandpipers prefer well-vegetated shallow freshwater wetlands such as swamps, billabongs, lakes, and other waterbodies (Phoenix, 2025a). Migratory shorebirds may opportunistically use wetland habitat in the Proposed Development Envelope to forage, or flyover in search of more suitable wetlands such as those to the west of the Development Envelope.

Western Brush Wallaby (*Notamacropus irma*)

The DBCA lists the Western Brush Wallaby as a Priority 4 species. Western Brush Wallaby was recorded in the desktop records, west of the Proposed Development Envelope, where suitable mallee, woodland, forest, low grass lands and scrubby thickets exist. The Western Bush Wallaby is 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 Proposed Development Envelope is low due to the

continued use for agricultural cropping, the Proposed Development Envelope may be used by transient individuals or occasional foraging visitors. However, it is considered unlikely the species would reside within the Proposed Development Envelope due to the presence of predator species (European Fox and Domestic Dog) (Phoenix, 2025a).

Chuditch (*Dasyurus geoffroii*)

The Chuditch is listed as Vulnerable under both the BC Act and EPBC Act. The Proposed Development Envelope is located at the northern extent of the Chuditch known distribution. No evidence or sightings were recorded during field surveys. The desktop review revealed sparse and infrequent historical records in the area. One record exists from 1987, located approximately 600 m north of the Proposed Development Envelope, and one record in 2001 relating to a carcass that was located approximately 1 km south of the Proposed Development Envelope. 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 Proposed Development Envelope as occasional foraging visitors or to disperse but are unlikely to reside in the Proposed Development Envelope as it is not considered significant habitat (Phoenix, 2025a).

Black-striped Snake (*Neelaps calonotos*)

The DBCA lists the Black-striped Snake as a Priority 3 species. It prefers heathland habitats near the coast, as well as Banksia woodlands further inland. The species was not recorded within the Proposed Development Envelope; however, due to the occurrence of records in the desktop search area and the presence of potentially suitable habitat in the Proposal area, it is considered likely to occur (Phoenix, 2025a).

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon is listed as Other Specially Protected (OS) under the BC Act. Peregrine Falcon is considered a widespread species but rare and has large foraging ranges. The species is considered likely to occasionally forage within and around the Proposed Development Envelope (Phoenix, 2025a). Peregrine Falcon may nest in wooded drainage lines or in suitable tall trees where old raptor or corvid nests are present. No evidence of Peregrine Falcon was recorded within the Proposed Development Envelope during recent surveys (Phoenix, 2025a).

7.4.5.3 Significant vertebrate fauna species possibly occurring in the Proposed Development Envelope

A total of 24 significant vertebrate fauna species were identified as possible to occur in the Proposed Development Envelope, including Malleefowl (VU - EPBC Act and BC Act). Malleefowl is listed as Vulnerable under both the BC Act and EPBC Act. Malleefowl are predominantly ground dwelling birds which require adequate vegetation cover, leaf litter and sandy substrate. Malleefowl have been recorded in the vicinity of the Proposed Development Envelope in 1993, 1988, and 2005 (Phoenix, 2025a).

Malleefowl habitat assessments were conducted within and surrounding the Proposed Development Envelope. Thirty-five out of the 36 sites were determined to be moderately suitability for Malleefowl, suitable for foraging and dispersal but not for breeding. The highly fragmented condition of native vegetation and sparse crown cover, coupled with introduced predator species (European Fox, Domestic Dog and Cat), make it difficult for Malleefowl to persist within the Proposed Development Envelope (Phoenix, 2025a). Although the Proposed Development Envelope is within the known range for Malleefowl the area lacks suitable leaf litter abundance, canopy cover, vegetation screening, and/or vegetation assemblages, which are vital for mound construction and refuge from predators (Phoenix, 2025a).

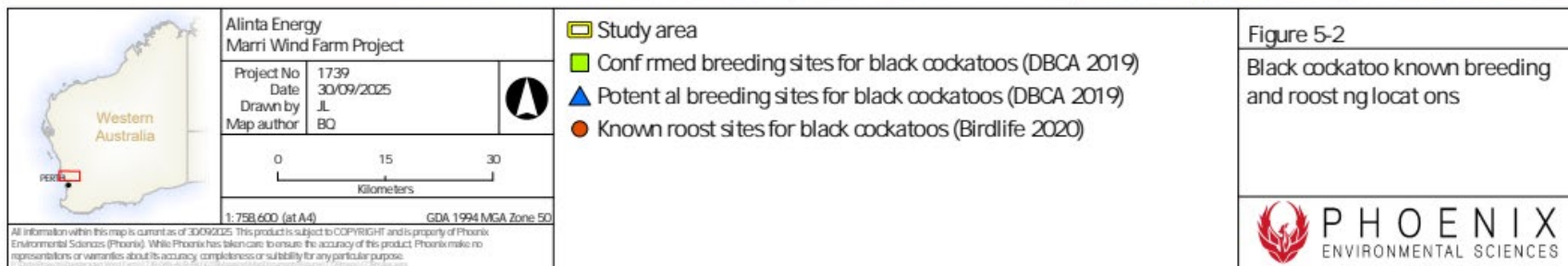
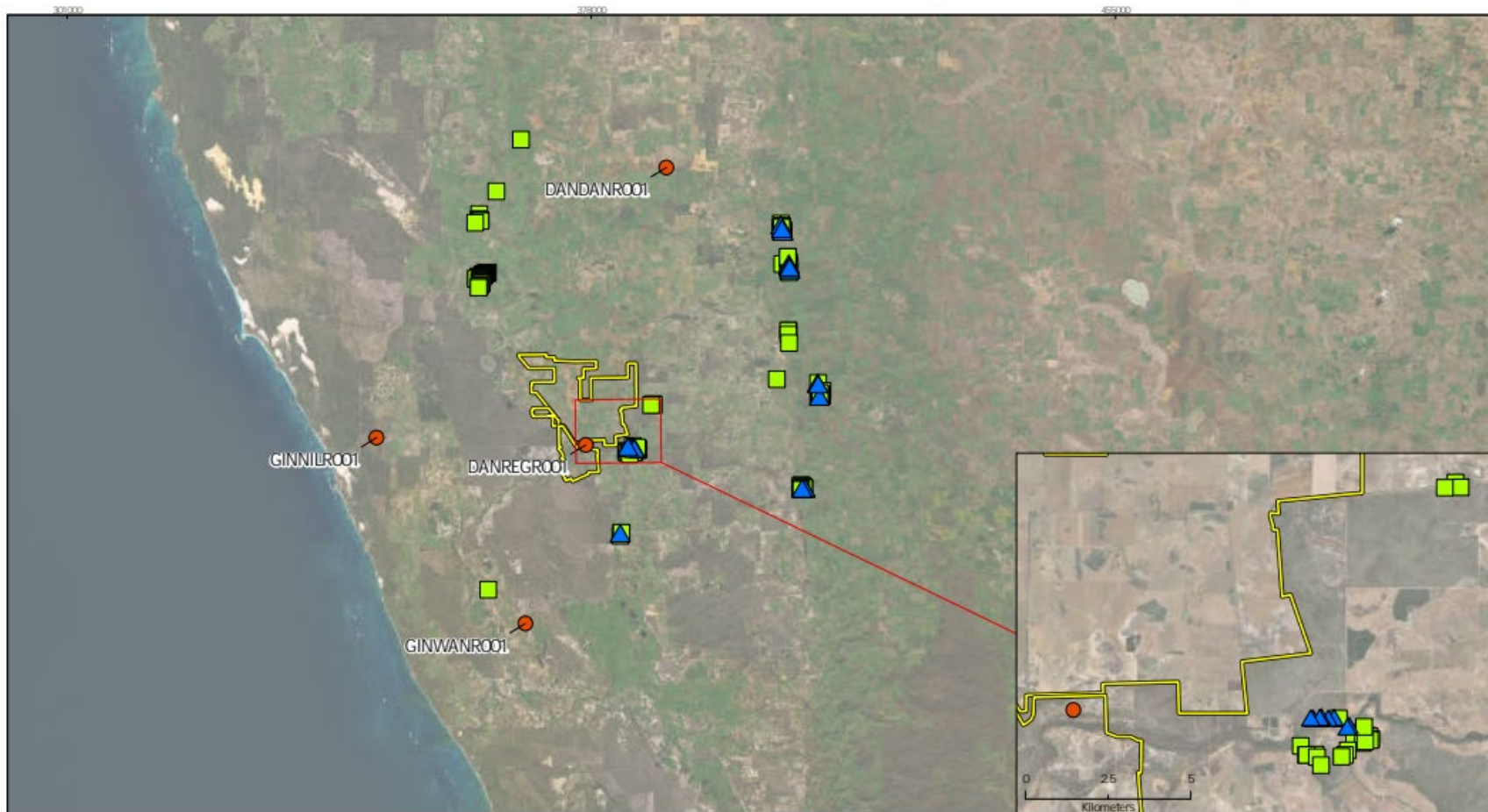


Figure 7-3 Black cockatoo known breeding and roosting habitat locations

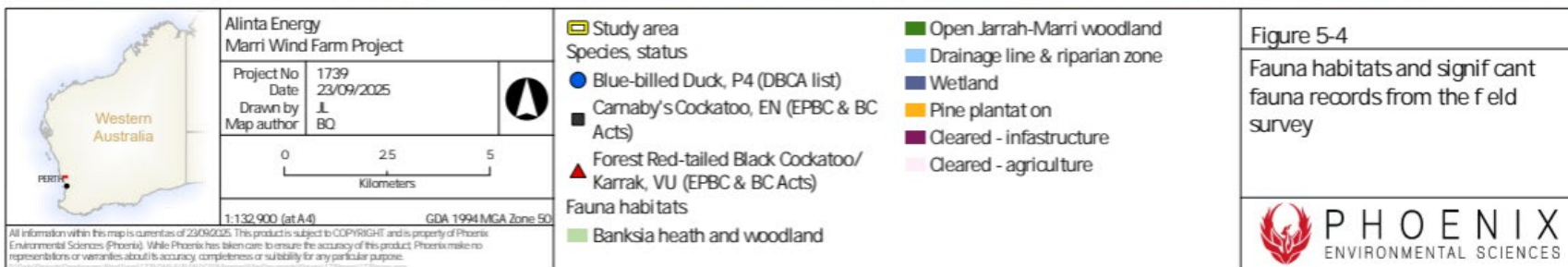
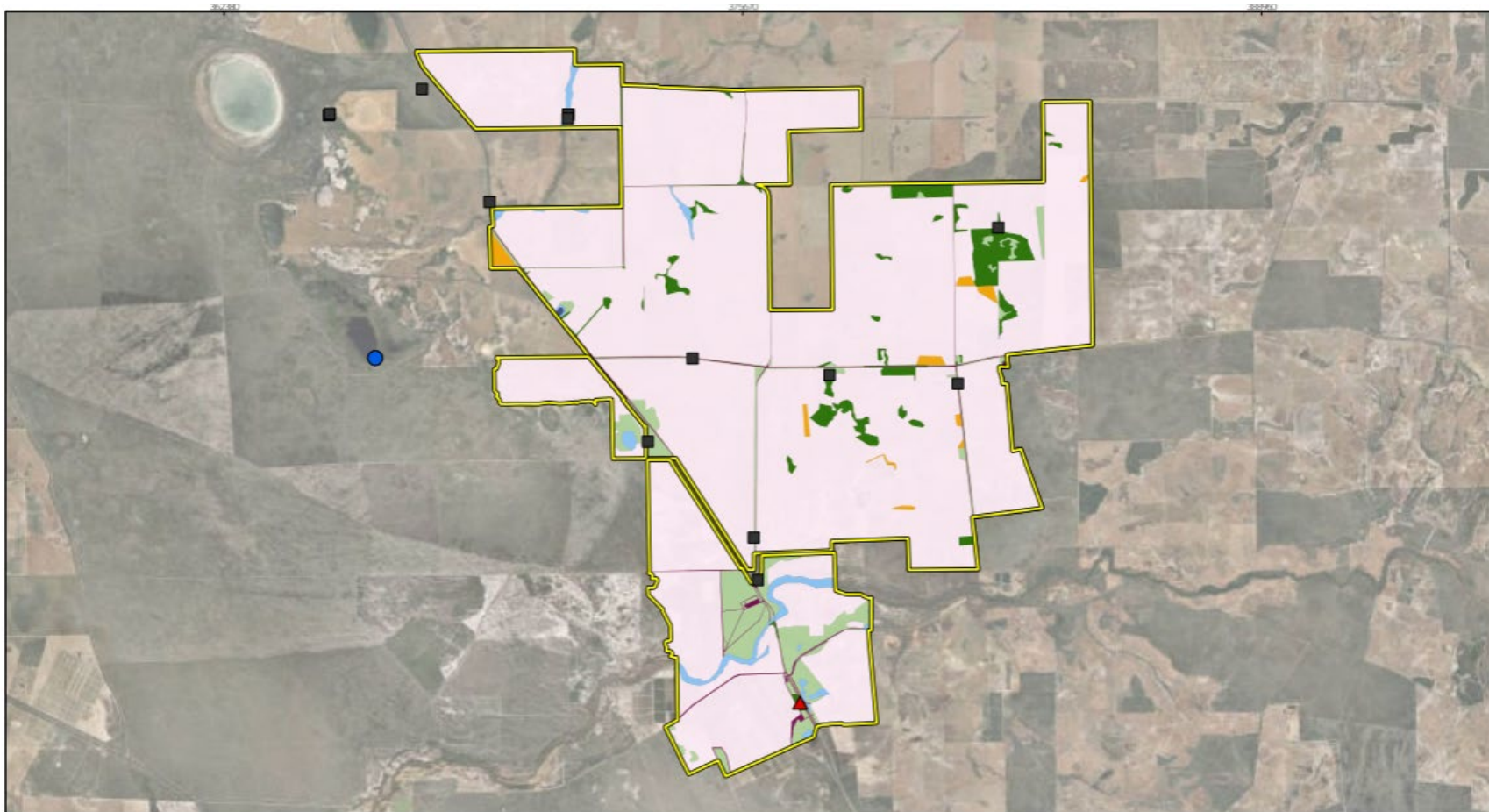


Figure 7-4 Black cockatoo habitat within and in the vicinity of the Proposed Development Envelope

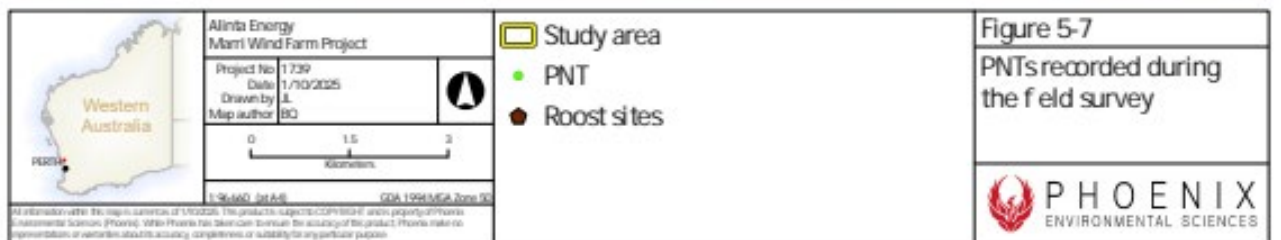
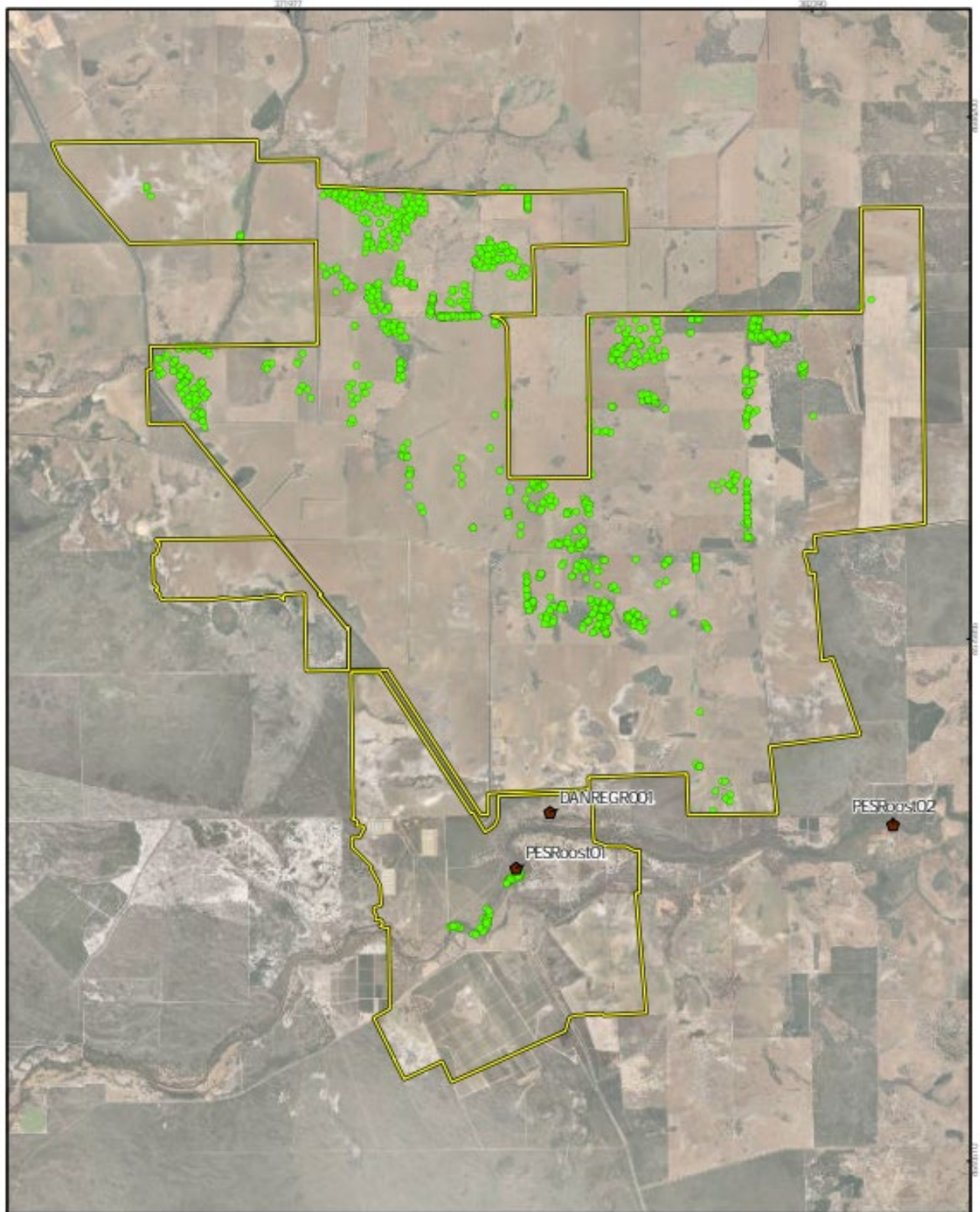


Figure 7-5 Black cockatoo potential nesting trees within and in the vicinity of the Proposed Development Envelope

7.4.6 Short range endemic invertebrate fauna

7.4.6.1 Short range endemic invertebrate fauna habitat

Three SRE habitat types were identified within the Proposed Development Envelope, including Banksia heath and woodland, Open Jarrah-Marri woodland and Drainage line and riparian (Table 7-4 and Figure 7-6). Although drainage line habitat type is generally considered to be of high value to SREs this is not the case in the Proposed Development Envelope. The drainage lines in the Proposed 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 Proposed Development Envelope is considered to have a low potential to support SREs (Phoenix, 2025a).

Banksia heath and woodland and Open Jarrah-Marri woodland habitats, occur within the Proposed Development Envelope as well as broadly across the Dandaragan Plateau subregion, particularly to the west and east of the Proposed 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, 2025a).

7.4.6.2 Significant short range endemic invertebrate fauna records

A total of 22 invertebrate fauna taxa were collected from the Proposed 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, 2 taxa were of Uncertain SRE taxa, and 7 were considered to be widespread (Figure 7-6) (Phoenix, 2025a).

Of the collected 22 SRE taxa, 9 were considered new species as they had not been recorded previously:

- Armadillidae `Phoenix0390`
- Austrochthonius 'Ma01'
- Ballarra `Phoenix0387`
- Buddelundia `Phoenix0388`
- Iulomorphidae 'Phoenix0384'
- Laevophiloscia `Phoenix0389`
- Mecistocephalidae 'Phoenix0385'
- Sepedonophilus `Phoenix0383`
- Spherillo 'Phoenix0298' (Phoenix, 2025a).

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

Table 7-4 Short-range endemic species habitats within the Proposed Development Envelope

Habitat type	Description	Potential to support SRE
Cleared – agriculture and infrastructure	Cleared areas provide no habitat for SREs.	None
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

Habitat type	Description	Potential to support SRE
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
Pine plantations	Cleared areas provide no habitat for SREs.	None
Wetlands	Inundated areas provide no habitat for SREs.	None

Source: Phoenix, 2025b Basic and Targeted terrestrial fauna survey for the Marri Wind Farm Project

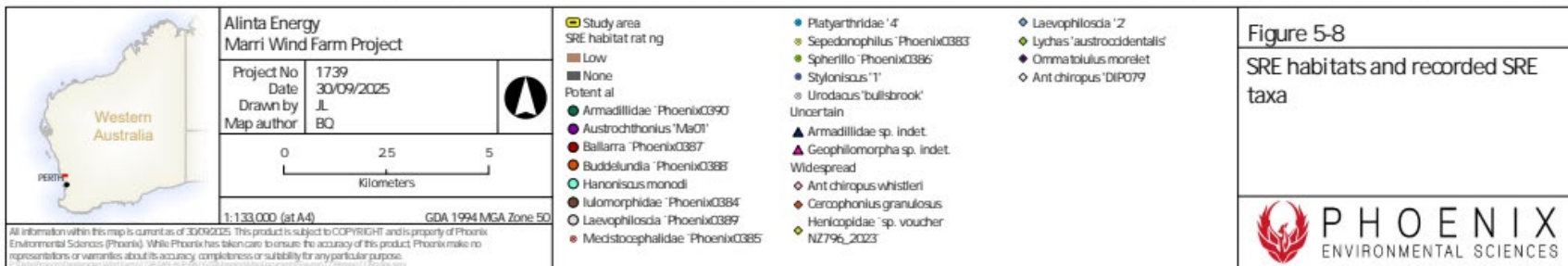
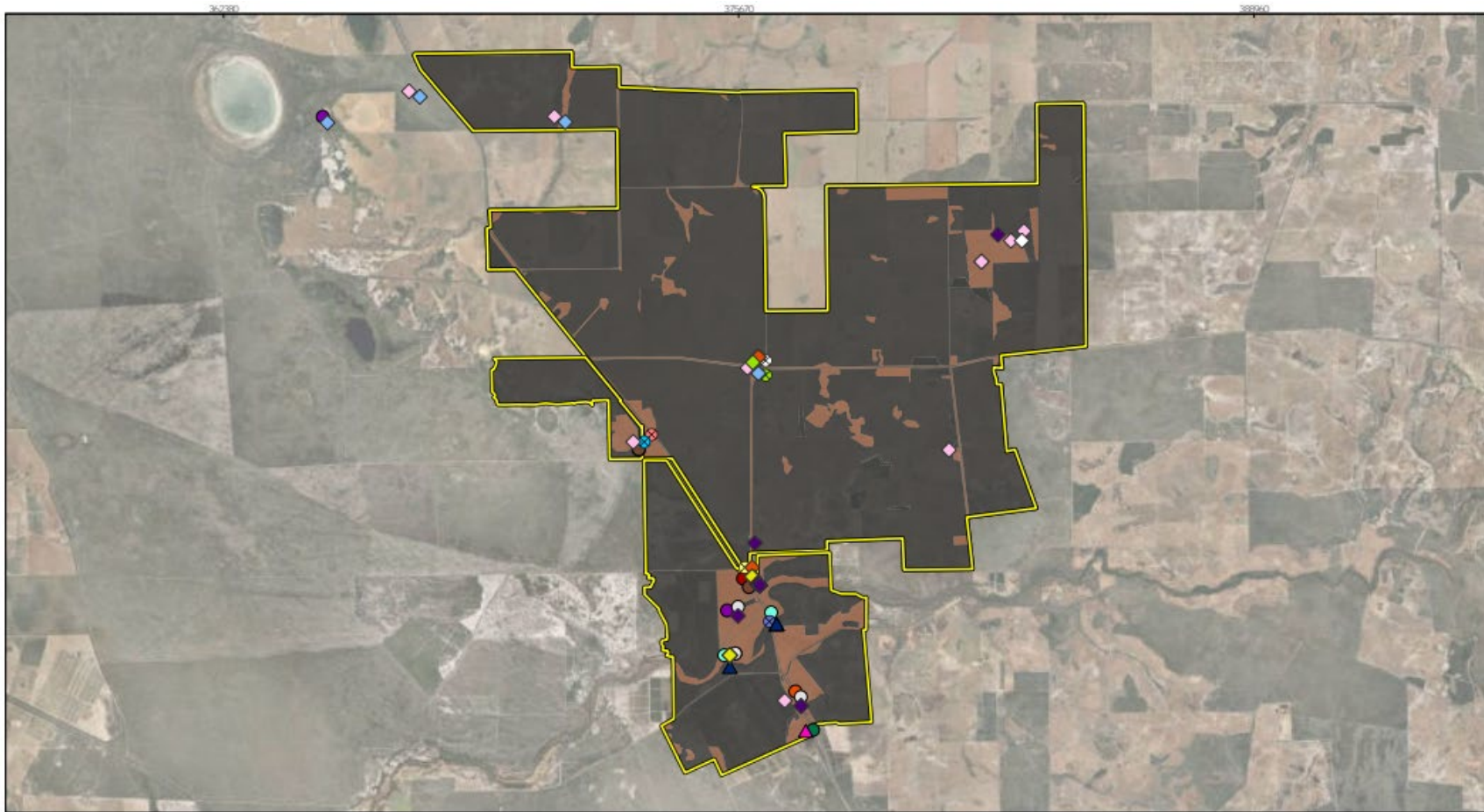


Figure 7-6 Short range endemic habitats and recorded taxa within the Proposed Development Envelope and vicinity

7.5 Potential environmental impacts

The Proposal may result in some potential level of direct, indirect or cumulative impacts relating to fauna within the Proposed Development Envelope. These have been identified in the subsections below, and proposed mitigation measures have been outlined in Section 7.6.

7.5.1 Potential direct impacts

Direct impacts with the potential to occur may include:

- Loss of vertebrate or invertebrate habitat and fragmentation
- Loss of vertebrate or invertebrate fauna

7.5.2 Potential indirect impacts

Indirect impacts with the potential to occur may include:

- Habitat degradation associated with construction and operational activities (weeds, feral animals, altered fire regime)
- Changes to the airshed above the current landscape (new tall obstacles) to be navigated.
- Disturbance and possible displacement of fauna from construction and operation activities.

7.5.3 Cumulative impacts

Cumulative impacts are defined as “the successive, incremental, and interactive impacts on the environment of a proposal with one or more past, present, and reasonably foreseeable future initiatives” (EPA, 2021b). The Proposal will contribute to the following cumulative impacts at a regional scale:

- Clearing/disturbance of native fauna habitat
- Loss of vertebrate or invertebrate fauna

The combined cumulative impact of all relevant factors is considered and presented in Section 13.

7.6 Mitigation

The mitigation hierarchy outlined in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2016h) has been used to inform the preparation of mitigation measures for the Proposal (Table 7-5).

Table 7-5 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, 2016h)

A review of the potential direct (Section 7.5.1) and indirect impacts (Section 7.5.2) has been completed against the mitigation hierarchy to inform the potential consequences and appropriate mitigation measures under the Environmental Factors for Terrestrial Fauna and SRE species have been summarised below.

7.6.1 Potential direct impacts

The following mitigation measures are recommended to address potential direct impacts identified in Section 7.5.1:

- Locate the Proposed Construction Footprint outside of any terrestrial fauna, SRE, protected or listed species critical habitat areas (including migratory species protected under international government agreements) where possible.
- Infrastructure placement has been driven by utilisation of historically pre-disturbed / pre-cleared land, minimising the need for additional native vegetation clearing to enable the Proposed Development Activities to proceed.
- All 82 wind turbine generators are to have a minimum rotor sweep area (height) of approximately 66 m bgl to minimise the potential for bird and or bat impacts. This is based on the identification of the flight patterns and typical flight height ranges for species observed. An adaptive management plan will be developed to mitigate and monitor impacts to birds and bats (including collision risk).
- Progressive rehabilitation is to occur following the commissioning phase, with the area to be returned to previous land use (agricultural cropping).
- To mitigate entrapment of both native and introduced species during construction activities, a CEMP will be developed and implemented, and will include provisions to ensure all cable openings, pipe openings or trenches are made safe at the end of each shift. This may include provision for fauna spotters (suitably qualified fauna handlers).
- To minimise and avoid injury or death to terrestrial species (native or introduced) due to vehicle strike during the construction, commissioning or operational phases of the Proposal, a site speed restriction will be imposed through the Traffic Management Plan.

7.6.2 Potential indirect impacts

The following mitigation measures are to be implemented to address potential indirect impacts identified in Section 7.5.2:

- Restrictions to night shift activities and the use of lighting may be required during the construction phase, to minimise impacts to dwellings or the Carnaby's Black Cockatoo (during breeding season).
 - Terrestrial fauna surveys conducted have not identified any confirmed breeding habitat for the Carnaby's Black Cockatoo. A 24-month targeted monitoring program has commenced which incorporates targeted potential nesting tree and habitat surveys. The outcome of this monitoring program will inform the Proponent if additional or amended mitigation measures are likely to be required to further minimise potential risk to breeding locations of listed species.
- Engineered design and choice of turbines are expected to be well above the Carnaby's Black Cockatoo observed flight height and range of movement. A BBUS (collision risk avoidance) is underway as a two-part monitoring program over 24-months and is expected to conclude late 2026. Following the cessation of the monitoring program an adaptive management plan will then be developed to mitigate and monitor impacts to birds and bats (including collision risk).
 - Monitoring across multiple existing wind farms located between Perth and Eneabba in Western Australia have been used to inform baseline flight height ranges for the Carnaby's Black Cockatoo. The interim flight height range conclusions have been compared against the Proposal's minimum expected rotor sweep distance. Mitigation measures to avoid and minimise risk were confirmed through the engineered design scope.

- Crop harvesting can force small introduced species such as mice to flee away from the harvester resulting in an attractive food source for birds of prey. Although most bird flight height range is expected to be below the minimum blade sweep, continued consultation with key stakeholders may enable identification of a window of opportunity to align turbine maintenance (stationary turbines) with crop harvesting.
- The CEMP will include responsible waste management to ensure containment of waste (in particular, food waste) is inaccessible to wildlife (native or introduced).

7.7 Assessment and significance of residual impact

7.7.1 Assessment of direct impacts

7.7.1.1 Loss of vertebrate or invertebrate habitat and fragmentation

Black Cockatoos

Foraging habitat

The majority (91.5%) of the Proposed Development Envelope and vicinity was assessed as providing low foraging value for Carnaby's Black Cockatoo (canola crop, and sparsely scattered Marri) (Phoenix, 2025e). High quality foraging habitat is restricted to Banksia heath and woodland habitat, which constitutes 5.3% of the area studied. The remaining habitat types were assessed as having moderate foraging value.

The majority (92.2%) of the Proposed Development Envelope and vicinity was also assessed as providing low foraging value for Forest Red-tailed Black Cockatoo (Phoenix, 2025e). Open Jarrah-Marri woodland, Banksia heath and woodland and Drainage line and riparian habitat were considered to have moderate foraging value as they contained suitable foraging species, although in reduced densities due to historic clearing. Areas cleared for infrastructure and wetlands contained no known foraging plants for either species, although wetlands may provide drinking habitat for both species.

While most of the Proposed Development Envelope is considered to provide low quality foraging habitat, Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoo's will traverse low scoring habitats to access higher value foraging areas. Native vegetation within Proposed Development Envelope predominantly occurs along roadsides as remnant vegetation. These narrow areas of roadside vegetation provide a role in maintaining connectivity in a highly cleared landscape (DAWE, 2022).

Breeding habitat

A total of 1,609 potential nesting trees (PNTs) were recorded within the Proposed Development Envelope and vicinity (Figure 7-5). Black cockatoos are reliant on trees with large hollows (300 to 500 mm) for breeding habitat. Breeding trees are generally in woodland or forest, however, may occur in partially cleared woodlands or in isolated trees (DAWE, 2022), such as those present within the Proposed Development Envelope. Known breeding trees for Carnaby's Black Cockatoo include Salmon Gum, Wandoo, Tuart, Jarrah, Flooded Gum, York Gum, Powderbark, Karri and Marri. Known breeding trees for Forest Red-tailed Black Cockatoo include Marri, Karri Wandoo, Bullich, Blackbutt, Tuart and Jarrah (DAWE, 2022).

A total of 69 PNTs had hollows that were considered potentially suitable for breeding. However, of these, 4 were occupied by other species, 19 showed recent evidence of use (indicated by chewing around the hollow entrance) and 15 had evidence of old chew marks (not confirmed as used for breeding by black cockatoos). Other cockatoo and parrot species are known to chew around nesting hollows, which are competitors with black cockatoos for suitable breeding sites. Therefore, without direct observation of the bird species, chew marks cannot be attributed to any particular cockatoo species. Of the 69 PNTs with hollows suitable for breeding, none were located within the Proposed Construction Footprint.

Three night roost sites were identified outside the Proposed Development Envelope up to 3 km south (Phoenix, 2025e). Given that the Proposed Development Envelope occurs in the known breeding range for Carnaby's Black Cockatoo, PNTs (with possibly suitable hollows) and suitable foraging and roosting habitat is present, it is possible that this species may breed within or around the Proposed Development Envelope. However, further surveys (scheduled for November 2025 and ongoing in 2026) are required to confirm the use of PNTs within the Proposed Development Envelope for cockatoo breeding.

Loss of vertebrate or invertebrate fauna

Placement of the Proposed Construction Footprint has been amended multiple times to maximise the use of previously cleared agricultural land and minimise clearing of native fauna habitat. Negligible direct loss of terrestrial fauna species is expected to result from the implementation of the Proposal.

The unpredictability of fauna movements both on ground and within the air cannot be completely mitigated or discounted as a risk. The proposed engineered design presented within this Proposal employs avoidance and minimisation as key processes to prevent fauna impact or mortality. The two Black Cockatoo species are likely to be at risk of impact from this Proposal, however data from recent and ongoing studies indicate that these species generally fly below rotor swept area (Bamford, 2025).

With the avoidance and mitigation measures implemented through the CEMP, Traffic Management Plan and Bird and Bat Management Plan the residual risk of direct impact to fauna is considered low.

7.7.2 Assessment of indirect impacts

The indirect impacts associated with the Proposal include:

- Habitat degradation associated with construction and operational activities (weeds, feral animals, altered fire regime)
- Changes to the airshed above the current landscape.
- Disturbance and possible displacement of fauna from construction and operation activities.
- Edge effects of land clearing leading to increased access for predators.

7.7.3 Cumulative impacts

Significant fauna species that occur or are likely to occur within the Proposed 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 Proposed Indicative Envelope 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

In consideration of the proposed avoidance and management measures and likely residual impacts associated with the Proposal, the anticipated environmental outcomes that apply to terrestrial fauna are as follows.

- No greater than approximately 0.170 ha of high-quality foraging habitat for black cockatoo species mapped within the Proposed Development Envelope will be impacted.

Whilst additional technical survey data is still being obtained, residual impacts are predicted to remain low to negligible following the avoidance and mitigation measures described above and the potential provision of offsets. Therefore, the Proposal is likely to meet the terrestrial fauna environmental factor objective “to protect terrestrial fauna so that biological diversity and ecological integrity are maintained” (EPA, 2016e).

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, 2023).

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

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 Legislation		
(DCCEEW, 1999)	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	Australia’s main national and environmental legislation, which provides for the government’s role in protecting and preserving the environment and heritage; and enables efficiency between states and territories on protected matters.
(CoA, 1993)	<i>Native Title Act 1993</i> (NT Act)	This Act recognises and protects the rights of Indigenous Australians to their traditional land and waters. The Act provides a legal framework for Indigenous people to claim native title rights. It sets out the process for determining native title claims, establishes the Native Title Tribunal, and provides for negotiations and agreements between Indigenous groups and other parties, such as governments and developers. This guidance was used by Archae-aus (2025) in conjunction with the desktop Aboriginal and Historical Cultural Heritage Due Diligence Assessment.
(DITRDCA, 2024)	<i>Civil Aviation Act 1988</i> (as amended 2024)	Administered by the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts and amended in 2024. Enabled the establishment of CASA as the federal body under the Act.
(NEPC, 2013)	National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)	The purpose of the Measure is 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.
(CASA, 1998)	Civil Aviation Safety Regulations (CASR) 1998	These regulations are part of a broader regulatory framework managed by CASA. This regulation supports the <i>Civil Aviation Act 1988</i> .
State Legislation		
(DWER, 1986)	<i>Environmental Protection Act 1986</i> (EP Act)	Provides for the EPA to regulate the prevention, control and abatement of pollution and environmental harm to enable the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.

Author, Year	Title	Consideration
(EPA, 1997)	Environment Protection (Noise) Regulations 1997	The Environment Protection (Noise) Regulations 1997 excludes wind farm noise from its provisions and recognises the fact that developments are primarily intended for rural areas where natural background noise may be very low. Furthermore, noise from wind turbines have unique characteristics that can be present for a large portion of the day.
(DPLH, 2005)	<i>Planning and Development Act 2005</i> (PD Act)	Provides the legal framework for land use planning and development control within the state. Its primary purpose is to promote orderly and sustainable development by regulating planning schemes, development approvals, and the preparation and implementation of strategic plans. This guidance was used by Archae-aus (2025) in conjunction with the desktop Aboriginal and Historical Cultural Heritage Due Diligence Assessment.
(DPLH, 2015)	Planning and Development (Local Planning Schemes) Regulations 2015)	A statutory document which sets out objectives, development standards and provisions for the use, development and protection of land within the Shire of Dandaragan. The Scheme (Local Planning Scheme No.7) divides the Shire into zones to identify areas for particular land uses and distinguishes land reserved for public purposes.
(DWER, 2012)	<i>Rights in Water and Irrigation Act 1914</i> (RIWI Act)	The purpose of the RIWI Act is to provide for the sustainable use, management, and protection of the state's water resources, including surface water and groundwater, by regulating abstraction and use through licensing in proclaimed areas. This guidance was used by Aurecon (Aurecon, in conjunction with the Preliminary Water Resources Impact Assessment
(DPLH, 1972)	<i>Aboriginal Heritage Act 1972</i> (AH Act as amended)	This Act makes provisions for the preservation of sites and objects traditionally used by, or belonging to, the original inhabitants of Australia or their descendants. The Act was amended in 2023 and was repealed. This guidance was used by Archae-aus (2025) in conjunction with the desktop Aboriginal and Historical Cultural Heritage Due Diligence Assessment.
(HCWA, 2024)	<i>Heritage Act 2018</i>	Replaced the <i>Heritage of Western Australia Act 1990</i> in July 2019. To recognise and promote WA cultural heritage by defining principles for conservation, use, development or adaptation for heritage places, sometimes referred to as European Heritage. This guidance was used by Archae-aus (2025) in conjunction with the desktop Aboriginal and Historical Cultural Heritage Due Diligence Assessment.
(DoH, 2024)	<i>Health Act (Miscellaneous Provisions) 1911</i> Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974	The Act sets out processes and requirements to obtain approval through local government to construct and install apparatus for the treatment of sewage (as amended 2024). The Regulations further provide guidance on restricted flush fixtures; maintenance of aerobic treatment units; conditions to be followed to construct dry type septic tanks; requirements for the disposal of effluent and liquid wastes; registration of marks and brands of apparatus for the treatment of sewage; offences and penalties.
(DWER, 2021)	<i>Contaminated Sites Act 2003</i> (as amended 2023)	National Environment Protection (Assessment of Site Contamination) Measure 1999
(NTA, 2010)	<i>National Trust of Australia (W.A.) Act 1964</i> (NTA)	Establishes the National Trust as the statutory authority for the management of over 60 heritage sites across the state of Western Australia. These sites include heritage listed buildings (or ruins) and natural landscapes.
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 (PM10 and PM2.5), carbon monoxide, nitrogen dioxide, sulfur dioxide, and ozone—in outdoor ambient air.

Author, Year	Title	Consideration
(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, 2024)	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, 2021)	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 Group (NASAG) Guideline D	Minimising the risk to civil aviation arising from the development, presence and use of wind farms and wind monitoring towers.
State Technical Guidance		
(EPA, 2023)	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, 2018)	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, 2024)	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 (2025) in conjunction with the Social Baseline Study.

Author, Year	Title	Consideration
(DWER, 2011)	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 (2025) (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. 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, 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.

Author, Year	Title	Consideration
(DWER, 2011)	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, 2024)	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 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.

Author, Year	Title	Consideration
(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 (2025) 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, 2025).

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, 2024b) 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, 2025).

■ 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, Social IQ (2025).

Table Totes:

* 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. For positive impacts: high capacity to realise opportunities.	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 impacts: reasonable capacity to realise opportunities.	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. 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, Social IQ (2025).

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).

The sections below provide the following information:

Section 8.4 outlines all additional surveys and studies carried out to supplement and support the assessment of the Social Surrounding Environmental Factor.

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 (SIQ, 2025) to document the existing social, cultural, and economic characteristics of the communities and areas which may be impacted due to Proposal implementation. 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 Proposed 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 Proposed 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 R to support assessment of this Proposal.

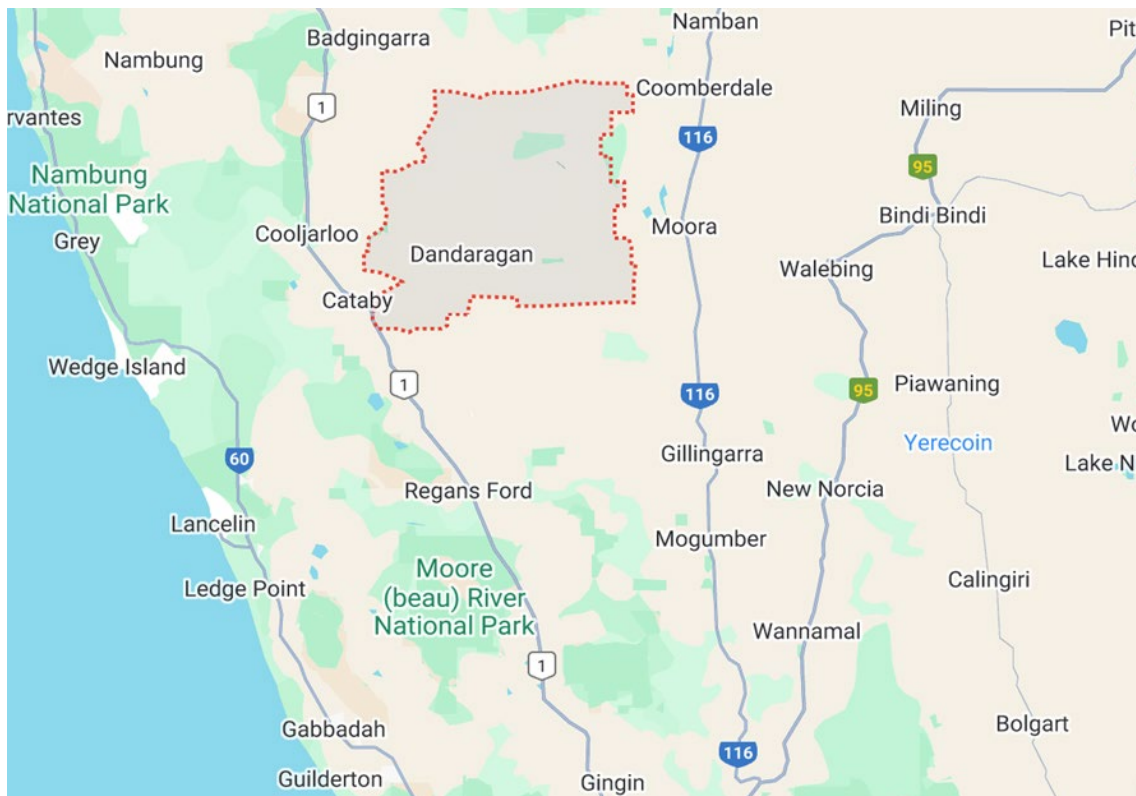


Figure 8-1 Local impact area

Source: Social Impact Assessment (SIQ, 2025a)

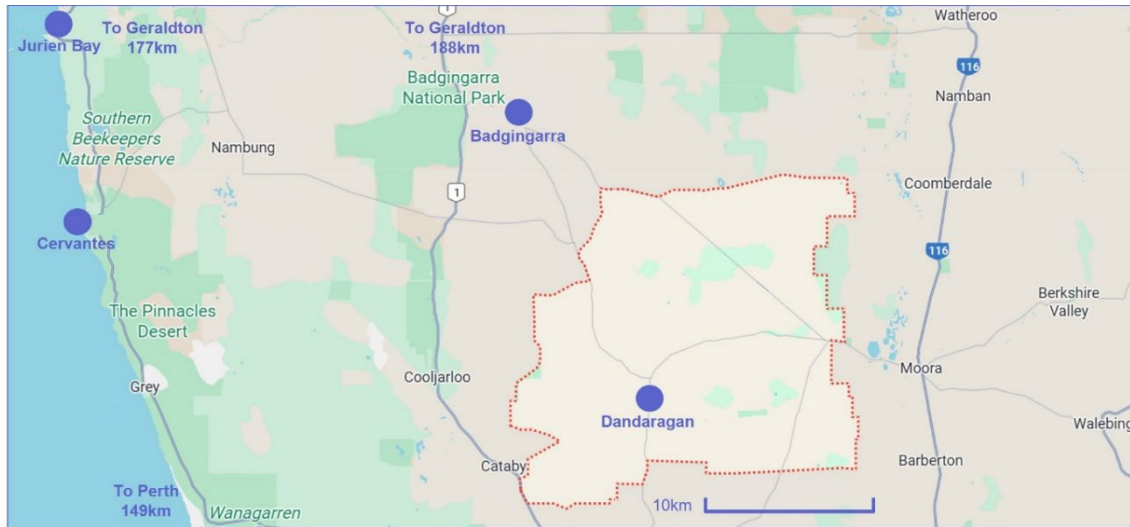


Figure 8-2 Regional Impact Area

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 Proposed 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.

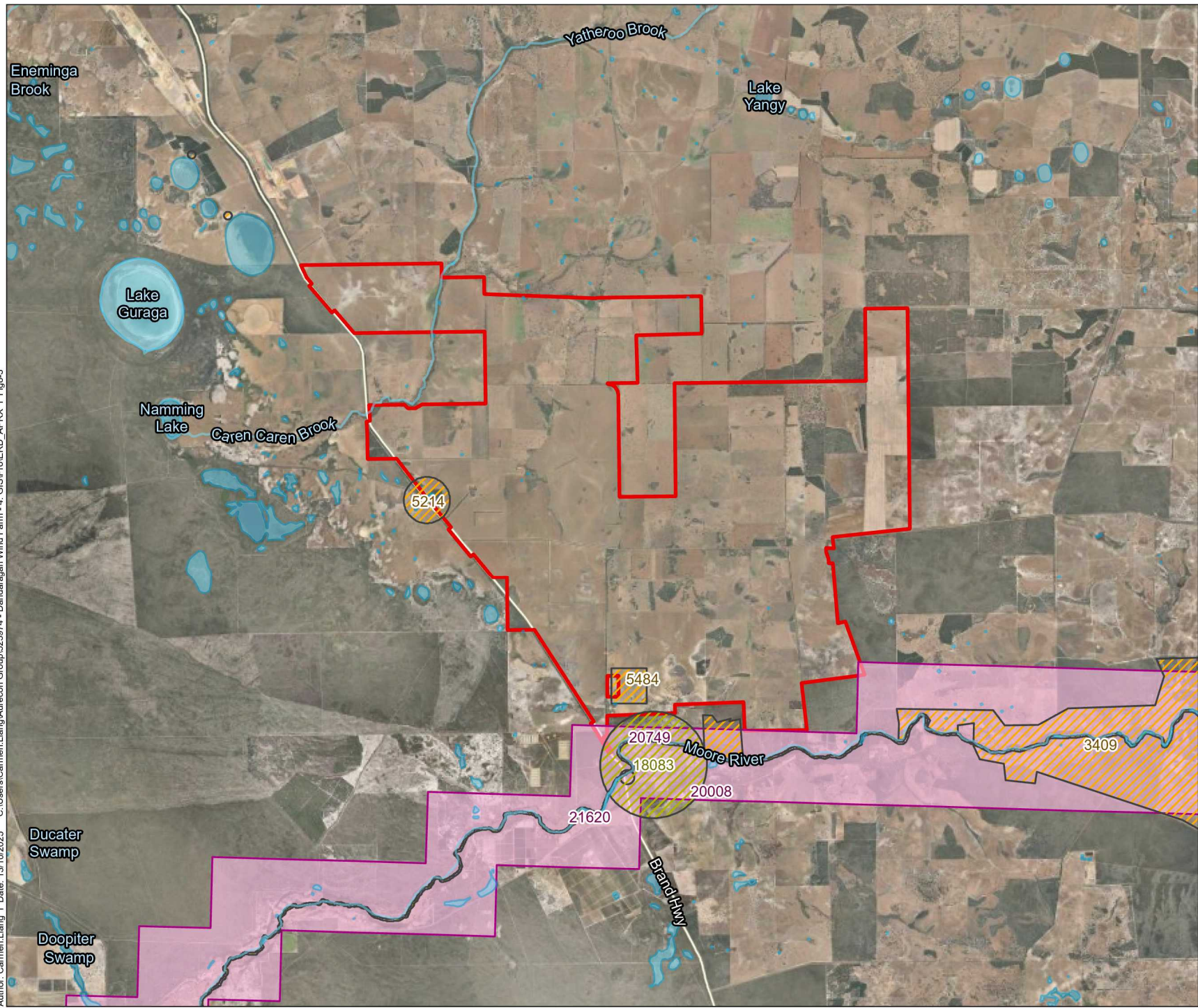
The DDA and identified 16 registered, lodged or historic Aboriginal Cultural Heritage sites within a 5 km buffer of the Proposed Development Envelope. The assessment found limited prior heritage surveys, indicating a need for broader field investigations. The Aboriginal Cultural Heritage Inquiry System (ACHIS) and DPLH online databases identified 4 sites either intersected or located within a 2 km (buffer) of the Proposed Development Envelope (Archae-aus, 2025), including one registered Aboriginal Cultural Heritage place, 2 lodged places and one historic place. The Aboriginal Cultural Heritage sites located within the Proposed 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 Proposed 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 Proposed Development Envelope

Place ID	Registered place name	Place type	Intersecting the Proposal 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



- Proposed 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



Author: Carmen Liang | Date: 13/10/2025 | C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\ProJERD_APRX | Fig8-3

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 Proposed Development Envelope were identified, including the Moore River Pool (PCE-06), Wetlands & Watercourses Moore River to Bullsbrook, Red Gully Creek, Gingin Brook Waggy, 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 6 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 Proposed 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 where possible. Micro-sighting allowance within the Proposed Indicative Envelope also assists in mitigating risks where there are unexpected finds.
- Predictive statements for site types were used to identify 4 levels of heritage potential occurrence within the Proposed 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 Proposed 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.

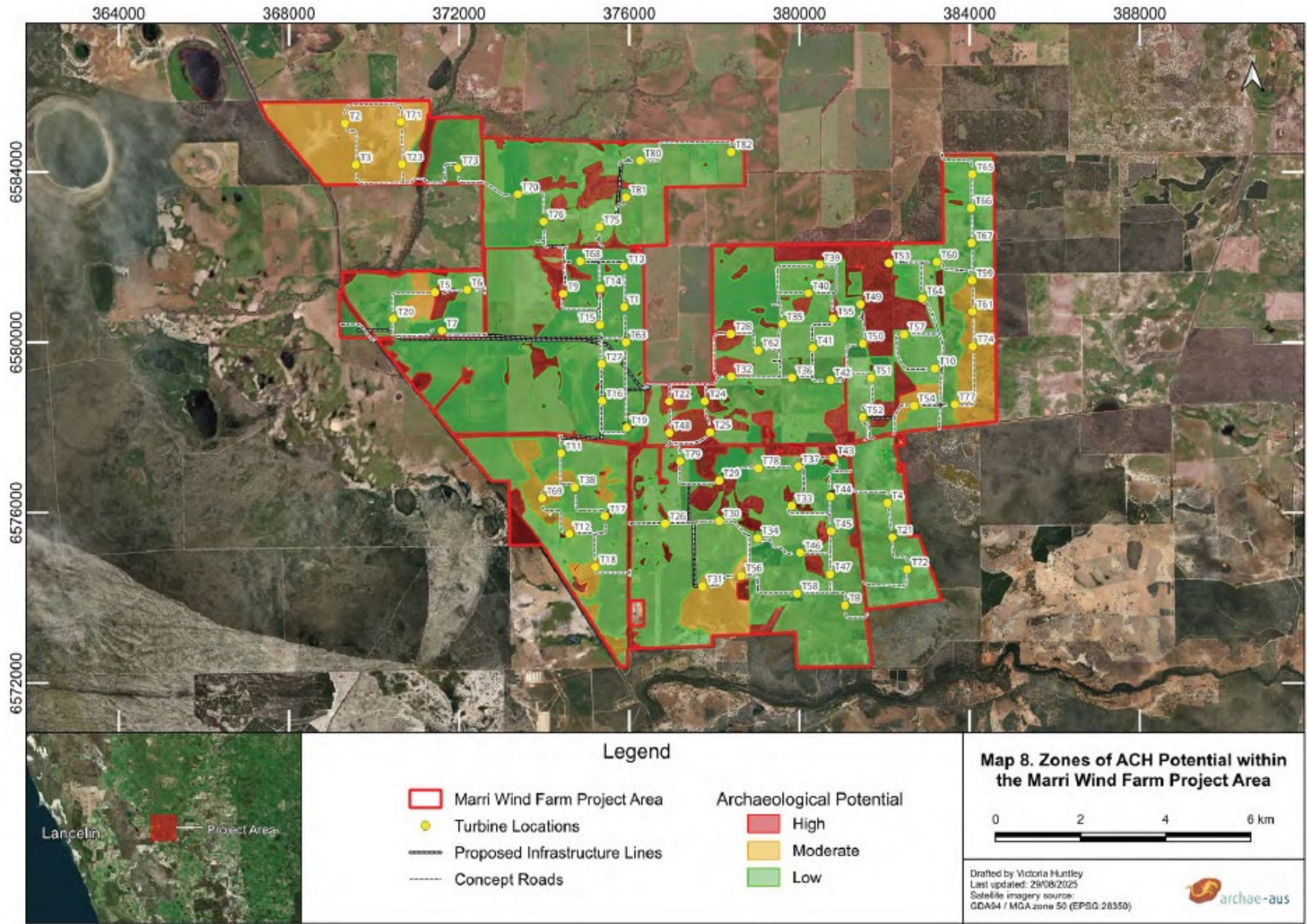


Figure 8-4 Zones of ACH Potential

Source: Aboriginal and Cultural Heritage DDA (Archae-us, 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 Proposed 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).

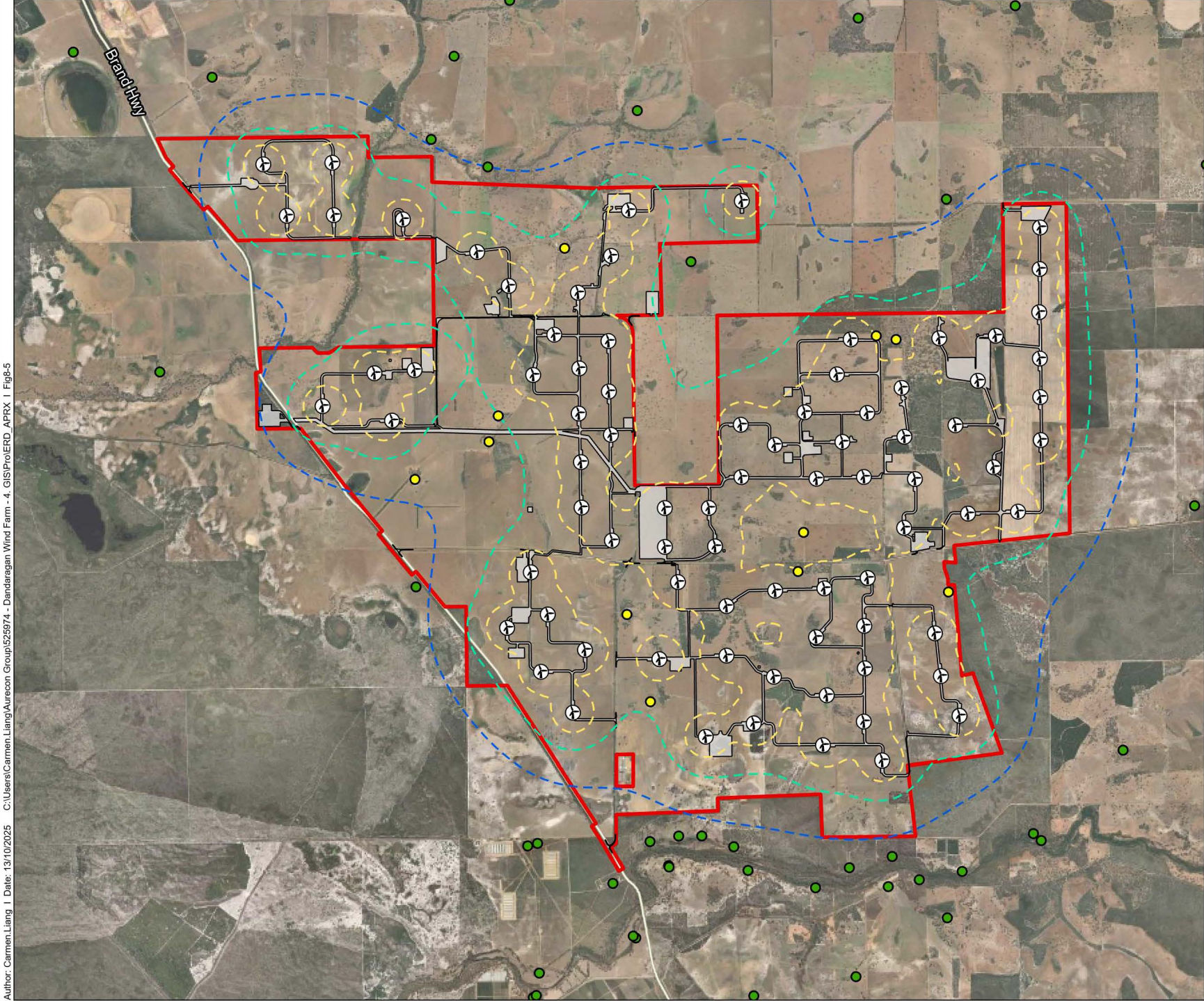
- Prior to the commencement of construction of the Proposal, a pre-construction noise assessment may be beneficial to reflect the final turbine and ancillary infrastructure selections and design.
- The pre-construction noise assessment should include a cumulative noise assessment incorporating the Yathroo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



- Proposed Development Envelope
- Proposed Construction Footprint
- ⊕ Turbine Layout
- Involved Sensitive Receivers
- Non-Involved Sensitive Receivers

Predicted Noise Level LAeq,10

- 35 db
- 40 db
- 45 db

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



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 Proposed Development Envelope boundary, due to the large size of the turbines (maximum 275 m agl), hence 8 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.

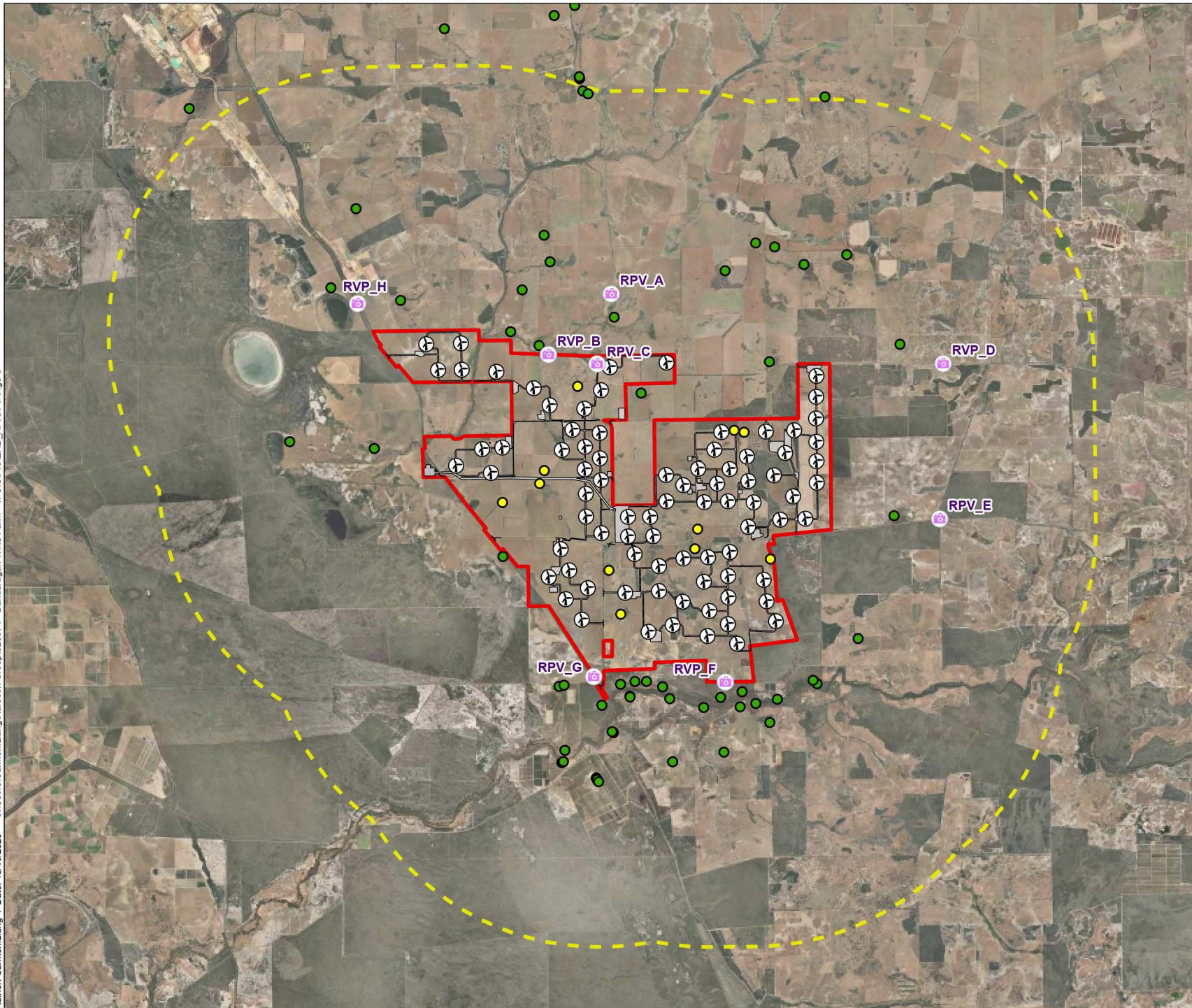
Cumulative impacts from existing and proposed future wind farms within 8 to 20 km radius of the Proposal were also assessed to define a combined potential impact on sequential visibility, visual compatibility, land use changes, and loss of landscape elements.

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.

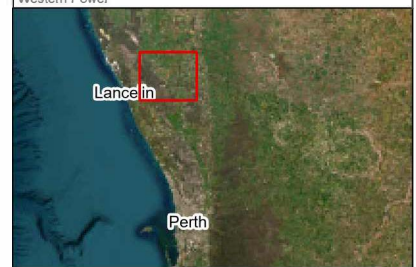
Potential impacts have been presented within Section 8.6.

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.

- Proposed Development Envelope
- Proposed Construction 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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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 2 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, point-to-area (Figure 8-8). This investigation incorporated other radar equipment within approximately 50 km of the Proposed 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 Proposed 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 Proposed 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 Proposed Development Envelope which may result from implementing this Proposal.

Desktop investigations utilised ArcGIS Pro, Nearmap imagery, and Main Roads WA OSOM (Oversize Over Mass) 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 resultant findings identified 2 potential pathways, which include:

- 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 2 routes from the 2 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 this Proposal, the preferred or actual port of delivery has not been identified. 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 Proposed 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 Proposed 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 Proposed Development Envelope access points. Once defined, additional permits under the EP Act will be required.

The Proposed 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 Proposed 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.

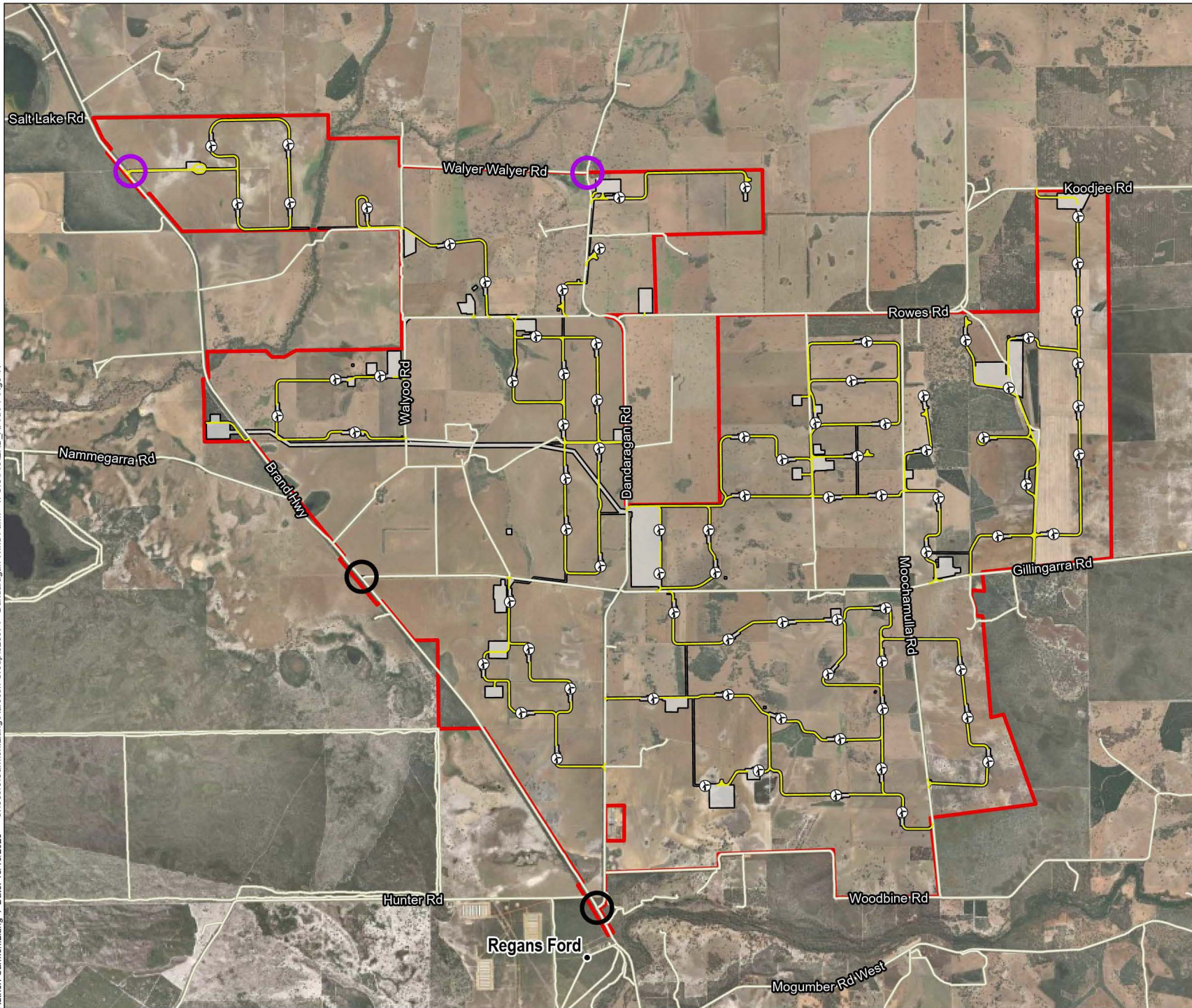
Drainage upgrades may be required at Dandaragan Road's southeast corner; whilst Brand Highway upgrades north and south of the site are planned (however not directly adjacent to the Proposal), including widening and new overtaking lanes approved for 2025/26, with further works proposed for future years. 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.



- Proposed Development Envelope
- Proposed Construction 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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8.4.10 Traffic Impact Assessment

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 Traffic Impact Statement (TIS) was prepared. The report also follows standards set by Main Roads Western Australia (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 2 main port-to-Proposal options (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 Proposed 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 Proposed 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 Proposed Development Envelope

Source: Traffic Impact Statement (Aurecon, 2025b)

Consultation with the Shire identified that Gillingarra, Walyer Walyer, Mochamulla, 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 Proposed Development Envelope.

Brand Highway is slated for widening and overtaking lane improvements north and south of the Proposed 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 Proposed 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 Proposed 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 Proposed 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 Proposed Development Envelope (Aurecon, 2025). 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 (2025) provides detail on hydrological and geological settings and identifies registered groundwater bores within one km of the Proposed 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 Proposed Development Envelope. They are the Caren Caren Brook (north-west within the Proposed Development Envelope) and the Moore River located outside of the Proposed Development Envelope to the south. Inflows into these 2 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, 2025) 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 Proposed 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 were 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 4 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.

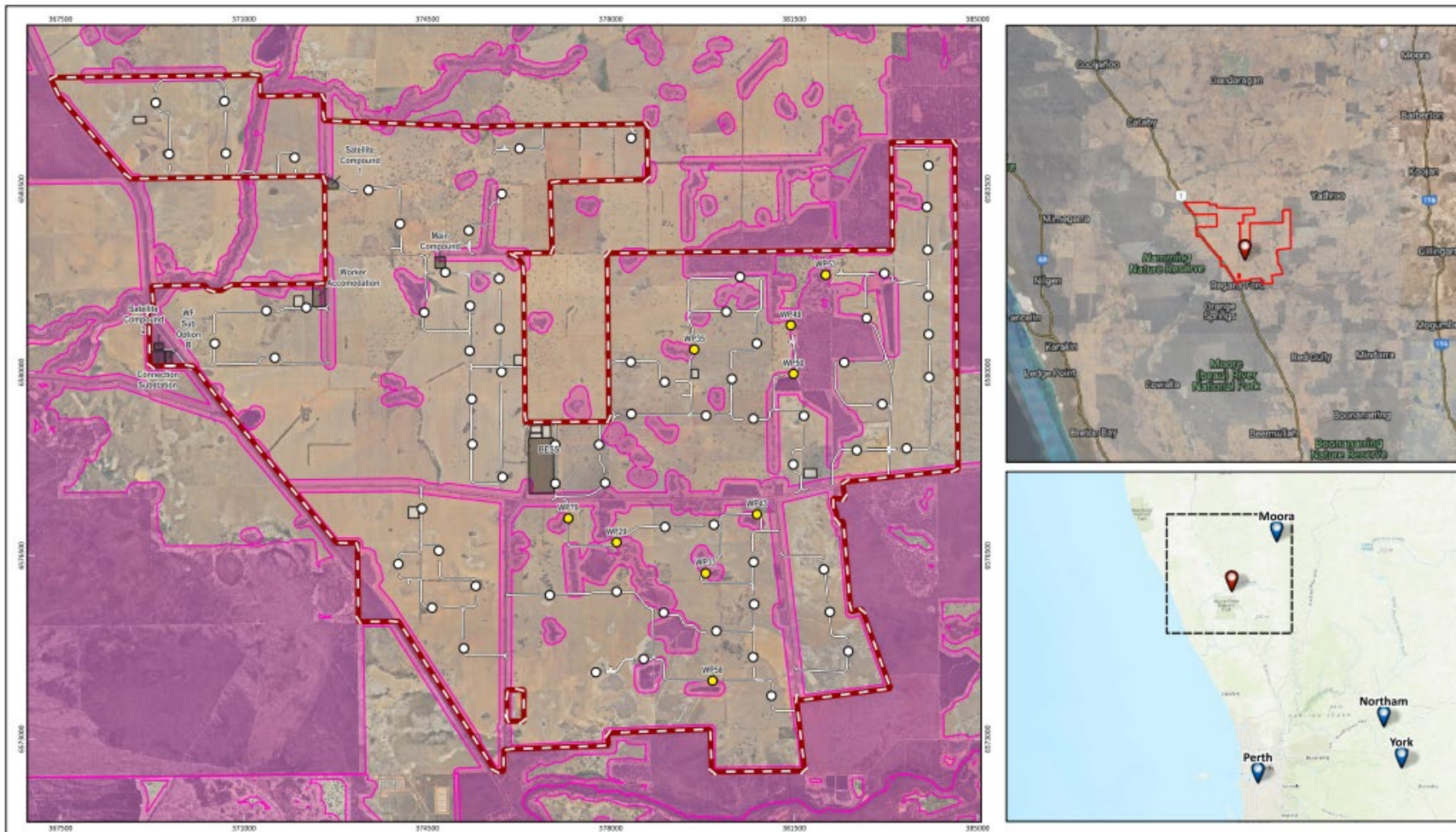


Figure 1: Site Overview

		PROJECT NAME Bushfire Planning Advice Memorandum Marri Wind Farm, Regan's Ford		Legend 	<table border="1"> <thead> <tr> <th>No.</th> <th>Description</th> <th>Status</th> <th>Approval</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Description	Status	Approval	Date					
No.	Description	Status	Approval			Date									
SCALE 1:70,000 GRID A3 COLOUR		CLIENT Alinta Energy c/- Aurecon													
COORDINATE REFERENCE SYSTEM GDA2020 / MGA zone 50		PROJECT NUMBER A24.306		<p>Western Environmental Pty Ltd 18/2004 Stirling Highway, Perth WA 6000 Level 2/200 Stirling Highway, Perth WA 6000</p>											
DATA SOURCE LANDSAT AERIAL IMAGERY		DATE 9/9/2025													

Figure 8-9 Western Environmental, 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 Proposed Development Envelope is 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 Proposed 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).

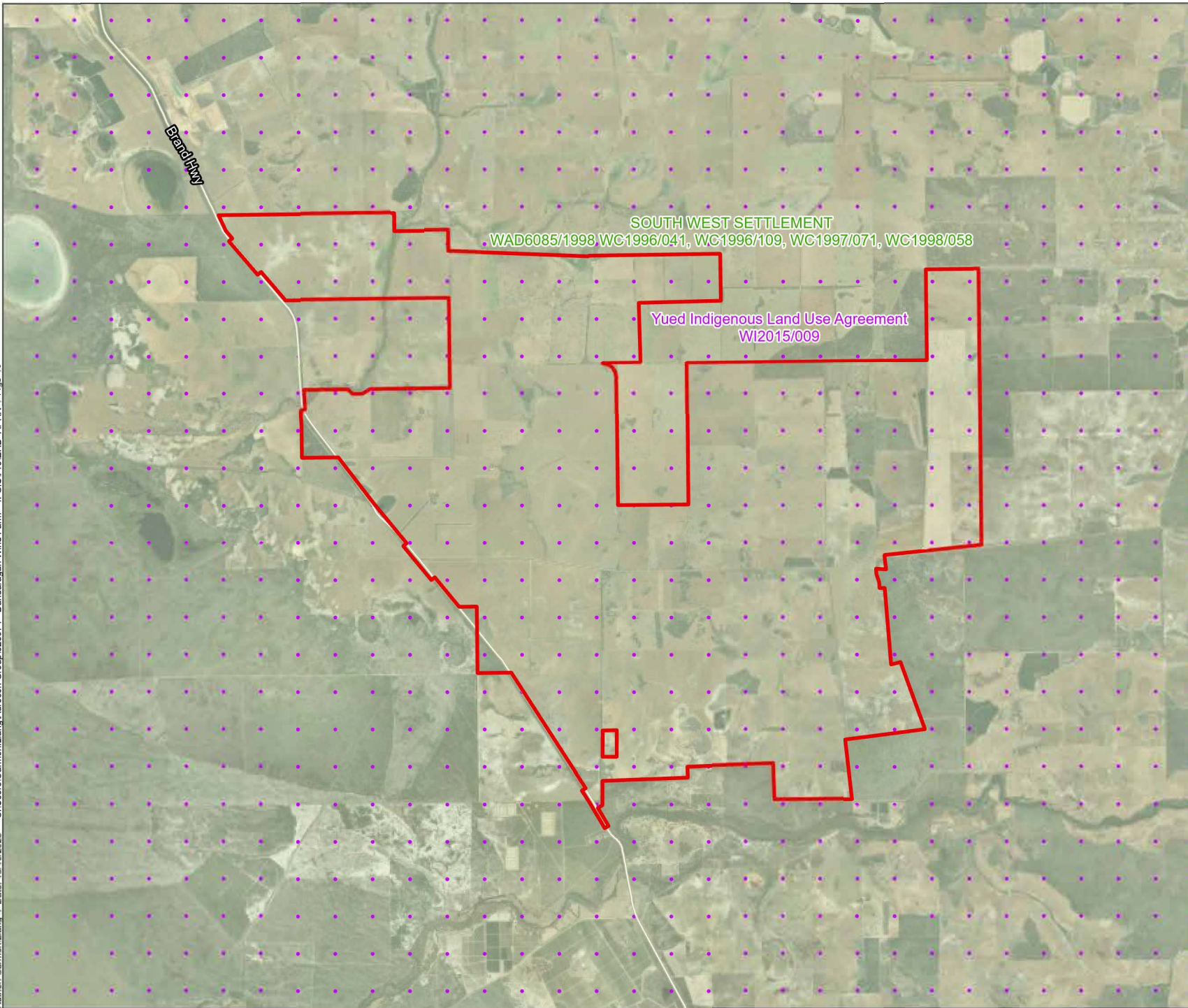
To demonstrate the Proponent's commitment to assess and consider potential impacts under social surroundings and Aboriginal cultural heritage, reasonable efforts have been taken to understand the values important to Yued that may be affected or have the potential to be impacted by the Proposal. Specialist anthropologists were also engaged in 2025 to complete 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.

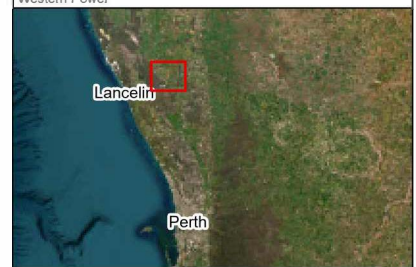
More information regarding stakeholder consultation is presented in Section 3.

Additional information regarding Native Title is presented in Section 1.5.11.

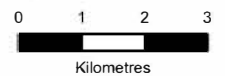
- Proposed Development Envelope
- Native Title (ILUA) (LGATE-067)
- Native Title (Determination) (LGATE-066)
- Public Local Roads



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



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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, 2025).

Public databases, including inherit (inHerit, 2024) Social Baseline Study (SIQ, 2025) identified one heritage site that intersects the Proposed Development Envelope (Figure 8-11):





- Farmhouse site (Place Number 05824) located near Regans Ford in the south of the Proposed Development Envelope along Dandaragan Road. The layout has been refined to avoid impact with this site.

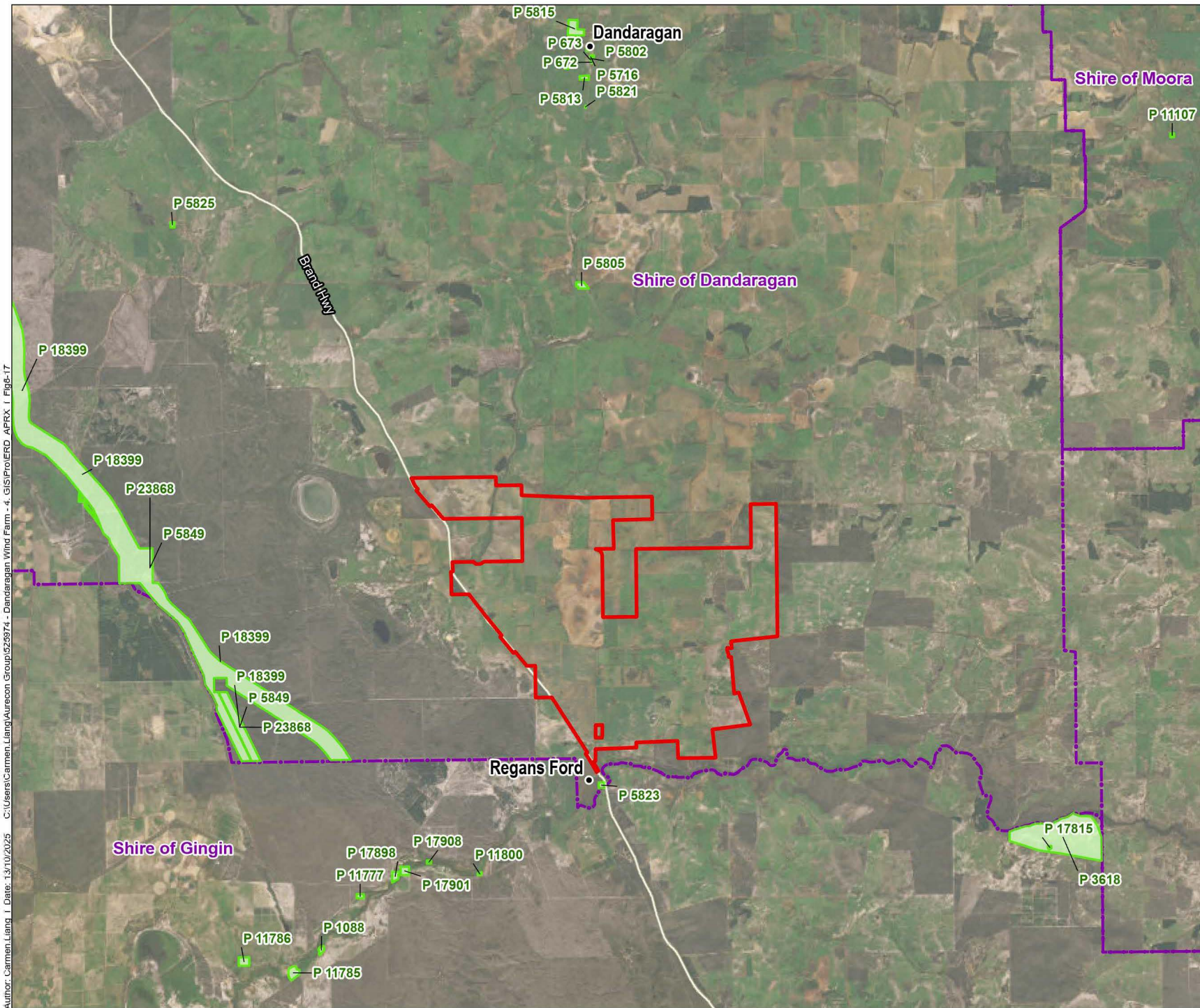
Additional heritage sites located within 10 km of the Proposed Development Envelope boundary identified 3 heritage sites, including:

- Regan's Ford River Crossing (Place Number 26282), approximately 1.8 km south of the Proposed Development Envelope boundary,
- Regan's Ford - River Crossing and Tennis Court Site (Place number 05823), approximately 1.7 km south of the Proposed Development Envelope boundary,
- Yathroo Homestead and Outbuildings (Place number 05805), approximately 10.2 km north of the Proposed Development Envelope boundary.

Other significant non-Indigenous heritage places in the area include (SIQ, 2025; 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 Proposed Development Envelope within the town of Dandaragan.
- The Mogumber Mission and Cemetery (Place number 3618), approximately 16 km southwest of the Proposed Development Envelope, which is listed as a State Heritage site and holds important historical significance.

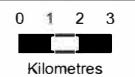
-  Proposed Development Envelope
-  LGA Boundaries (LGATE-233)
-  Heritage Council WA - Local Heritage Survey (DPLH-008)
-  Public Local Roads



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



Marri Wind Farm Environmental Review Document
Figure 8-11 European Heritage Places near the Proposal Development Envelope



Author: Carmen Liang | Date: 13/10/2025 | C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\ProJERD APRX | Fig8-17

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 Proposed 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, 2019; 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 3 main towns: Dandaragan, Badgingarra, and Jurien Bay, however, the Shire of Dandaragan Economic and Tourism Strategy (2019) 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 Proposed Development Envelope, is a small rural township with about 292 residents rooted in agriculture and mining, facing population ageing and focusing on sustainable farming and economic diversification through renewables. Badgingarra, 54 km north of the Proposed 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 Proposed 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 3 years (Shire of Dandaragan, 2019). 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, 2025), 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 Proposed 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, 2025).

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 Proposed Development Area (the closest being Pastoral station (DPLH-083) (Pastoral number: N049535) located 195 km Northeast of the Proposed 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	<ul style="list-style-type: none"> ■ 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 Proposed Development Envelope.
Landholders	Confidential Information	<ul style="list-style-type: none"> ■ 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 Proposed Development Envelope. ■ Access to ground water resources
Community and special interest groups	General Public	<ul style="list-style-type: none"> ■ 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 Proposed Development Envelope.
	Tourists	
Government and Industry	Bureau of Meteorology (BOM)	<ul style="list-style-type: none"> ■ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs meteorological radar services.
	Aviation	<ul style="list-style-type: none"> ■ Degrading signal quality or causing communication disruptions telecommunications by wind turbines causing electromagnetic interference that disturbs aeronautical radar services.
	Defence	<ul style="list-style-type: none"> ■ 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, 2023).

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, 2024b).

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, 2021b). The EPA (2021b) 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 Proposed Development Envelope indicates there are 4 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 Proposed 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 4-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 Proposed 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 3 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 2 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 2 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

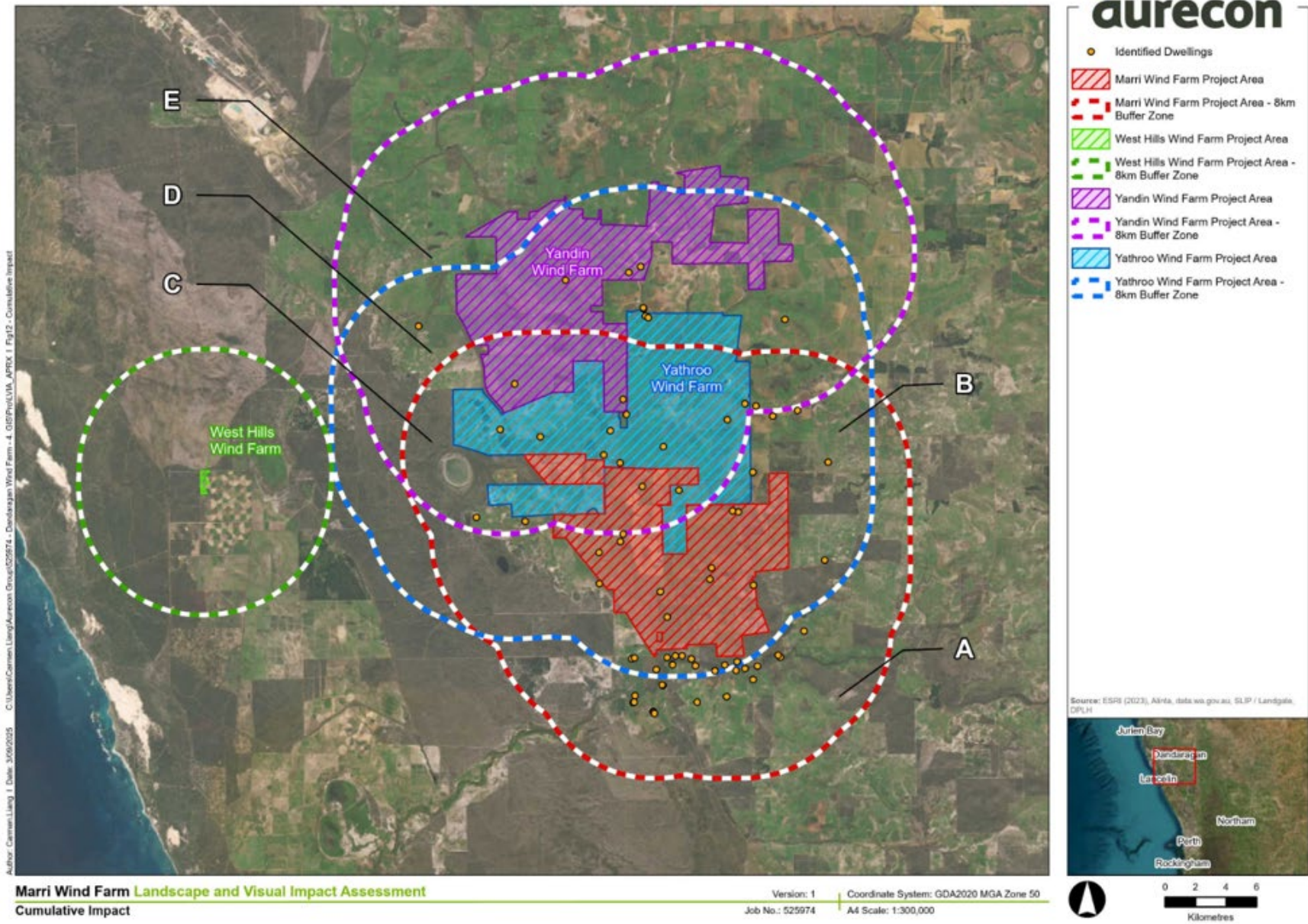


Figure 8-12 Overlapping area for potential visual cumulative impacts from wind turbine

Source: Landscape Visual Impact Assessment (Aurecon, 2025a)

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, 2024b) 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, 2024b)

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 Social surroundings mitigation measures

Potential impacts	Avoid	Minimise	Manage/rehabilitate
Yued Traditional Owners - Social Management Measures			
Unauthorised disturbance to heritage sites due to clearing and earthworks.	<ul style="list-style-type: none"> ■ All heritage places identified within the Proposed Development Envelope will be avoided ■ Adhere to mitigation management as defined in the SIA mitigation measures (2025a) including: <ul style="list-style-type: none"> – 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. <ul style="list-style-type: none"> – 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 Construction 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. 	<ul style="list-style-type: none"> ■ Development of a Cultural Heritage Management Plan (CHMP) <ul style="list-style-type: none"> – 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: <ul style="list-style-type: none"> – Support preservation and protection of significant cultural heritage sites in and around the Proposed Development Envelope. – Ensure mitigation measures are implemented as part of the CEMP to minimise impacts caused by construction 	<ul style="list-style-type: none"> ■ Ahere to mitigation management as defined in the SIA mitigation measures (2025a) including: <ul style="list-style-type: none"> – Support cultural heritage preservation Proposals and protection of significant sites within and around the Proposed 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	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ Built in micro-siting zones for relevant turbines to ensure minimal impact to access 	<ul style="list-style-type: none"> ■ Ahere to mitigation management as defined in the SIA mitigation measures (2025a) including: <ul style="list-style-type: none"> – 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.	<ul style="list-style-type: none"> ■ Proposal designed to avoid significant water sources identified in proximity to the Proposal. Including: <ul style="list-style-type: none"> – 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) 	<ul style="list-style-type: none"> ■ Appropriate design on stormwater drainage in line with the <i>Stormwater management manual for Western Australia</i> (DWER, 2025a) and local government guidance () ■ 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. 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Correspondence with Stakeholders will ensure all concerns are addressed during design stages 	<ul style="list-style-type: none"> ■ Ahere, where appropriate, to mitigation management as defined in the SIA mitigation measures (2025a) 	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Proposal design will ensure that impacts to land use for agricultural activities are limited. 	<ul style="list-style-type: none"> ■ Adherence to the Proposals CEMP 	<ul style="list-style-type: none"> ■ Continued engagement and consultation with existing land users during construction, operation and decommissioning phases
Disturbance of employee and general public amenity - noise	<ul style="list-style-type: none"> ■ Site design such that noise limits comply with the Environmental Protection (noise) Regulations 1997 (WA) <ul style="list-style-type: none"> – 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. <ul style="list-style-type: none"> – 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. 	<ul style="list-style-type: none"> ■ 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, 2019a) and adherence to the Proposal's CEMP. 	<ul style="list-style-type: none"> ■ 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.	<ul style="list-style-type: none"> Proposal design approach to avoid clearing within the Proposed 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. 	<ul style="list-style-type: none"> Minimise vegetation removal for transportation of equipment to site and in siting of infrastructure. In particular, significant species and mature trees. 	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Site design ensures minimal interference to sensitive receptors 	<ul style="list-style-type: none"> Ongoing consultations with impacts stakeholders prior to groundbreaking 	<ul style="list-style-type: none"> Continued engagement with affected stakeholders with impact from EMI and telecommunications interference
Disturbance to aviation	<ul style="list-style-type: none"> Designated flight paths and height of flight path. . 	<ul style="list-style-type: none"> Meteorological monitoring masts require marking with contrasting paint and marker balls to ensure visibility 	<ul style="list-style-type: none"> All turbines and masts must be reported as tall structures to be included in official obstacle databases and aeronautical charts as required by CASA

Potential impacts	Avoid	Minimise	Manage/rehabilitate
<p>Temporary disturbance during construction of public roads road works, overweight/ wide loads</p>	<ul style="list-style-type: none"> ■ Route selection to reduce impact to sensitive receptors (including local and state-controlled roads) 	<ul style="list-style-type: none"> ■ Develop a OSOM TMP which can include but is not limited to: <ul style="list-style-type: none"> – 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 	<ul style="list-style-type: none"> ■ Opportunistic monitoring of road conditions
<p>Modification to the hydrological regimes of water sources including changes to surface flow, changes in water quality resulting from Proposal construction activities.</p>	<ul style="list-style-type: none"> ■ Proposal designed to avoid significant water sources identified in proximity to the Proposal. Including: <ul style="list-style-type: none"> – 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. 	<ul style="list-style-type: none"> ■ 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. 	<ul style="list-style-type: none"> ■ Monitoring of water sources.

Potential impacts	Avoid	Minimise	Manage/rehabilitate
<p>Increase in bushfire risk due to installation of turbines and other ancillary infrastructure.</p>	<ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> – Appropriate separation distances between infrastructure – Appropriate firebreaks 	<ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> – 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 	<ul style="list-style-type: none"> ■ Emergency Plan to be developed in accordance with AS 3745-2010: Planning for emergencies in facilities and include the following: <ul style="list-style-type: none"> – 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

Potential impacts	Avoid	Minimise	Manage/rehabilitate
Disturbance of public amenity – dust during construction	<ul style="list-style-type: none"> ■ Road surface design, preparation and construction. ■ Forecast and works planning to consider high wind events ■ Topsoil stripping not undertaken during the following conditions: <ul style="list-style-type: none"> – High wind events. – When topsoil is saturated or when very dry. 	<ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> – 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 	<ul style="list-style-type: none"> ■ Reducing vehicle speed limits ■ Dust monitoring (when required) during construction to confirm dust levels comply with the applicable dust assessment criteria
Human Safety	<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ Adhere to Proposal’s CEMP ■ All Proposal personnel and contractors to undertake relevant mobilisation inductions, including toolbox meetings and safety briefings 	<ul style="list-style-type: none"> ■ 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 (Proposed Development Envelope and Proposed Construction Footprint) to avoid these values.	Unlikely to be regionally significant. Not likely due to the design of the Proposed 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 Proposed Development Envelope and the Proposed Construction 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. Public Safety	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 Proposed Development Envelope and the Proposed Construction 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 Proposed Development Envelope and the Proposed Construction 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 Proposed Development Envelope and the Proposed Construction 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, 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 Proposed 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 Proposed 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 Proposed Development Area 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 4 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

All 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.

Continuing from the context presented in Table 5-1, Environmental Impact Assessment “uses environmental factors and objectives to organise and systemise” the identification and quantifying the level of “significance” expected from implementing the Proposed Activity as described (EPA, 2024b).

Table 9-1 through to Table 9-7 represents the environmental factors which, following additional review in conjunction with the Proposal Description (Section 1.4), 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	<p>“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).</p> <p>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.</p> <p>The significance of a landform is determined in relation to 6 criteria: variety, integrity, ecological importance, scientific importance, rarity and social importance (EPA, 2018a) .</p>
Receiving Environment	<p>The Proposed 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 Proposed Development Envelope.</p> <p>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.</p> <p>Additional key points relating to the receiving environment include:</p> <ul style="list-style-type: none"> ■ Geological and environmental surveys of the Proposed 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).

Aspect	Description/reasoning
Potential Impacts	<p>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 Proposed Development Envelope.</p> <p>Potential impacts may include:</p> <ul style="list-style-type: none"> ■ 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.
Proposed Mitigation and Management Actions	<p>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 Proposed Development Envelope that may be considered significant in accordance with the criteria set out in the factor guidance (EPA, 2018a).</p> <p>The Proposed Indicative Envelope has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure.</p> <p>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.</p>
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, 2016e). Technical Guidance ‘Sampling Methods for Subterranean Fauna (EPA, 2021d).
Environmental Factor Context	<p>“Subterranean fauna; are defined as fauna which live their entire lives (obligate) below the surface of the earth” (EPA, 2016e).</p> <p>Two groups are subterranean fauna include “stygo fauna – aquatic and living in groundwater” and “troglifauna – air-breathing and living in caves and voids” (EPA, 2016e).</p> <p>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, 2016e), when assessing or considering elements of the Proposal.</p>
Receiving Environment	<p>Additional key points relating to the receiving environment includes:</p> <ul style="list-style-type: none"> ■ Stygo fauna (enclosed aquifer) and troglifaunal (cave systems) require very specific stable subterranean habitats to exist. No defined suitable habitats (e.g., groundwater aquifer or cave system) have been identified during surface and sub-surface investigations. (No subterranean specific studies have been undertaken as no impacts to groundwater or deep excavations are anticipated). ■ The Proposed Development Envelope and regional setting consist of undulating sand dune systems which are not conducive to the provision of suitable habitats for subterranean fauna. ■ Undefined groundwater resources exist and the extraction of groundwater for agricultural use is common throughout the Dandaragan region.

Aspect	Description/reasoning
Potential Impacts	<p>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.</p> <p>Water for construction and operation of the Proposal will be sourced from current (i.e., approved) groundwater allocations and surface storages.</p> <p>Potential impacts to subterranean fauna (or habitat) may include:</p> <ul style="list-style-type: none"> Changes to groundwater levels (extraction) or quality (pollution). The Proposal will not increase current levels of groundwater abstraction nor seek to develop new groundwater sources. No changes to existing groundwater levels and water quality are expected as a result of the development of the Proposal. The risk of impact to potential habitat through these changes is considered to be negligible.
Proposed Mitigation and Management Actions	<p>Mitigation measures or environmental management actions for the subterranean fauna environmental factor will be incorporated into the CEMP, TMP and the PEP.</p> <p>The Proposed Indicative Envelope has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure.</p> <p>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.</p>
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).
Legislation, Guidance and Policy	Environmental Factor Guideline Terrestrial Environmental Quality. Technical Guidance: Assessment and Management of Contaminated Sites (DWER, 2021). Contaminated Sites Act 2003.
Environmental Factor Context	“The chemical, physical, biological and aesthetic characteristics of soils” (EPA, 2016f). 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, 2016f) .
Receiving Environment	<p>Additional key points relating to the receiving environment include:</p> <ul style="list-style-type: none"> Agriculture has been the primary land use across the Proposed 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	<p>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.</p> <p>Potential impacts to terrestrial environmental quality may include:</p> <ul style="list-style-type: none"> 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.

Aspect	Description/reasoning
Proposed Mitigation and Management Actions	<p>Mitigation measures or environmental management actions for the terrestrial environmental quality environmental factor will be incorporated into the CEMP, TMP and the PEP.</p> <p>The Proposed Indicative Envelope has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure.</p> <p>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.</p> <p>Standard site procedures include industry best practice for the transport, storage, use and disposal of any substances.</p>
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	<p>Environmental Factor Guideline Inland Waters (EPA, 2018).</p> <p><i>Rights in Water and Irrigation Act 1914</i></p> <p><i>Country Areas Water Supply Act 1947</i></p>
Environmental Factor Context	<p>"The occurrence, distribution, connectivity, movement, and quantity (hydrological regimes) of inland water including its chemical, physical, biological and aesthetic characteristics (quality) (EPA, 2018).</p> <p>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, 2018) and should be considered as such when assessing or considering elements of the Proposal.</p>
Receiving Environment	<p>Additional key points relating to the receiving environment include:</p> <ul style="list-style-type: none"> ■ There is limited presence of surface water expressions such as wetlands, lakes, creeks or rivers within the landscape of the Proposed Development Envelope. ■ Surface water flows (if/when they occur) may report in part to the Moore River to the south of the Proposed 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 Proposed Development Envelope and the Moore River. ■ The land between the Proposed 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. ■ Agriculture practices on the Dandaragan Plateau are commonplace, with cropping abundant.

Aspect	Description/reasoning
Potential Impacts	<p>Water for construction and operation of the Proposal will be sourced from current (i.e., approved) groundwater allocations and surface storages.</p> <p>Potential impacts may include:</p> <ul style="list-style-type: none"> Construction or operational activities may require modification of a wetland system to enable access or placement of infrastructure. Ecological surveys have confirmed that no wetland or RAMSAR wetland exists within the Proposed Development Envelope. 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 Proposed 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.
Proposed Mitigation and Management Actions	<p>Mitigation measures or environmental management actions for the environmental factor subterranean fauna will be incorporated into the CEMP, TMP and the PEP.</p> <p>The Proposed Indicative Envelope has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure.</p> <p>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 or water source) and avoid impacts.</p>
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	<p>"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).</p> <p>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.</p>
Receiving Environment	<p>Additional key points relating to the receiving environment include:</p> <ul style="list-style-type: none"> Gentle undulating inland sand dune systems with established vegetation best describes the visual extent of the Proposed 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.

Aspect	Description/reasoning
Potential Impacts	<p>Potential impacts to air quality may include:</p> <ul style="list-style-type: none"> 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	<p>Mitigation measures or environmental management actions for the environmental factor air quality will be incorporated into the CEMP, TMP and the PEP.</p> <p>The Proposed Indicative Envelope has been delineated to provide an element of flexibility within the scope of delivery for micro-siting and final placement of infrastructure.</p> <p>Use of water trucks for dust suppression as part of normal site activities to mitigate mobilisation of disturbed particulates.</p>
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 gases 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, 2024c).
Environmental Factor Context	<p>"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, 2024c).</p> <p>"Scope 2 GHG emissions are those from the independent consumption of an energy product" (EPA, 2024c) by implementation of the Proposal activities.</p> <p>"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, 2024c).</p>
Receiving Environment	<p>Additional key points relating to the receiving environment include:</p> <ul style="list-style-type: none"> 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	<p>Potential impacts may include:</p> <ul style="list-style-type: none"> 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.

Aspect	Description/reasoning
Proposed Mitigation and Management Actions	<p>Annual greenhouse gas emission reporting is required under the Commonwealth <i>National Greenhouse and Energy Reporting Act 2007</i> (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.</p> <p>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.</p> <p>A projection has been completed to ascertain the likelihood of greenhouse gas emissions exceeding 100,000 t-CO₂e 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.</p> <p>Infrastructure placement will occur within the Proposed Construction Footprint only.</p>
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, 2016g).
Environmental Factor Context	<p>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.</p> <p>Human health provides the specific framework for considering the possible impacts to human health arising from the emission of radiation.</p> <p>The guideline does not address occupational health and safety which is comprehensively regulated by other agencies.</p>
Receiving Environment	There are no known sources or emitters of radiation within the Proposed Development Envelope or the vicinity of the Proposal.
Potential Impacts	No impacts to human health are anticipated as a result of the Proposal.
Proposed Mitigation and Management Actions	<p>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.</p> <p>No impacts to this environmental factor are expected through the implementation of the Proposal as described within this supporting document.</p>
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 reflecting 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 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
Legislation		
(DCCEEW, 1999)	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act)	Australia’s main national and environmental legislation, which provides for the government’s role in protecting and preserving the environment and heritage; and enables efficiency between states and territories on protected matters.
(DWER, 1986)	<i>Environmental Protection Act 1986</i> (WA) (EP Act)	Provides for the EPA to regulate the prevention, control and abatement of pollution and environmental harm to enable the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.
(DBCA, 2016)	<i>Biodiversity Conservation Act 2016</i> (BC Act)	Provides for the conservation and protection of biodiversity in WA, and the ecological sustainable use of biodiversity components in WA.
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:

- Clearing of approximately 0.170 ha of Banksia Woodlands of the Swan Coastal Plain (TEC), of which approximately 0.153 ha is of excellent condition and approximately 0.015 ha is of very good condition within the Proposed Construction Footprint and Disturbance area. This represents 0.1% of the 186.5 ha of the confirmed survey extent within the Proposed Development Envelope and immediate surrounds.
- Approximately 84 ha of vegetation (excluding Agricultural land absent of native vegetation and cleared land) within the surveyed portion of the Proposed Construction Footprint (Disturbance area). Which represents 6.1% of the vegetation (excluding Agricultural land absent of native vegetation and cleared land) within the surveyed portion of the Proposed Development Envelope (excluding Agricultural land absent of native vegetation).
- Approximately 572.6 ha of Agricultural land absent of native vegetation within the surveyed portion of the Proposed Construction Footprint (disturbance area).
- The potential for disruption to Carnaby’s Black Cockatoo forage or roosting locations within the Proposed Development Envelope. Carnaby’s Black Cockatoo’s have been observed.

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 2 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 3.10 ha within the Proposed Construction Footprint.

Impact: Considered short term and recoverable and not of a significant extent which would result in loss of vegetation. Trimming is expected to enable the vegetation to regrow relatively easily (recover).

Offset: not applicable as incorporated into licencing process.

- **Action:** Clearing of 81.24 ha of native vegetation within the Proposed Construction Footprint (Disturbance area) or at site entry locations, which is classified as degraded or poor condition and not listed as a priority or listed 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 0.170 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 (option b) 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 Proposed Construction Footprint.

- Originally Transmission Line (option a) was proposed which would require of a much larger area of TEC either side of the Moore River and disturbance to beds and banks and potentially impact on Aboriginal Cultural Heritage (ethnographic).
- It has been noted that the Transmission Line (option a) may have potential to impact on 7 potential nesting trees (3 no evidence of use, 2 with old chewing evidence and one with fresh chewing.)
- Hence why this Transmission Line (option a) is no longer being considered under this Proposal.

- **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 1,060 observations of Carnaby's Black Cockatoo recorded during BBUS and targeted Carnaby's Black Cockatoo surveys (Phoenix, 2025e) within the Proposed Development Envelope, no breeding or foraging of habitat or sightings of birds were observed in this particular section 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 84 ha of native vegetation. Within this larger area offsets may be required for the clearing of 0.17 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 (scheduled for November 2025).

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, Listed Threatened Species and Listed Migratory Species (DoE, 2013) .

Any Proposed Action (Action) which 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.

Post holistic assessment of all supporting impact studies for the Proposal, the following points have been highlighted:

- Resultant of this self-assessment, one listed fauna species and one threatened ecological community have been identified through field surveys, and 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 threatened ecological community, listed as endangered.
- The Proponent has prepared and will 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).
- The Preparation and finalisation of the EPBC Referral for federal lodgement will be accordance with the *EBPC Act Referral Preparation Guide* (DCCEEW, 2024a).
- The EPBC Referral is 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) 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 this evaluation of MNES under the Bilateral agreement made under Section 45 of the EPBC Act relating to environmental assessment.

Table 11-1 Policy and guidance relevant to MNES

Author, year	Title	Consideration
Commonwealth		
(DCCEEW, 1999)	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (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
Commonwealth Technical Guidance		
(DCCEEW, 2024a)	EPBC Act referral preparation guide	Outlines the requirements for a EPBC referral as per regulation 4.03 and Schedule 2 of the Environment Protection and Biodiversity Conservation Regulations 2000.
(DoE, 2013)	Significant Impact Guidelines (No. 1.1): Matters of National Environmental Significance	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 of the Swan Coastal Plain ecological community.
(DEWHA, 2010)	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) <i>Calyptorhynchus latirostris</i> , Baudin's Black Cockatoo (vulnerable) <i>Calyptorhynchus baudinii</i> , and Forest Red-tailed Black Cockatoo (vulnerable) <i>Calyptorhynchus banksii naso</i>	Revised guidelines to 3 species of Western Australian black cockatoos listed as threatened, guides on referral to the EPBC Act. Updates previous guidelines from 2012.
(DEWHA, 2010a)	Survey Guidelines for Australia's threatened bats	Guidelines for detecting bats listed as threatened under the EPBC Act.
State		
(DWER, 1986)	<i>Environmental Protection Act 1986</i> (EP Act)	This Act provides for the EPA, for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with the foregoing.
(DBCA, 2016)	<i>Biodiversity Conservation Act 2016</i> (BC Act)	This Act provides for the conservation and protection of biodiversity in Western Australia, ecological sustainable use of biodiversity components in WA.
State Level Technical Guidance		
(EPA, 2024)	Environmental Protection Authority, Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2021	Provides guidance on the environmental impact assessment under Part V of the EP Act. Identifying this as an impact of some significance.
(EPA, 2016c)	Technical Guidance: 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)	Technical Guidance: 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, 2020)	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, 2016d)	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.

Author, year	Title	Consideration
(EPA, 2019)	Technical Guidance: Carnaby's Black Cockatoo in Environmental Impact Assessment in the Perth and Peel Region	Details the issues affecting Carnaby's Black Cockatoo, 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 Western Australia under EIA.

11.2 Protected Matters Search Tool

The Protected Matters Search Tool (PMST) was utilised to identify the presence or absence of MNES known or likely to be observed within the Proposed Development Envelope boundary and within an additional 20 km buffer zone, rather than a centralised geographical point. This search query was completed on 25 July 2025.

A summary of the PMST results is presented in Table 11-2. This initial search identified that 5 threatened ecological species, 66 threatened species and 11 migratory species would benefit from additional investigation and assessment to clearly understand the level of significance potentially imposed on each species.

Table 11-2 Summary matters of national environmental significance 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	5	Refer to Table 11-3	Minor local impact will occur
Threatened Species	66	Refer to Table 11-4	No significant impact expected
Migratory Species	11	Refer to Table 11-5	No significant impact expected

Source: Protected Matters Search Tool query on 25/07/2025 (DCCEEW, data base)

11.2.1 Listed Threatened Ecological Communities

Listed TECs under the EPBC Act and their likelihood of occurrence within the Proposed Development Envelope are summarised within Table 11-3. Initially five potential TECs were identified as having suitable range (growing conditions) within either the Proposed Development Envelope or within a 20 km buffer zone.

The known range of each 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 state regulator databases and in some instances new or extended discoveries were mapped (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 robust baseline prior to the commencement of construction.

Table 11-3 Listed Threatened Ecological Communities and likelihood of occurrence

Community type	PMST buffer status	Threatened category	Presence likelihood	Recorded in Proposed Development Envelope (Y/N)	Proposed construction footprint? (Y/N)
Threatened Ecological Communities within the Proposed Development Envelope					
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Within DE	Critically Endangered	Likely to occur within area	No 16.6 km SSW from DE	No
Banksia Woodlands of the Swan Coastal Plain ecological community	Within DE	Endangered	Likely to occur within area	Yes	Yes Connection substation access approximately 0.153 ha
Threatened Ecological Communities located outside of the Proposed Development Envelope					
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

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 Proposed Development Envelope and Proposed Construction Footprint.

Therefore, Actions proposed under this Proposal, these communities are not considered to be at risk from “an Action which has, will have, or is likely to have a significant impact on an ecological community listed as critically endangered or endangered” (DoE, 2013). Resulting in no significant impact expected to 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 from implementation of this Proposal.

11.2.1.1 Potential to impact

Delivery of the Proposal (as described) will result in the requirement to undertake clearing activities, of which a proportion of the overall disturbance will consist of non-protected native vegetation. This equates to 84 ha of vegetation (excluding agricultural land absent of native vegetation and cleared land) within the surveyed portion of the Proposed Construction Footprint (Disturbance area).

In addition, clearing of approximately 0.170 ha of Banksia Woodlands of the Swan Coastal Plain (TEC), of which approximately 0.153 ha is of excellent condition and approximately 0.015 ha is of very good condition within the Proposed Indicative Footprint and Disturbance area. This approximate 0.170 ha represents 0.1% of the 186.5 ha of the confirmed survey extent within the Proposed Development Envelope and immediate surrounds.

The remaining portion of approximately 84 ha of potentially native vegetation (excluding Agricultural land absent of native vegetation and cleared land) within the surveyed portion of the Proposed Construction Footprint (Disturbance area).

This represents 6.1% of the potentially native vegetation (excluding Agricultural land absent of native vegetation and cleared land) within the surveyed portion of the Proposed Development Envelope (excluding Agricultural land absent of native vegetation).

11.2.1.2 Area of proposed disturbance

Proposed disturbance within the Proposed Development Envelope described as “an Action which has, will have, or is likely to have a significant impact on an ecological community listed as critically endangered or endangered (DoE, 2013) requires additional assessment. This applies to the area of disturbance to occur within the Proposed Construction Footprint (Disturbance), as define below.

Entire extent of Banksia Woodland TEC within the:

- Proposed Development Envelope (12,472 ha) and immediate surrounds contain 186.5 ha regionally significant community (database records) of Banksia Woodland TEC.
- Proposed Construction Footprint consists of 964.4 ha, of which approximately 0.170 ha is of locally significant community Banksia Woodland TEC.
- Proposed Indicative Envelope consists of 10,159.14 ha, of which to avoid duplication the same approximately 0.170 ha area of locally significant community Banksia Woodland TEC will be disturbed to implement this Proposal.

No disturbance of local or regional significance stands of Banksia Woodland TEC outside of the Proposed Indicative Footprint is Proposed, therefore minimising the overall potential impact on local and regional occurrences of Banksia Woodland TEC.

11.2.2 Listed threatened species

The same PMST report returned guidance for up to 66 listed threatened flora and fauna species which may occur within either the Proposed Development Envelope or in the surrounding 20 km buffer zone (area). Field surveys conducted to support this Proposal have identified the actual likelihood of 32 listed threatened species, may occur within the Proposed Development Envelope resultant of habitat, forage availability and breeding potential. These fauna species have been presented within Table 11-4.

11.2.3 Listed migratory species

Review of information collated for assessing migratory species which may have potential to utilise the land or sky area within the Proposed Development Envelope. These 11 migratory species were transposed from the PMST data base and presented in Table 11-4.

Table 11-4 Listed threatened species and likelihood of occurrence

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
Threatened species: Birds within Proposed Development Envelope								
<i>Aphelocephala leucopsis</i>	Southern Whiteface	Within Proposed DE	Vulnerable	Species or species habitat may occur within area	No Records	No	No	Negligible to none
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Within Proposed DE	Vulnerable Migratory Wetlands Species: Listed	Species or species habitat may occur within area	No Records	No	No	Negligible to none
<i>Calidris ferruginea</i>	Curlew Sandpiper	Within Proposed DE	Critically Endangered: Migratory Wetlands Species: Listed - overfly marine area	Species or species habitat may occur within area	Recorded 1978	No	No	Negligible to none
<i>Leipoa ocellata</i>	Malleefowl	Within Proposed DE	Vulnerable	Species or species habitat known to occur within area	Recorded nearby in 1993, 1988, and 2005	No	No	Negligible to none
<i>Numenius madagascariensis</i>	Eastern Curlew	Within Proposed DE	Critically Endangered: Migratory Wetlands Species: Listed	Species or species habitat may occur within area	No suitable habitat	No	No	Negligible to none
<i>Rostratula australis</i>	Australian Painted Snipe	Within Proposed DE	Endangered: Listed - overfly marine area (as <i>Rostratula benghalensis</i> (<i>sensu lato</i>))	Species or species habitat likely to occur within area	No Records	No	No	Negligible to none
<i>Tringa nebularia</i>	Common Greenshank	Within Proposed DE	Endangered: Migratory Wetlands Species: Listed - overfly marine area	Species or species habitat likely to occur within area	Recorded 2003 and 1977	No	No	Negligible to none
<i>Zanda latirostris</i>	Carnaby's Black Cockatoo	Within Proposed DE	Endangered (listed as <i>Calyptorhynchus latirostris</i>)	Breeding known to occur within area	Within known range	Yes	Open woodland, pine plantation, shrubland, drainage line	Low
Threatened species: Mammals within Proposed Development Envelope								
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll	Within Proposed DE	Vulnerable	Species or species habitat known to occur within area	Recorded in 2001 and 1987	No	No	Negligible to none

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
<i>Macroderma gigas</i>	Ghost Bat	Within Proposed DE	Vulnerable	Species habitat may occur within area	**Outside known range	No	No	Negligible to none
<i>Parantechinus apicalis</i>	Dibbler	Within Proposed DE	Endangered	Species habitat may occur within area	***Outside known range	No	No	Negligible to none
Threatened Species: Reptile within Proposed Development Envelope								
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink	Within Proposed DE	Endangered	Species habitat may occur within area	Outside known range	No	No	Negligible to none
Threatened Species: Fish within Proposed Development Envelope								
<i>Nannatherina balstoni</i>	Balston's Pygmy Perch	Within Proposed DE	Vulnerable	Species or species habitat likely to occur within area	No	No	No	Negligible to none
Threatened Species: Plants within Proposed Development Envelope								
<i>Acacia forrestiana</i>	Forest's Wattle	Within Proposed DE	VU (EPBC Act) VU (BC Act) T (DBCA list)	Species or species habitat known to occur within area	6.2 km N of Proposed Development Envelope.	No – Considered unlikely Spring Survey to Confirm	No	Low to Negligible
<i>Andersonia gracilis</i>	Slender Andersonia	Within Proposed DE	EN (EPBC Act) VU (BC Act) T (DBCA list)	Species or species habitat known to occur within area	389 m SSW of Proposed Development Envelope.	No - Possible Spring Survey to Confirm	No	Low to Negligible
<i>Anigozanthos viridis subsp. terraspectans</i>	Dwarf Green Kangaroo Paw	Within Proposed DE	VU (EPBC Act) VU (BC Act) T (DBCA list)	Species or species habitat known to occur within area	2.6 km SSW of Proposed Development Envelope.	No - Possible Spring Survey to Confirm	No	Negligible to none
<i>Banksia fuscobractea</i>	Dark-bract Banksia	Within Proposed DE	Critically Endangered	Species or species habitat known to occur within area	No	Spring Survey to Confirm	No	Low to Negligible
<i>Banksia mimica</i>	Summer Honeypot	Within Proposed DE	EN (EPBC Act) VU (BC Act) T (DBCA list)	Species or species habitat known to occur within area	7.3 km ESE of Proposed Development Envelope.	No - Possible Spring Survey to Confirm	No	Negligible to none

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
<i>Banksia serratulooides</i> subsp. <i>serratulooides</i>	Southern Serrate Dryandra	Within Proposed DE	Vulnerable	Species or species habitat known to occur within area	No	Spring Survey to Confirm	No	Negligible to none
<i>Caleana dixonii</i>	Sandplain Duck Orchid	Within Proposed DE	Endangered (listed as <i>Paracaleana dixonii</i>)	Species or species habitat known to occur within area	No	Spring Survey to Confirm	No	Low to Negligible
<i>Chamelaucium lullfitzii</i>	Gingin Wax	Within Proposed DE	(listed as <i>Chamelaucium</i> sp. <i>Gingin</i> (N.G.Marchant 6)) VU (EPBC Act) VU (BC Act) T (DFCA list)	Species or species habitat likely to occur within area	8.9 km N of Proposed Development Envelope.	No - Possible Spring Survey to Confirm	No	Negligible to none
<i>Conospermum densiflorum</i> subsp. <i>unicephalatum</i>	One-headed Smokebush	Within Proposed DE	Endangered	Species or species habitat known to occur within area	No	Spring Survey to Confirm	No	Low to Negligible
<i>Drakaea elastica</i>	Glossy-leafed Hammer Orchid, Warty Hammer Orchid	Within Proposed DE	EN (EPBC Act) CR (BC Act) T (DFCA list)	Species or species habitat known to occur within area	1.8 km W of Proposed Development Envelope.	No - Possible Spring Survey to Confirm	No	Negligible to none
<i>Eleocharis keigheryi</i>	Keighery's Eleocharis	Within Proposed DE	Vulnerable	Species or species habitat known to occur within area	No	Spring Survey to Confirm	No	Negligible to none
<i>Eucalyptus dolorosa</i>	Dandaragan Mallee, Mount Misery Mallee	Within Proposed DE	Endangered	Species or species habitat known to occur within area	No	Spring Survey to Confirm	No	Negligible to none
<i>Eucalyptus leprophloia</i>	Scaly Butt Mallee	Within Proposed DE	Endangered	Species or species habitat may occur within area	No	Spring Survey to Confirm	No	Negligible to none
<i>Grevillea curviloba</i> subsp. <i>incurva</i>	Narrow curved-leaf Grevillea	Within Proposed DE	Endangered	Species or species habitat likely to occur within area	No	Spring Survey to Confirm	No	Negligible to none
<i>Hakea megalosperma</i>	Lesueur Hakea	Within Proposed DE	Vulnerable	Species or species habitat likely to occur within area	No	Spring Survey to Confirm	No	Negligible to none

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
<i>Hemiandra gardneri</i>	Red Snakebush	Within Proposed DE	Endangered	Species habitat may occur within area	No	Spring Survey to Confirm	No	Low to Negligible
<i>Macarthuria keigheryi</i>	Keighery's Macarthuria	Within Proposed DE	EN (EPBC Act) EN (BC Act) T (DBC list)	Species or species habitat known to occur within area	5.2 km WNW of Proposed Development Envelope.	No - Possible Spring Survey to Confirm	No	Negligible to none
<i>Ptychosema pusillum</i>	Dwarf Pea	Within Proposed DE	VU (EPBC Act) VU (BC Act) T (DBC list)	Species or species habitat known to occur within area	1.9 km W of Proposed Development Envelope.	Spring Survey to Confirm	No	Low to Negligible
<i>Thelymitra stellata</i>	Star Sun-orchid	Within Proposed DE	EN (EPBC Act) EN (BC Act) T (DBC list)	Species or species habitat may occur within area	No	No - Possible Spring Survey to Confirm	No	Low to Negligible
Threatened Species of Birds outside of the Development Envelope								
<i>Calidris canutus</i>	Red Knot, Knot	In buffer area only	Vulnerable: Migratory Wetlands Species: Listed - overfly marine area	Species or species habitat may occur within area	No coastal habitat present	No	No	Negligible to none
<i>Sternula nereis nereis</i>	Australian Fairy Tern	In buffer area only	Vulnerable	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Falco hypoleucos</i>	Grey Falcon	In buffer area only	Vulnerable	Species or species habitat may occur within area	Outside known range	No	No	Negligible to none
<i>Myrmecobius fasciatus</i>	Numbat	In buffer area only	Endangered	Species or species habitat may occur within area	Outside known range	No	No	Negligible to none
Threatened Species of Arachnids outside of the Development Envelope								
<i>Idiosoma nigrum</i>	Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider	In buffer area only	Vulnerable	Species or species habitat may occur within area	No	No	No	Negligible to none

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
Threatened Species of Marine/Fresh Water Fauna outside of the Development Envelope								
<i>Westralunio carteri</i>	Carter's Freshwater Mussel,	In buffer area only	Vulnerable	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Pseudemydura umbrina</i>	Western Swamp Tortoise	In buffer area only	Critically Endangered	Translocated population known to occur within area	Outside known range	No	No	Negligible to none
<i>Pristis pristis</i>	Freshwater Sawfish	In buffer area only	Vulnerable: Migratory Marine Species	Species or species habitat may occur within area	No	No	No	Negligible to none
Threatened Species of Plants outside of the Development Envelope								
<i>Haloragis platycarpa</i>	Broad-fruited Haloragis	In buffer area only	Critically Endangered	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Grevillea gillingarra</i>	null	In buffer area only	Critically Endangered (listed as <i>Grevillea</i> sp. <i>Gillingarra</i> (R.J.Cranfield 4087))	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Grevillea calliantha</i>	Foote's Grevillea, Cataby Grevillea, Black Magic Grevillea	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Spirogardnera rubescens</i>	Spiral Bush	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Goodenia arthrotricha</i>	-	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Darwinia carnea</i>	Mogumber Bell, Narrogin Bell	In buffer area only	Endangered	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Glyceria drummondii</i>	Nangetty Grass	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
<i>Leucopogon obtectus</i>	Hidden Beard-heath	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Thelymitra dedmaniarum</i>	Cinnamon Sun Orchid	In buffer area only	Endangered	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Daviesia dielsii</i>	Diels' Daviesia	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Eremophila scaberula</i>	Rough Emu Bush	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Diplolaena andrewsii</i>	-	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Eucalyptus pruiniramis</i>	Midlands Gum, Jingymia Gum	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Lepidosperma rostratum</i>	Beaked Lepidosperma	In buffer area only	Endangered	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Chorizema humile</i>	Prostrate Flame Pea	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Grevillea pythara</i>	Pythara Grevillea	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Eremophila glabra subsp. chlorella</i>	-	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Eucalyptus recta</i>	Silver Mallet	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Eucalyptus absita</i>	Badgingarra Box	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none

Scientific name	Common name	PMST buffer status	Threatened category	Presence likelihood	Previous record	Recorded in Proposed DE survey	Proposed Construction Footprint? (Y/N)	Risk of impact
<i>Melaleuca sciotostyla</i>	Wongan Melaleuca	In buffer area only	Endangered	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Acacia splendens</i>	Splendid Wattle, Dandaragan Wattle	In buffer area only	Endangered	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Darwinia acerosa</i>	Fine-leaved Darwinia	In buffer area only	Endangered	Species or species habitat known to occur within area	No	No	No	Negligible to none
<i>Gastrolobium hamulosum</i>	Hook-point Poison	In buffer area only	Endangered	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Asterolasia nivea</i>	Bindoon Starbush	In buffer area only	Vulnerable	Species or species habitat likely to occur within area	No	No	No	Negligible to none
<i>Eucalyptus argutifolia</i>	Yanchep Mallee, Wabling Hill Mallee	In buffer area only	Vulnerable	Species or species habitat may occur within area	No	No	No	Negligible to none
<i>Chamelaucium sp. Cataby</i> (G.J.Keighery 11009)	Griffin's Waxflower	In buffer area only	Vulnerable	Species or species habitat known to occur within area	No	No	No	Negligible to none

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 11-5 Listed migratory species and likelihood of occurrence

Scientific name	Common name	Threatened category	IUCN	Intergovernmental agreements	PMST area status	PMST presence likelihood	Recorded in Proposed DE Survey (Y/N)	Critical breeding area	Critical habitat area	Critical to feeding, rest or migration	Risk of impact
<i>Actitis hypoleucos</i>	Common Sandpiper	Migratory Wetlands Species, Listed	Least Concern	CAMBA, JAMBA, ROKAMBA	Within Proposed DE	Likely	No Records	No	No	No	Negligible to none
<i>Apus pacificus</i>	Fork-tailed Swift	Migratory Marine Birds, Listed - overfly marine area	Least Concern	CAMBA, JAMBA, ROKAMBA	Within Proposed DE	Likely	No Records	No	No	No	Negligible to none
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Vulnerable; Migratory Wetlands Species, Listed	Vulnerable	Bonn, CAMBA, JAMBA, ROKAMBA	Within Proposed DE	May	No Records	No	No	No	Negligible to none
<i>Calidris canutus</i>	Red Knot, Knot	Vulnerable; Migratory Wetlands Species, Listed - overfly marine area	Near Threatened	CAMBA, JAMBA, ROKAMBA	In buffer area only	May	No Records	No	No	No	Negligible to none
<i>Calidris ferruginea</i>	Curlew Sandpiper	Migratory Wetlands Species, Listed - overfly marine area	Vulnerable	Bonn, CAMBA, JAMBA, ROKAMBA	Within Proposed DE	May	Recorded 1978	No	No	No	Negligible to none
<i>Calidris melanotos</i>	Pectoral Sandpiper	Migratory Wetlands Species, Listed - overfly marine area	Least Concern	JAMBA, ROKAMBA	Within Proposed DE	May	No Records	No	No	No	Negligible to none
<i>Motacilla cinerea</i>	Grey Wagtail	Migratory Terrestrial Species, Listed - overfly marine area	Least Concern	CAMBA, JAMBA, ROKAMBA	Within Proposed DE	May	No Records	No	No	No	Negligible to none
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Critically Endangered; Migratory Wetlands Species, Listed	Endangered	Bonn, CAMBA, JAMBA, ROKAMBA	Within Proposed DE	May	No Records	No	No	No	Negligible to none

Scientific name	Common name	Threatened category	IUCN	Intergovernmental agreements	PMST area status	PMST presence likelihood	Recorded in Proposed DE Survey (Y/N)	Critical breeding area	Critical habitat area	Critical to feeding, rest or migration	Risk of impact
<i>Pandion haliaetus cristatus</i>	Osprey	Migratory Wetlands Species, Listed	Least Concern	Bonn	Within Proposed DE	Known	approximately 1 km from DE in 2000 Only as a Previous Record	No	No	No	Negligible to none
<i>Pristis pristis</i>	Freshwater Sawfish	Vulnerable; Migratory Marine Species	Critically Endangered	Bonn	In buffer area only	May	No	No	No	No	Negligible to none
<i>Tringa nebularia</i>	Common Greenshank	Endangered; Migratory Wetlands Species, Listed - overfly marine area	Least Concern	CAMBA, JAMBA, ROKAMBA	Within Proposed DE	Likely	Previously Recorded 2003 and 1977 Previously 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.

11.3 MNES species potentially impacted

Basic and targeted terrestrial fauna surveys have been completed following the Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment. Resultant analysis of desktop and field surveys completed in late 2024 and across 2025. These surveys have identified the following protected species may be present.

- Carnaby's Black Cockatoo (endangered), *Zanda latirostris*
- Forest Red-tailed Black Cockatoo (vulnerable), *Calyptorhynchus banksii subsp. Naso*

Of these two species listed above, the Forest Red-tailed Black Cockatoo is considered as possibly being a transient visitor due to the Proposed Development Envelope being located outside of what is considered its normal home range. In addition, the Carnaby's Black Cockatoo has been observed repeatedly and is known to forage, fly, roost and breed within the general area.

No observations of the Baudin Black Cockatoo have occurred during field surveys.

The EPBC Act referral Guidelines for 3 Threatened Black Cockatoo Species was utilised for mapping and characterising foraging and breeding habitat (DSEWPC, 2012). Mapping and characterising foraging and breeding habitat findings were reviewed by Bamford Consulting Ecologists. 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 (Phoenix, 2025e).

11.3.1 Carnaby's Black Cockatoo (*Zanda latirostris*; EN)

The Carnaby's Black Cockatoo (*Zanda latirostris*) was the only species observed within the Proposed Development Envelope. This means that there is some level of habitat present to attract them. However, the level of resource reliance, compared to more favourable nearby locations has been studied at depth since 2024, including the establishment of a 24-month potential nesting tree monitoring program to determine the availability of suitable forage or nesting trees (critical habitat).

A total of 1,609 PNT were recorded during recent surveys (Phoenix, 2025e). The species of PNT trees included:

- 1,421 Marri (*Corymbia calophylla*)
- 82 unidentified eucalypt trees
- 43 Tuart (*Eucalyptus gomphocephala*)
- 35 River Gums (*Eucalyptus camaldulensis*)
- 11 Jarrah (*Eucalyptus marginata*)
- 9 Wandoo (*Eucalyptus wandoo*)
- 5 Blackbutt (*Eucalyptus tottiana*)
- 3 Powderbark Wandoo (*Eucalyptus accedens*)

Of the total PNT surveyed, 101 were found to contain one or more hollows; however, 32 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; 19 PNT showed evidence of recent chew marks, 15 showed evidence of old chew marks and the remaining 31 had no evidence of use (Phoenix, 2025e).

Of the 1,609 PNT recorded, 1,178 were in areas cleared for agriculture, 258 in Open Jarrah-Marri woodland, 116 in Drainage line and riparian zones, 34 in areas cleared for infrastructure, 17 in Banksia heath and woodland, 5 in Pine plantations (Phoenix, 2025e). The remaining PNT was recorded opportunistically

outside the Proposed Development Envelope (Phoenix, 2025e) to support local and regional occurrence and understanding of availability of mature trees potentially suitable as nesting trees. A total of 69 PNTs had hollows that were considered potentially suitable for breeding. None of these PNTs were located within the Proposed Construction Footprint.

11.3.2 Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*; VU)

A total of 26 Forest Red-tailed Black Cockatoos have been directly observed during 4 field monitoring occasions under the 24-month monitoring potential nesting tree program (Phoenix, 2025e). Of these observations, 4 individuals have been recorded either within, or in the immediate vicinity (<1 km) from the Proposed Development Envelope. In addition, one historical desktop record (2013) of the Forest Red-tailed Cockatoo was located through background data research. The location of this observation was included within the assessment of impact significance.

The Forest Red-tailed Black Cockatoo 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).

11.3.3 Key threatening processes

Potential threatening processes (Direct Impacts) associated with the Carnaby's Black Cockatoo species:

- Land clearing and tree harvesting for agriculture, forestry and mining.
- Destruction of nesting and foraging trees from fire events.
- Loss of hollows from European honeybees (*Apis mellifera*). European honeybees have been observed competing with Carnaby's Black Cockatoo for suitable nest hollows, as observed within the Proposed Development Envelope (Phoenix, 2025e).
- Nest hollow shortage due to competition with other bird species. Competition for hollows with other bird species has been observed. Cockatoos, including Carnaby's Black Cockatoo (*Zanda latirostris*) and Sulphur-crested Cockatoo (*C. galerita*), as well as Galah (*Cacatua rosiecapilla*), Great Knot (*C. tenuirostris*); as observed within the Proposed Development Envelope (Phoenix, 2025e).
- Plant pathogens and pests - Plant pathogens include *Phytophthora cinnamomi* dieback, *Quambalaria coyrecup* (canker) and *Quambalaria pitereka* (leaf and shoot blight).
- Insect infestation: Significant attack on jarrah, marri and karri by bullseye borer (a beetle) has been observed and is likely to be contributing to the decline in breeding and foraging habitat for Carnaby's Black Cockatoo.
- Climate Change: 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 Carnaby's Black Cockatoo 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 Carnaby's Black Cockatoo habitat is likely to be further exacerbated by an increased frequency and intensity of fires.

Key threatening processes (Direct Impacts) associated with the Forest Red-tailed Black Cockatoo species:

- Nest hollow shortage is the principal ongoing threat to the Forest Red-tailed Black Cockatoo (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).
- Clearing and degradation - Habitat loss for agriculture, timber harvesting and mining is the principal cause of historic decline of the subspecies (Mawson & Johnstone, 1997). The Forest Red-tailed Black Cockatoo

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 (Lee et al. 2013).

- 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, Forest Red-tailed Black Cockatoos 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 Forest Red-tailed Black Cockatoo are received in most years and prosecutions for these actions are undertaken whenever sufficient evidence is available.

11.3.4 Potential direct or indirect impacts

Other direct (an individual bird) or indirect impacts to either black cockatoo species which may result from implementation of this Proposal or compounded by additional developments may include:

- Population decline or increase mortality rates within localised populations due to natural climatic influences (heat waves or drought, regional clearing rates)
- Increased injury rates of young birds flying the coop, with no previous learned avoidance tactics for avoiding impacts with vehicles or machinery
- Loss of suitable forage, roosting, nesting and/or breeding habitat from other developments or climatic events (drought, bushfire or avian pathogen)

11.3.5 Potential mitigation measures

Two Commonwealth plans are in place to aid implementation of threat reducing mechanisms for the Black Cockatoo's these are:

- Forest Black Cockatoo (Baudin's Black Cockatoo *Zanda baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan (Chapman, 2008).
- Environment Protection and Biodiversity Conservation Act (Threat Abatement Plan for Predation by Feral Cats 2024) Instrument (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 be attractant to predator fauna species into the Proposed Development Envelope.

Additional mitigation measures supported through the 2-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 MNES ecological community potentially impacted

Reconnaissance and targeted flora and vegetation surveys have been completed following the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2020b). Resultant analysis from desktop and field surveys has identified that the following listed threatened ecological community Banksia Woodlands of the Swan Coastal Plain (Threatened Ecological Community) is present both within and externally of the Proposed Development Envelope.

11.4.1 Banksia Woodlands of the Swan Coastal Plain

Typically, Banksia Woodlands of the Swan Coastal Plain 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 Woodland (height, percentage of cover, density and dominant banksia species) vary. In general, dominant Banksia components includes at least one of 4 key species, which are *Banksia attenuata* (candlestick banksia), *Banksia. menziesii* (firewood banksia), *Banksia. prionotes* (acorn banksia) and/or *Banksia. ilicifolia* (holly-leaved banksia). *Banksia littoralis* (swamp banksia) and *Banksia. burdettii* (Burdett's banksia) may in some areas also be observed in increased numbers (DoEE, 2016a).

This ecological community 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).

11.4.2 Key threatening processes (direct impacts) associated with the Banksia Woodland TEC community

Key directly impacting processes on remaining stands of Banksia Woodland TEC include, but are not limited to the following:

- Direct land clearing for construction projects, road or highway reserves, urban development, agriculture or other primary industries. This Proposal will require a total ground disturbance of 964.4 ha, of which 84 ha of vegetation (excluding Agricultural land absent of native vegetation and cleared land) within the surveyed portion of the Proposed Construction Footprint (Disturbance Area).
- The area of ground disturbance not yet surveyed within the Proposed Construction Footprint (Disturbance Area), of 295.92 ha falls largely across agricultural land and is not anticipated to contain Banksia Woodland TEC or native vegetation. However, this will be confirmed during spring surveys.
- Clearing of approximately 0.170 ha of Banksia Woodlands of the Swan Coastal Plain (TEC), of which approximately 0.153 ha is of excellent condition and approximately 0.015 ha is of very good condition within the Proposed Indicative Footprint and Proposed Construction area.
- Further fragmentation of remaining stands of Banksia Woodland TEC at two site entry locations, or more noticeable edge impacts; including higher rates of invasive weed colonisation (degrading the overall vegetation health).
- Presence or new introduction of die-back diseases such as *Phytophthora cinnamom* (DoEE, 2016a) from farming or earth moving equipment, due to poor equipment hygiene practices between work sites
- 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.
- Climate Change: 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

11.4.3 Potential indirect impacts

Indirect impacts which may result from implementation of this Proposal or compounded by additional developments may include:

- 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.
- 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.
- Dense vegetation provides excellent refuge to feral animals such as rabbits, mice, cats, foxes and dogs.
- 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).

11.4.4 Potential mitigation aspects or offsets

Mitigation options considered for this Proposal have weighed the potential concerns and impact potential, further investigated and queried flora and vegetation data and proposed engineering. Results of this work has concluded that minimising the overall volume of clearing of TEC which is also not directly connected to a water way is the most practical mitigation measure which can be applied.

Connection location into the State grid at the proposed connector substation is linked to external direction from Western Power and outside of the control of this Proposal.

Offsets for the clearing of approximately 0.170 ha of Banksia Woodland TEC may be required at the discretion of the regulator.

11.5 Assessment of impact 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 value 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
- Listed Migratory Species
- Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community, endangered

Findings from each assessment are presented in Table 11-6, Table 11-7, Table 11-8, and Table 11-9.

11.5.1 Carnaby’s Black Cockatoo

Species assessment utilising the significant impact criteria has been summarised in Table 11-6 for the actions within and surrounding the Proposed Action (this Proposal) on the listed endangered Carnaby’s Black Cockatoo (*Zanda latirostris*).

Table 11-6 Assessment of impact significance – Carnaby’s Black Cockatoo

Significant impact criteria	Assessment of impact significance – Carnaby’s Black Cockatoo
Lead to a long-term decrease in the size of a population	<ul style="list-style-type: none"> ■ Considered unlikely to impact on the long-term population size of Carnaby’s Black Cockatoo 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 Carnaby’s Black Cockatoo (0 to 60 m agl (Bamford, 2025). ■ 1,060 Carnaby’s Clack Cockatoo observations were observed across the Proposed Development Envelope and 2 transmission lines (option a and b) routes 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.

Significant impact criteria	Assessment of impact significance – Carnaby’s Black Cockatoo
Reduce the area of occupancy of the species	<ul style="list-style-type: none"> ■ In field observations combined with additional nearby observations at similar wind farm and future wind farm locations point to a trend of the Carnaby’s Black Cockatoo transversing the open areas. When traveling from one foraging or roosting area to another. ■ All locally identified Carnaby’s Black Cockatoo confirmed roosting locations occur externally to the Proposed Development Envelope and the Transmission line (option b).
Fragment an existing population into two or more populations	<ul style="list-style-type: none"> ■ The Proposed Development Envelope is approximately 12,472 ha, which is relatively small and poorly vegetated in respect to forage and nesting critical for the Carnaby’s Black Cockatoo. ■ No significant impact is considered likely to result from implementing site access clearing. Especially not of an extent that may fragment local or regional Carnaby’s Black Cockatoo populations.
Adversely affect habitat critical to the survival of a species	<ul style="list-style-type: none"> ■ Preferred habitat of the Carnaby’s Black Cockatoo occurs in uncleared or remnant native eucalypt woodlands south-west WA or on coastal plains during non-breeding times of the year. ■ Fauna habitat mapping identified eucalypt woodlands vegetation type within the Proposed 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 Proposed 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 Proposed Construction Footprint consisting of non-native or remnant vegetation 84 ha (6.1%) (excluding Agricultural land absent of native vegetation and cleared land). ■ Within the Proposed Development Envelope of 12,472 ha, approximately 768.99 ha surveyed area is identified as Agricultural land with low to mid isolated trees to open woodland of <i>Corymbia calophylla</i> (occasionally <i>E. totiana</i>), over low sparse to closed grassland of non-native crop or pasture species (Ag(Cc)). <p>Of this potential habitat, 77.69 ha is positioned within the surveyed portion of the Proposed Construction Footprint (Disturbance area) for disturbance.</p> <ul style="list-style-type: none"> ■ Clearing of approximately 0.170 ha of potential forage area of Banksia Woodland of the Swan Coastal Plain (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). ■ Majority of the area (584.73 ha, 87.5%) located within the surveyed portion of the Proposed Construction Envelope, is land with no native vegetation or is already cleared. ■ However, outcomes from the 24-month PNT survey and BBUS are not yet known. Results can be incorporated once known (late 2026). ■ Early observations conclude critical habitat for nesting/ breeding occur outside of both the Proposed Development Envelope and Proposed Construction Footprint.
Disrupt the breeding cycle of a population	<ul style="list-style-type: none"> ■ Three hollows found during potential nesting tree surveys are located outside of the Proposed Development Envelope and the Transmission line (option b). No confirmed nesting habitat (recent or historical) have been located within the Proposed 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. ■ No hollows suitable for Carnaby’s Black Cockatoo nesting requirements have been positively identified within the Proposed Development Envelope, following extensive survey under the continuing 2-year potential nesting tree survey program.

Significant impact criteria	Assessment of impact significance – Carnaby's Black Cockatoo
	<ul style="list-style-type: none"> 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 Carnaby's Black Cockatoo is occurring within the Proposed Development Envelope.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	<ul style="list-style-type: none"> Clearing of 964.4 ha native, non-native and agricultural potential foraging habitat will occur during the construction phase. However, this is not considered to be a critical volume of impact due to approximately 0.170 ha of TEC will be cleared for access, there is no findings of chewing, nesting or transient birds in the proposed area to be cleared. 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Importation of infrastructure from overseas, may carry the risk of foreign matter of some sort being introduced into Australia.
Interfere with the recovery of the species	<ul style="list-style-type: none"> All deliveries will be subject to import customs inspections and once onsite additional checks and if required quarantine area established. It is not envisaged 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	<ul style="list-style-type: none"> The observations of Carnaby's Black Cockatoo 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)	<ul style="list-style-type: none"> Available habitat within the Proposed 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 Proposed Development Envelope.
To maintain genetic diversity and long-term evolutionary development, or	<ul style="list-style-type: none"> Clearing of approximately 0.170 ha of TEC, which appears to be of low value to local populations (no evidence of feeding, roosting or breeding, or individuals).
For the reintroduction of populations or recovery of the species or ecological community.	<ul style="list-style-type: none"> Resulting small area, is not considered to impact on the genetic diversity, evolutionary development or recovery of local populations of the Carnaby's Black Cockatoo. Offsets may be required for this Proposal.
Assessment:	Additional information and field surveys to confirm, but potential for significant impact or loss of critical habitat is not expected. Significant impact is not expected.

11.5.2 Forest Red-tailed Black Cockatoo

An additional species has been included within this assessment utilising the significant impact criteria and summarised in Table 11-7. The Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii subsp. naso*) is listed as vulnerable under the EPBC Act and was observed during the PNT and breeding field surveys (Phoenix, 2025e). Therefore, the information within Table 11-7 has been included under the precautionary principle.

Table 11-7 Assessment of impact significance – Forest Red-tailed Black Cockatoo

Significant impact criteria	Assessment of impact significance: Forest Red-tailed Black Cockatoo
Lead to a long-term decrease in the size of an important population of a species.	<ul style="list-style-type: none"> ■ Considered unlikely to impact on long-term population size as the Proposed Development Envelope is located outside of the northern modelled distribution range for this species.
Reduce the area of occupancy of an important population	<ul style="list-style-type: none"> ■ Preferred and critical habitat conditions are not present within the Proposed Development Envelope.
Fragment an existing important population into two or more populations	<ul style="list-style-type: none"> ■ No population or individual Forest Red-tailed Black Cockatoo has been observed within the Proposed Development Envelope or 2 Transmission line (option a and b) routes during surveys (terrestrial, potential breeding habitat, bird and bat utilisation survey, tree nesting hollow survey). ■ Field surveys have noted the observation of 26 Forest Red-tailed Black Cockatoos. ■ Desktop analysis resulted in a single record being discovered approximately 11 km South-Southeast of the Proposed Development Envelope and the Transmission line (option b). ■ Records from surrounding field surveys (9) 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	<ul style="list-style-type: none"> ■ The Forest Red-tailed Black Cockatoo prefers habitat that resembles dense Jarrah, Karri, and Marri forests, mainly in the hilly interior, and a range of other forest and woodland types (DCCEE, 2024c). ■ The Proposed Development Envelope and survey vicinity consists of >89% 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 Forest Red-tailed Black Cockatoo 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 Forest Red-tailed Black Cockatoo. 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	<ul style="list-style-type: none"> ■ It is considered unlikely that the Forest Red-tailed Black Cockatoo to breed or roost within the Proposed 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 Forest Red-tailed Black Cockatoo.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Not key habitat type for the Forest Red-tailed Black Cockatoo, therefore negative impacts on population numbers is not expected.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	<ul style="list-style-type: none"> ■ 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	Not key habitat type for the Forest Red-tailed Black Cockatoo, therefore negative impacts on population numbers is not expected.
Interfere substantially with the recovery of the species.	
Habitat critical to the survival of a species	
Key source populations either for breeding or dispersal	<p>Key source populations of the Forest Red-tailed Black Cockatoo were not identified within the 24-month PNT and breeding monitoring planning currently being undertaken for Carnaby's Black Cockatoo.</p> <p>Therefore, the available habitat within the Proposed Disturbed Envelope is not considered to be critical to the survival of the Forest Red-tailed Black Cockatoo. Known breeding habitat is known to be located well south of the Proposal area, where Jarrah Forests are more dominant within the ecological setting.</p>
Populations that are necessary for maintaining genetic diversity, and/or	The observations of Forest Red-tailed Black Cockatoo during field surveys have been recorded and assessed by suitably qualified and experienced zoologists utilising habitat quality score methodology developed by Bamford Consulting Ecologists.
Populations that are near the limit of the species range.	

Significant impact criteria	Assessment of impact significance: Forest Red-tailed Black Cockatoo
	Known and documented breeding areas are further south of the Proposal and are highly unlikely to be impacted by the Proposals implementation.
Assessment:	Significant impact is not expected.

11.5.3 Listed migratory species

An assessment utilising the significant impact criteria is summarised below in Table 11-8 for the proposed actions within and surrounding the Proposed Development Envelope on listed migratory species.

Table 11-8 Assessment of impact significance – Listed migratory species

Significant impact criteria	Assessment of impact significance – 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	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 Proposed Construction Footprint, on any external boundary or within the surrounding 10 km of the Proposed 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	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.	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.
Assessment:	Significant impact is not expected.

11.5.4 Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community

An assessment utilising the significant impact criteria for a listed endangered vegetation community is summarised in Table 11-9.

Ingress and egress from the Band 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 11-9 Assessment of impact significance – Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community

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.	<ul style="list-style-type: none"> ■ Under the Offsets mechanism, a portion or like for like Banksia Woodlands of the Swan Coastal Plain TEC may be required.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	<ul style="list-style-type: none"> ■ Ingress and egress from the Band 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 Proposed Development Envelope will not be impacted by civil or structural engineering, as directional sub surface drilling will be utilised.
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	
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	<ul style="list-style-type: none"> ■ The clearing of up to approximately 0.170 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: <ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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 (Carnaby's Black Cockatoo) 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.	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.
Assessment:	<p>Offset potentially required (approximately 2 ha).</p> <p>Impact is considered small and unlikely to place significant risk to the ecological community within the local area, whilst only minimally reducing the regional population.</p> <p>Cleaning activities will be managed via the implementation of a CEMP and surveyed as part of the site development.</p> <p>Significant impact is not expected</p>

11.6 Summary of impact significance

The significance of the proposed impacts above has been considered throughout the planning and design processes supporting this Proposal. The extent of clearing has resulted in a major design amendment which

has reduced the potential impact to Banksia Woodland TEC to approximately 0.170 ha, with offsets considered if required.

Evidence is consistent with local information, regarding preferred roosting and breeding areas for the Carnaby's Black Cockatoo (Section 7). With ongoing species-specific surveys identifying an area of potential forage area of excellent ecological condition, which seems less favourable to the Carnaby's Black Cockatoo.

With the available information to date, proposed impacts do not appear to meet the significance level of impacts described under the environmental impact assessment definition and utilised under the EPBC Act.

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 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 2 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, 2024a).

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 5).

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.

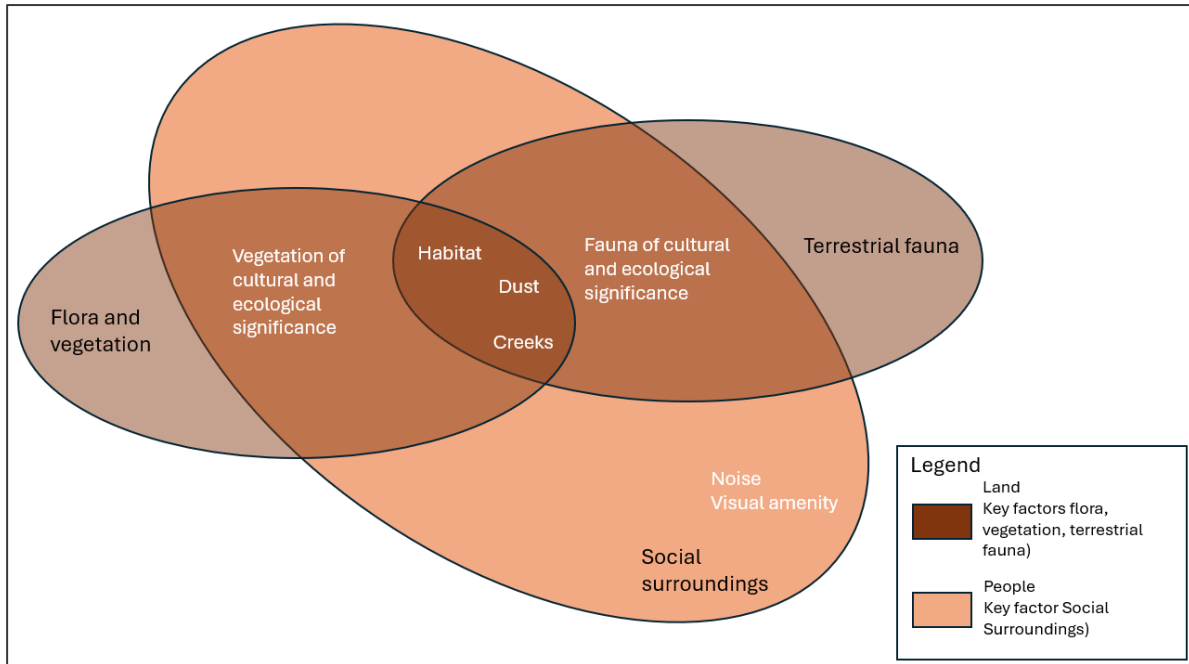


Figure 12-1 Holistic Impact Assessment

12.2.1 Construction

12.2.1.1 Vegetation and Land Clearing

Construction of the Proposal is scheduled to take up to 3 years. To facilitate construction and commissioning of the Proposal components, the proposed works will result in the permanent clearing of approximately 0.170 ha of Banksia Woodland of the Swan Coastal Plain (EPBC TEC, BC Act PEC P3) and 84 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 Proposed Construction 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 3 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	<ul style="list-style-type: none"> Loss of conservation significant vegetation and supporting habitat. Potential introduction of weeds or declared pests. Potential indirect degradation of remnant native vegetation condition. 	<ul style="list-style-type: none"> Loss of habitat for conservation significant fauna species. Potential introduction of declared pests. Potential indirect degradation of terrestrial fauna habitat. 	<ul style="list-style-type: none"> Loss of amenity – noise, visual. Potential introduction of weeds or declared pests – impact to agricultural activity. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Loss of social perception and cultural connection of local communities to culturally significant fauna species. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Potential introduction of weeds or declared pests Potential indirect degradation of remnant native vegetation condition. 	<ul style="list-style-type: none"> Potential loss of individual fauna. Potential introduction of declared pests. Potential indirect degradation of terrestrial fauna habitat. 	<ul style="list-style-type: none"> Loss of culturally significant fauna species. Potential introduction of weeds or declared pests – impact to agricultural activity . 	<ul style="list-style-type: none"> 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, 2024a). 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 Proposed 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 Proposed 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 Proposed 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 Proposed Development Envelope will not exceed 84 ha (of currently surveyed areas) or occur outside of the Proposed Indicative Footprint.
- Clearing of approximately 0.170 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 Proposed Construction Footprint is already cleared and being repurposed. Local impacts will require careful adherence 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 462.96 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 Proposed Construction 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 Proposed 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 Proposed 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.

Project title	Distance from Proposed Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
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 within the external envelope. This includes disturbance of no more than: <ul style="list-style-type: none"> 206.4 ha of the Banksia woodlands of the Swan Coastal Plain TEC (Endangered under EPBC Act and BC Act) Priority flora: <ul style="list-style-type: none"> <i>Levenhookia preissii</i>: 3 individuals <i>Grevillea cooljarloo</i> (Keighery & Olde): 697 individuals <i>Jacksonia carduacea</i>: 1 individual <i>Schoenus pennisetis</i>: 3 individuals <i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i>: 1 individual <i>Conospermum scaposum</i>: 570 individuals <i>Hensmania stoniella</i>: 32 individuals <i>Isopogon panduratus</i> subsp. <i>palustris</i>: 944 individuals <i>Stylidium aceratum</i>: 710 individuals population of the <i>Jacksonia aff. floribunda</i>: 194 individuals Offsets are required.	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.
Bidamina 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 ' <i>Banksia attenuata</i> 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 Bidamina 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.

Project title	Distance from Proposed Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
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: <ul style="list-style-type: none"> 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, provision of providing artificial hollows, and removal of competitor species from hollows).	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.
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 3 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: <ul style="list-style-type: none"> 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 <i>Andersonia gracilis</i> (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 <i>Anigozanthos viridis subsp. terraspectans</i> (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 <i>Macarthuria keigheryi</i> (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.

Project title	Distance from Proposed Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
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, approximately 17 km north-east of Bunbury, for processing). This portion of the project is included for completeness and is outside the assessment 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 DE of no more than 239.10 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 DE 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: <ul style="list-style-type: none"> ■ 7.65 ha of the Coomberdale chert hills TEC ■ <i>Acacia aristulata</i> (ranked endangered): 17 individuals ■ <i>Daviesia dielsii</i> (ranked endangered): 15 individuals ■ <i>Goodenia arthrotricha</i> (ranked endangered): 0 individuals ■ <i>Stylidium</i> sp. Moora (J.A. Wege 713) (Priority 2): 5 individuals ■ <i>Diuris recurva</i> (P4): 65 individuals ■ <i>Regelia megacephala</i> (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.
Sand Quarries within Gngangara Pine Plantation Proponent: Hanson Australia	48.2 km south	Development of 3 sand quarries within the Gngangara Pine Plantation on tenements E70/3279, E70/3275 and M70/1306.	Operational. Not assessed by EPA (5/12/2016). Regulated under <i>Mining Act 1978</i> (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).

Project title	Distance from Proposed Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
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 <i>Banksia attenuata</i> and <i>B. menziesii</i> in good to degraded condition, while the vegetation within the private land parcels is completely degraded with a sparse canopy of predominantly <i>Corymbia calophylla</i> . 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 <i>Banksia</i> 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. Comprises 125 km of 2D seismic lines.	Proposed. Currently under an 'Additional Assessment Information (public review)' level of assessment. A request for further information is still with the proponent (04/09/2020)	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: <ul style="list-style-type: none"> 2,990 individuals of <i>Macarthuria keigheryi</i> (Endangered) 1,300 individuals of <i>Chordifex resemians</i> (P2) 222 individuals of <i>Babingtonia urbana</i> (P3) 63 individuals of <i>Banksia dallanneyi subsp. pollostia</i> (P3) 248 individuals of <i>Conospermum scaposum</i> (P3) 129 individuals of <i>Stylidium hymenocraspedum</i> (P3) 54 individuals of <i>Verticordia huegelii var. tridens</i> (P4) 143 individuals of <i>Verticordia lindleyi subsp. lindleyi</i> (P4) 	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.
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).

Project title	Distance from Proposed Development Envelope	Project description	Status of project	Potential cumulative flora and vegetation impacts	Potential terrestrial fauna impacts	Potential social surroundings impacts
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 84 ha of native vegetation across the Proposed 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

Appendix G

Traffic Route Assessment

Appendix H

Water Resources Impact Assessment

Appendix I

Hydrology Study

Appendix J

Bushfire Planning Advice

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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