Yathroo Wind Farm

Environmental Referral Supporting Document

Final

January 2026

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NEOEN

Environmental Referral Supporting Document

Final

Prepared by
Umwelt (Australia) Pty Limited

On behalf of
Neoen Australia Pty Ltd

Project Director:	Cormac Collins
Project Manager:	Thomas de Silva
Technical Director:	Rob Karelse
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Executive Summary

Neoen Australia Pty Ltd (Neoen) is investigating the potential development of the Yathroo Wind Farm (the Proposal), located on freehold land approximately 120 km north of Perth in the Shire of Dandaragan, Western Australia (WA). The Proposal will involve the construction of up to 65 wind turbines (turbines) with a maximum production capacity up to 500 MW, a battery energy storage system (BESS) with a capacity of 400 MW/3,200 MWh and associated infrastructure. Final make and model of the turbines will be confirmed during the competitive procurement and commercial processes prior to the project notice to proceed is issued.

This Environmental Referral Supporting Document is submitted to the Environmental Protection Authority (EPA) as a supporting document for a referral under Part IV of the *Environmental Protection Act 1986* (EP Act), by Umwelt on behalf of Neoen.

Through pre-referral consultation with the EPA, the following EPA environmental factors are identified as being relevant to the Proposal:

- Flora and Vegetation (Key environmental factor)
- Terrestrial Fauna (Key environmental factor)
- Social Surrounds (Other environmental factor).

Potential impacts of the Proposal on these factors will be managed through adoption of the mitigation hierarchy in accordance with the Statement of environmental principles, factors, objectives and aims of environmental impact assessment (EPA, 2023b).

A summary of the Proposal is provided in the following tables (**ES Table 1**, **ES Table 2** and **ES Table 3**) as per the current EPA Environmental Referral Document guidance documents. This information is also presented in the Proposal Content Document.

ES Table 1 General Proposal Content Description

Proposal Title	Yathroo Wind Farm
Proponent Name	Neoen Australia Pty Ltd
Short Description	The Proposal is located within the Shire of Dandaragan and is within the Central Coast subregion of the Wheatbelt. It is approximately 5 km south of the town of Dandaragan, 6.3 km north of Regans Ford, and 120 km north of Perth, WA. The Proposal will involve the construction and operation of up to 65 turbines, a BESS and ancillary infrastructure. It is located across numerous freehold properties that are primarily cleared for agricultural purposes. The Proposal is proposed to connect to an existing Western Power transmission line in the south-west and west of the Project Development Envelope that provides suitable network access with sufficient capacity to accommodate the Proposal. The required capacity will be provided by Western Power's Clean Energy Link North, a major transmission upgrade project designed to support the integration and transfer of renewable energy from the northern parts of the network. The Clean Energy Link North project is scheduled for completion in 2027.

ES Table 2 Proposal Content Elements

Proposal Element	Location/Description	Maximum Extent, Capacity or Range
Physical Elements		
• Project Development Envelope comprising of the following in the Indicative Proposal Footprint: • turbines • turbine foundations • electrical connections, substations and grid connection • underground cabling • BESS • Operational and maintenance facility • meteorological masts • communication towers • external site access • internal access roads • firewater tanks • utilities	See **Figure 1.3**	Clearing of no more than 10.28 ha of remnant native vegetation, 5.45 ha of isolated native trees and shrubs, and 7.33 ha of planted vegetation (native and non-native) within the 15,618 ha Project Development Envelope. Clearing extent is conservative and is likely to decrease through the detailed design process.
Construction Elements		
• construction compound and laydown areas • borrow pits/quarries • hardstands • stockpile areas	See **Figure 1.3**	Construction will take approximately 36 months. The Indicative Proposal Footprint is 729.1 ha.
• water supply	Within the Project Development Envelope	Water supply will be provided via the abstraction of groundwater from an existing bore within the Project Development Envelope. This would involve an increase to the existing licence of 200,000 kL/ year for 3 years.
• Concrete batching plants	Within the Project Development Envelope	Concrete for the foundations will be mixed at concrete batching plants which are proposed to be part of the laydown areas within the Project Development Envelope. Concrete batching material may be sourced off site.
• Transport of turbines and associated infrastructure along existing road network		No Clearing required outside of Project Development Envelope.
Operational Elements		
• Wind energy production and battery energy storage	Within the Project Development Envelope	65 turbines with a production capacity of 500 MW BESS 400 MW / 3,200 MWh

Proposal Element	Location/Description Maximum Extent, Capacity or Range
• Transmission connection and substation • Operations and Maintenance buildings	
Proposal Elements with Greenhouse Gas Emissions Use Gas Emissions	
Construction Elements:	
Scope 1	Clearing of native vegetation – approx. 2,307.07 t CO2e On-site power generation – approx. 5,300 t CO2e On-site vehicle movements – approx. 3,400 t CO2e
Scope 2	Not Applicable
Scope 3	Supply of equipment and materials – approx. 18,371 t CO2e Off-site employee vehicle movements – approx. 2,595 t CO2e Turbine lifecycle emissions are covered under operational elements
Operation Elements:	
Scope 1	No significant ongoing scope 1 emissions
Scope 2	No significant ongoing scope 2 emissions
Scope 3	Supply of equipment and materials – approx. 30.3 t CO2e / annum Off-site employee vehicle movements – approx. 0.5 t CO2e / annum
Rehabilitation	
At the end of the 36 month construction period, temporary construction areas will be returned to pre-construction condition. One (1) ha of degraded wetland will be rehabilitated after connection to the existing transmission line has been completed. Most of the proposed native vegetation clearing in the Indicative Proposal Footprint is required to support permanent infrastructure. This limits the potential for rehabilitation of native vegetation clearing.	
Commissioning	
There are no environmental impacts specific to commissioning.	
Decommissioning	
At the end of the operations phase, a decision will be made whether to: • Decommission the Proposal permanently; or • Repower the wind farm which may include selective turbine and component replacement. Decommissioning would include the following: • De-energising plant and equipment • Dismantling and removal of turbines, BESS, ancillary electrical infrastructure and transmission lines, as well as other aboveground buildings, foundations and equipment as far as practicable • Rehabilitation of disturbed land • Recycling of recyclable materials (including batteries) • Decommissioning of some elements may be subject to the landowner's discretion (such as access tracks).	

Proposal Element	Location/Description	Maximum Extent, Capacity or Range
Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life	The proposed technology is expected to have an economic life of approximately 25–30 years
	Construction phase	Approximately 36 months
	Operations phase	Approximately 25–30 years
	Decommissioning phase	Approximately 24 months

ES Table 3 Summary of Potential Impacts, Proposed Mitigation and Proposed Environmental Outcomes

Key Environmental Factors	
Key Environmental Factor 1 (Flora and Vegetation)	
Potential Impacts	Direct – vegetation clearing Indirect – edge effects, dust during construction, introduction or spread of weeds, erosion leading to sedimentation, loss of flora and vegetation in the event of a fire.
Mitigation Hierarchy	**Avoid:** • Avoidance of all Banksia Woodland of the Swan Coastal Plain PEC in Good condition or better. • Avoidance of all native vegetation mapped as 'Very Good' condition or better. • Avoidance of known locations of Threatened and Priority flora recorded from the surveys, including within the Indicative Proposal Footprint. • Avoidance of larger areas of intact native vegetation. • Maximising use of existing disturbed areas and avoiding clearing of native vegetation as far as reasonably practicable. **Minimise:** • The Indicative Proposal Footprint uses existing disturbed areas where possible to minimise clearing of native vegetation, particularly vegetation in Good or better condition where conservation significant vegetation have potential to occur. • Direct impacts to the Banksia Woodland of the Swan Coastal Plain PEC is limited to 0.11 ha of degraded vegetation which is required for an access track upgrade. • The number of creek crossings has been minimised, with existing crossings utilised for access roads and clearing of riparian vegetation minimised. • The Construction Environmental Management Plan (CEMP) procedures will minimise unnecessary native vegetation clearing, minimise generation of dust, mitigate and manage erosion and sedimentation and minimise potential fire impacts along with the Bushfire Management Plan. **Rehabilitate:** • Most of the proposed native vegetation clearing in the Indicative Proposal Footprint is required to support permanent infrastructure. This limits the potential for rehabilitation of native vegetation clearing.

Key Environmental Factors	
	• Areas cleared for temporary infrastructure in the Indicative Proposal Footprint will be confined to previously disturbed areas as far as practicable and will be rehabilitated to their pre-disturbance conditions when no longer required. Disturbance of a small area (1 ha) of degraded vegetation on the edge of one of the wetlands is required to connect to existing transmission infrastructure. This area is already subject to agricultural activities and will be rehabilitated at the end of construction. **Offsets:** • Offsets may be required via a Part V EP Act Native Vegetation Clearing Permit.
Residual Impacts, Including Assessment of Significance	The Proposal would result in direct loss of a maximum of 10.28 ha of remnant native vegetation, 5.45 ha of isolated native trees and shrubs and 7.33 ha of planted vegetation (native and non-native). This area is conservative and likely to decrease as the Proposal proceeds through detailed design and further avoidance as part of a Part V EP Act Native Vegetation Clearing Permit application. 20.83 ha (90%) of this vegetation is Completely Degraded or Degraded, with clearing of Good condition vegetation limited to 2.23 ha (10%) in locations where avoidance is not possible. Clearing of Banksia Woodland of the Swan Coastal Plain PEC is limited to 0.11 ha of degraded vegetation, with all PEC in Good condition or better avoided. Considering the mitigation measures applied, the Proposal is unlikely to have a significant residual impact on the biological diversity and ecological integrity of the local and regional flora and vegetation.
Proposed Environmental Outcomes	Clearing will be confined to the limits specified in the Proposal Content Document, which will not result in significant impacts to flora and vegetation. Clearing of potential PEC within the Indicative Proposal Footprint not to exceed 0.11 ha of Degraded vegetation. No direct impact to vegetation in Very Good condition or better. Clearing of potential vegetation in Good condition or better in the Indicative Proposal Footprint is not to exceed 2.23 ha.
Assessment of Offsets (if Relevant)	Offsets for flora and vegetation values may be required for native vegetation clearing via a Part V EP Act Native Vegetation Clearing Permit
Key Environmental Factor 2 (Terrestrial Fauna)	
Potential Impacts	Direct – fauna habitat loss, loss of fauna individuals Indirect – habitat fragmentation and loss of fauna habitat connectivity, further spread of pest fauna or weeds,
Mitigation Hierarchy	**Avoid:** • Avoidance of areas with high foraging value (site condition score of 6) for Black-Cockatoos to reduce the likelihood of turbine collision and avoid the loss of high-quality foraging habitat. • Avoidance of Rank 1 (trees with activity at hollow observed) and Rank 2 (with hollows of suitable size with chew marks visible) Black-Cockatoo nest-trees. • Avoid placement of turbines within 3.5 km of wetlands where migratory shorebirds were recorded in the western side of the Project Development Envelope. • Avoid permanent placement of ancillary infrastructure in wetland habitat where migratory species have been found to forage during the non-breeding season (Sept – March). Up to 1 ha of degraded wetland foraging habitat may need to be temporarily disturbed for the purposes of connecting to existing Western Power infrastructure. This area is already heavily degraded as a result of agricultural

Key Environmental Factors	
	practices, is unlikely to provide shorebird foraging habitat and will be rehabilitated to its original conditions following completing of the temporary works. • Avoid known Black-Cockatoo roosting sites and set turbines back 4 km from the main observed roosting site. **Minimise:** • Minimise clearing of Rank 3 (Potentially suitable hollow visible but no chew marks present at entrance; or potentially suitable hollow suspected to be present) Black-Cockatoo breeding trees. • Minimise clearing of vegetation with moderate to high Black-Cockatoo foraging value (site condition score of 5). The current Indicative Proposal Footprint intersects 0.65 ha of vegetation with moderate to high Carnaby's Black-Cockatoo foraging value. A particular focus of the micro-siting work will be to reduce this as much as practicable. • Minimise clearing of riparian habitat. This has been achieved by setting turbines back from riparian vegetation and utilising existing creek crossings where possible. • Measures in the CEMP minimise potential indirect impacts to fauna and fauna habitats. • Implementation of a Bird and Bat Adaptive Management Plan (BBAMP). **Rehabilitate:** • With the exception of 1 ha of degraded wetland habitat, all proposed native vegetation clearing is required to support permanent infrastructure. This limits the potential for rehabilitation. • The 1 ha of degraded wetland habitat is required to be temporarily disturbed for the purposes of connecting to existing Western Power infrastructure. This area is already heavily degraded as a result of agricultural practices and will be rehabilitated to its original conditions following completing of the temporary works. • Areas cleared for temporary infrastructure will be confined to previously disturbed areas. These areas will be rehabilitated to their pre-disturbance conditions when no longer required. **Offsets:** • Offsets for fauna habitat impacts may be required via a Part V EP Act Native Vegetation Clearing Permit.
Residual Impacts, Including Assessment of Significance	Although the Proposal will result in the removal of suitable foraging and potential breeding habitat for some fauna species, residual impacts are unlikely to be significant as: • Clearing is primarily restricted to the edges of small, fragmented and degraded native vegetation and fauna habitat, with larger remnant habitat patches avoided as far as possible. • Migratory shorebird habitat modifications will be limited to the temporary clearing of up to 1 ha of degraded vegetation on the edge of one of the wetlands, that will be rehabilitated at the end of construction. • No Rank 1 or 2 Black-Cockatoo trees will be disturbed by the Proposal, and disturbance of Rank 3 trees will be minimised. • High quality foraging value vegetation for Black-Cockatoos (site condition 6) has been avoided.

Key Environmental Factors	
	• A large proportion of habitat is being retained in the PDE, with over 98% of remnant native vegetation being retained outside the Indicative Proposal Footprint. • There are larger blocks of remnant vegetation outside the PDE likely to provide much greater foraging values for Black-Cockatoos. • Minimum turbine tip height is above the typical flight height of Black-Cockatoos. • With the exception of the blue-billed duck, migratory shorebirds have only been recorded in the wetland located in the western area of the PDE which are setback 3.5 km from turbines. • Impacts will be actively managed through a CEMP (**Appendix D**) and BBAMP (**Appendix I**).
Proposed Environmental Outcomes	Fauna habitat removal will be limited to the clearing limits specified in the Proposal Content Document, which will not result in significant impacts to terrestrial fauna. No Clearing of Rank 1 and Rank 2 Black-Cockatoo nesting trees. No clearing of high quality foraging value vegetation for Black-Cockatoos (site condition 6). No permanent removal of suitable migratory shorebird foraging habitat. No significant impacts to birds and bats as a result of wind farm operations.
Assessment of Offsets (if Relevant)	Offsets for fauna habitat impacts may be required via a Part V EP Act Native Vegetation Clearing Permit. If deemed required, this will be prepared in accordance with the WA Environmental Offset Policy 2011 and Environment Offset Guidelines 2014.

Abbreviations

Abbreviation	Definition
AEP	Annual Exceedance Probability
AGL	Above Ground Level
BAM Act	*Biosecurity and Agriculture Management Act 2007*
BBAMP	Bird and Bat Adaptive Management Plan
BBUS	Bird and Bat Utilisation Survey
BC Act	*Biodiversity Conservation Act 2016* (WA)
BCE	Bamford Consulting Ecologists
BESS	Battery Energy Storage System
BOM	Bureau of Meteorology
CASA	Civil Aviation Safety Authority
CEMP	Construction Environmental Management Plan
CSEP	Community and Stakeholder Engagement Plan
DA	Development Application
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DMPE	Department of Mines, Petroleum and Exploration
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environment Regulation
EIA	Environmental Impact Assessment
EN	Endangered
ENB	Environmental Noise Branch (of DWER)
ERM	Exposure Risk Modelling
EP Act	*Environmental Protection Act 1986* (WA)
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
GIS	Geographic Information Systems
IBRA	Interim Bio-Regionalisation of Australia Version 7
IBSA	Index of Biodiversity Surveys for Assessments
LVIA	Landscape and Visual Impact Assessment
HMA	Highly Modified Area
MI	Migratory
MNES	Matters of National Environmental Significance
MRWA	Main Roads WA
MWh	Megawatt hour
MW	Megawatt
NVCP	Native Vegetation Clearing Permit

Abbreviation	Definition
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OSOM	Over Size Over Mass
PDE	Project Development Envelope
PEC	Priority Ecological Community
RSA	Rotor Swept Area
SCP	Swan Coastal Plain
SWIS	Southwest Interconnected System
TEC	Threatened Ecological Community
TMP	Traffic Management Plan
VSA	Vegetation System Association
VT	Vegetation Type
VU	Vulnerable
WA	Western Australia
WP	Western Power
YAC	Yued Aboriginal Corporation
YHPA	Yued Heritage Protection Agreement

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1.0 Proposal

1.1 Proposal Content

Neoen Australia Pty Ltd (Neoen) is seeking approval to develop the Yathroo Wind Farm (the Proposal) approximately 120 km north of Perth in the Shire of Dandaragan, Western Australia (WA) (**Figure 1.1**). The Proposal will involve the construction of up to 65 wind turbines (turbines) with a maximum production capacity up to 500 MW, a battery energy storage system (BESS) with a capacity of 400 MW / 3,200 Megawatt hour (MWh) and associated infrastructure. It will be developed across freehold properties and road reserves, covering an area of 15,618 ha referred to as the Project Development Envelope. Total ground disturbance for the Proposal will be up to 729 ha, with minimal clearing of native vegetation required.

The Proposal location was selected for development because it has a strong wind resource, is predominantly cleared of native vegetation, has an existing 132 / 330 kV double circuit transmission line, has a low population density, and has access to established transportation corridors. The Proposal is able to connect to an existing Western Power transmission line in the south-west and west of the Project Development Envelope (PDE) that provides suitable network access with sufficient capacity to accommodate the Proposal. The required capacity will be provided by Western Power's Clean Energy Link North, a major transmission upgrade project designed to support the integration and transfer of renewable energy from the northern parts of the network. The Clean Energy Link North project is scheduled for completion in 2027.

1.2 Proposal Definitions

For the purposes of this report the following definitions apply:

- **Project Development Envelope** (PDE) refers to the boundaries of all involved land parcels where all Proposal infrastructure will be contained and is approximately 15,618 ha.
- **Indicative Proposal Footprint** refers to the maximum area of land that will be cleared for installation of all Proposal infrastructure within the PDE. Impact assessments within this document are based on the entire Indicative Proposal Footprint being disturbed which is approximately 729.1 ha.

The above areas are depicted in **Figure 1.2** with infrastructure layout included in **Figure 1.3**.

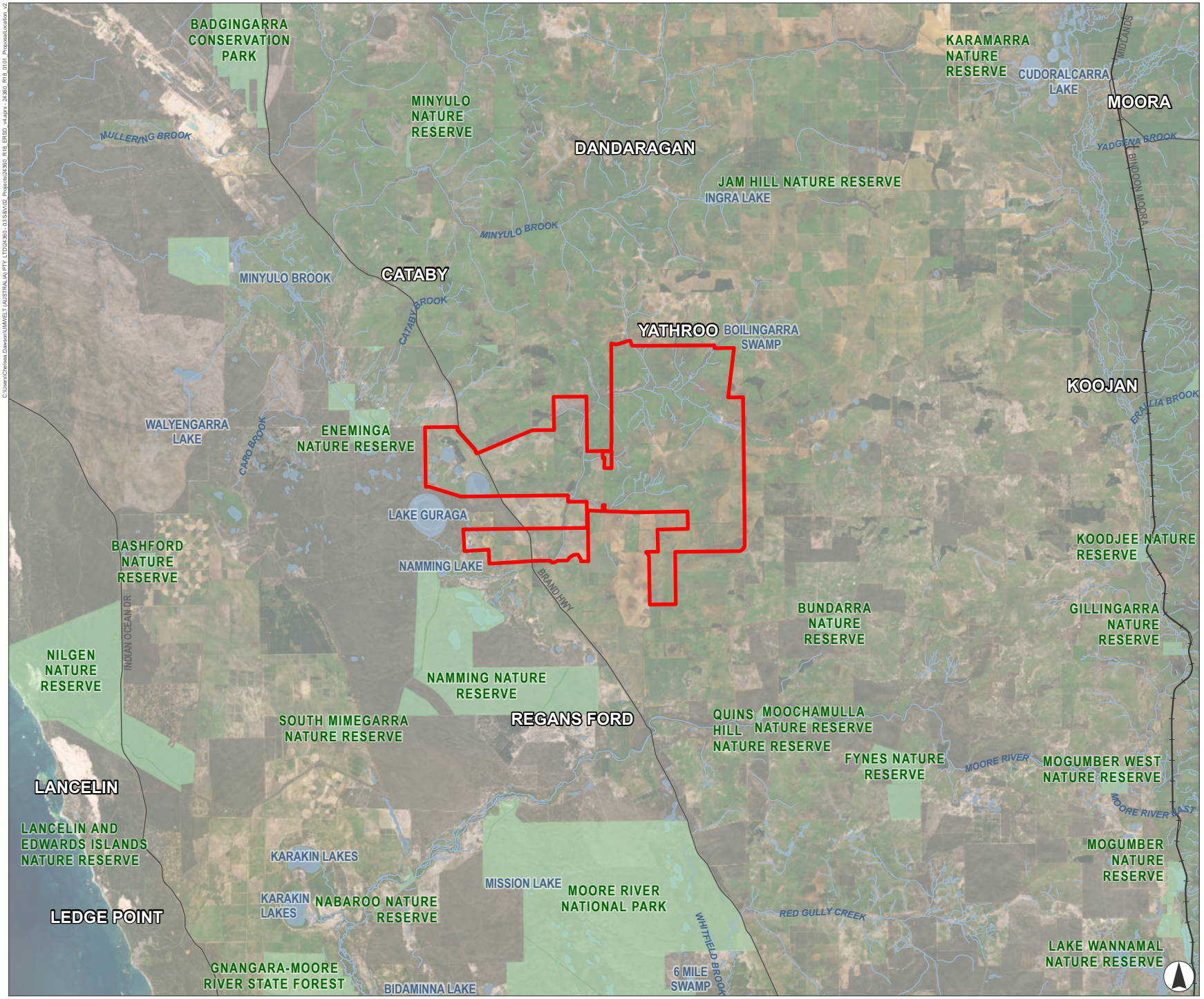


FIGURE 1.1

Project Regional Context

Legend

- Project Area
- Road
- Railway
- Watercourse
- Waterbody
- Protected Area

0 5 10

Kilometres

Scale 1:320,000 at A4
GDA2020 MGA Zone 50

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

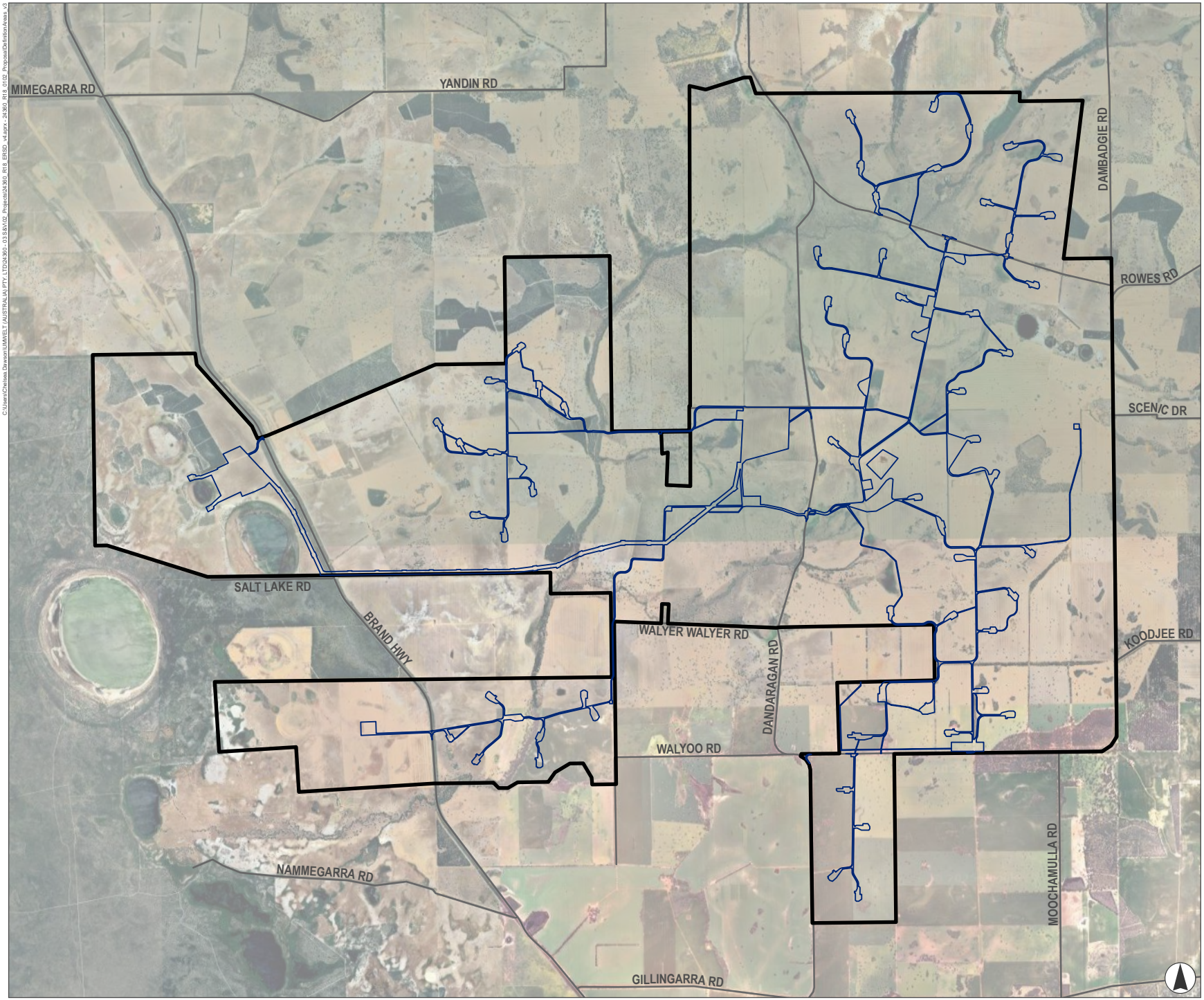


FIGURE 1.2

Proposal Definition Areas

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

1.3 Infrastructure

This section describes the key infrastructure elements that will make up the Proposal. The Proposal has been developed through an iterative design process which was informed by a combination of wind resource, economic, constructability, environmental, heritage, social, landowner and network capacity considerations. The total area of the Indicative Proposal Footprint is 729.1 ha within the PDE. The Proposal will include the following key infrastructure elements:

- turbines
- turbine foundations and hardstands
- electrical connections, substations, terminal and grid connection
- underground cabling
- BESS
- operational and maintenance facility
- construction compound, concrete batching plants and laydown areas
- borrow pits/quarries
- permanent meteorological masts
- communication towers
- external site access
- internal access roads
- firewater tanks
- utilities.

These elements are detailed in the sections below.

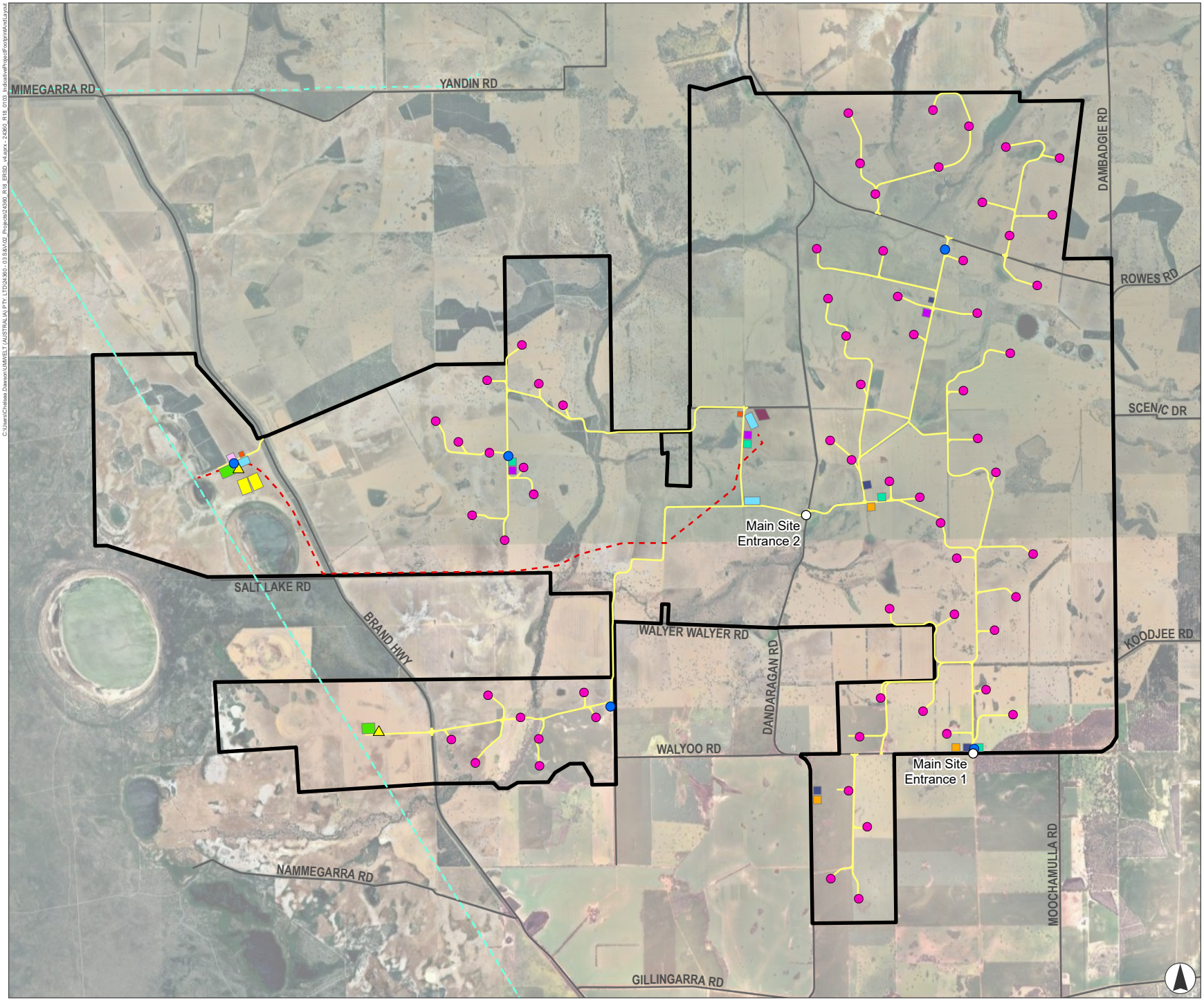


FIGURE 1.3

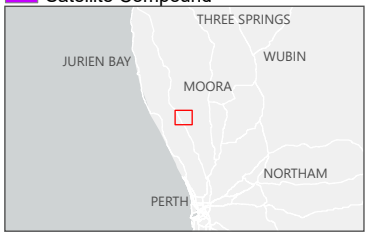
Indicative Proposal Footprint and Layout

Legend

- Road
- Existing 132/330kv Transmission Line
- Project Development Envelope

Preliminary Layout

- Wind Turbine Generator (WTG)
- Firewater Tanks
- Communication Towers
- Site Access
- Internal Roads and underground Cabling (Permanent)
- Proposed 330kV transmission route - 13.21km
- BESS
- O&M Facility
- Substation
- Western Power Terminal
- Batch
- Batch Plant
- Main Compound
- Laydown
- Overhead Transmission Line Compound
- Satellite Compound



0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

1.3.1 Turbines

Up to 65 wind turbines are proposed to be constructed. Each wind turbine will have a maximum hub height of 170 m above ground level (AGL), a maximum tip height of to up to 261 m and a minimum blade clearance from ground level of 59 m AGL. The maximum blade length will be 91 m with a maximum rotor diameter of 182 m.

The rotor swept area (RSA) refers to the physical area swept by the rotating blades during operation. For the purposes of this assessment, an inclusive "worst-case" RSA of 59 m AGL to 261 m AGL was considered to account for turbine models with hub heights as low as 150 m.

The exact dimensions will be determined during detailed design of the Proposal depending upon selection of the turbine Original Equipment Manufacturer (OEM) and model.

These maximum specifications are summarised in **Table 1.1**.

Table 1.1 Turbine Specifications

Feature	Maximum Specifications
Wind turbine generation capacity	Up to 500 MW
Number of turbines	65
Hub height	Up to 170 m
Tip height	Up to 261 m
Blade Length	Up to 91 m

* The specifications listed in the table are considered to be an upper limit and are intended to provide flexibility for any innovation in turbine design between now and the time of detailed design and construction.

1.3.2 Turbine Foundations

Each turbine foundation will comprise a reinforced concrete slab. The size of the turbine foundations may vary depending on imposed loadings, ground conditions, construction methodology and drainage design. Final design will account for geotechnical conditions identified through a detailed investigation.

Construction of the turbine foundations will require the excavation of surface organic soil/sub-soil and other soft overburden until either rock, or a firm stratum is found, with the excavation sides battered back to ensure stability. The excavated soil/sub-soil would be separated and stored safely near to the excavation in stockpiles. The surrounding ground around the turbine base would be restored to tie in with the original and existing surface levels by using the previously stored overburden. Any surplus material would be used for additional landscaping, concrete and surfacing reinstatement.

Concrete for the foundations will be mixed at concrete batching plants which are proposed to be part of the laydown areas within the PDE. Concrete batching material may be sourced off-site.

1.3.3 Hardstands

Each turbine requires areas of hardstand to be constructed adjacent to the actual turbine foundation area. These provide stable and suitable areas for the turbine components to be stored and lifted into position by the required cranes.

The construction of each turbine will require a primary large sized crane and a secondary small sized crane. These cranes will require gravel capped hardstands to provide a stable and firm base during the installation of the turbines. The crane hardstands will remain in-situ for the lifetime of the wind farm, in case any cranes are required during the operational phase e.g., to change a blade, undertake any repairs. The pad for the primary crane is typically 100 m x 50 m and the turbine foundation falls within this area, while there can be up to an additional four secondary crane hardstands of 25 m x 15 m each. The area of the permanent handstands in total is approximately 0.65 ha per turbine.

In addition to the permanent hardstands there will be two temporary cleared and graded areas during the construction phase to support the construction of the crane boom and for the laydown of the blades prior to lifting into place. The area for the crane boom is 150 m x 15 m, while the laydown area is 95 m x 20 m. The temporary works areas will be reinstated following construction.

As with the turbine foundations there will be a requirement for the excavation of surface organic soil/sub-soil and other soft overburden. This material will be treated like the material from the turbine foundations and reused where possible.

1.3.4 Electrical Connections, Substations and Grid Connection

The Proposal includes two substations and two operations and maintenance (O&M) facilities – one for the wind farm and one for the BESS. The proposed area for the substations and O&M facilities will also include vehicle parking spaces, septic ablutions and wash down areas as appropriate and with alignment to the considerations for the 'Special Control Area 1 – Bassendean Sand (SCA1)' within the PDE.

Power and communication cables will be installed underground between the turbines and will connect back to the substations and the O&M facilities.

Up to 12 km of overhead line will connect to one of two substations and then cut into the existing Western Power 132 / 320 kV double circuit transmission line located in the south-west of the PDE. The overhead line will be supported on either lattice and/or pole tower structures up to 60 m tall at 250 m to 500 m intervals. Reduced spans between towers may be required near crossings of rivers and roads, or where there is a change in direction. A 60–70 m wide corridor with no vegetation exceeding 3 m height will be required.

1.3.5 Underground Cabling

Power and communication cables will be installed underground (up to 1,500 mm) between the turbines and will connect back to the substation in cable trenches to allow for continued agricultural activities.

The total length of cable reticulation required is estimated to be 710 km but will depend on the final layout of the substation, turbines and O&M facilities. Once the trenched areas have been backfilled, the disturbed area will be reinstated.

1.3.6 Battery Energy Storage System (BESS)

The BESS will be adjacent to the proposed substation. The specific BESS technology has yet to be selected. However, it will likely be made of lithium-ion and will have capacity to deliver up to 400 MW / 3,200 MWh of power that can be dispatched to the grid as required. The BESS will include battery containers, inverters, medium-voltage transformers as well as modular electrical buildings containing switchgear and control cabinets. Lightning protection masts and security fencing will also be installed. All the equipment in the BESS area will be installed on a permanent hardstand with appropriate drainage and stormwater management and occupy an area of up to 24 ha. Underground cables will connect the BESS to the substation and export power to the South-West Interconnected System (SWIS) utilising the same transmission lines as the wind farm.

The BESS area will also include balance of plant including firewater tanks, a separate O&M building from the wind farm, a stores and security.

1.3.7 Construction Compound, Concrete Batching Plant and Laydown Areas

The construction compound areas will be used to manage construction activities. These compounds will likely include: portacabins (site offices, first aid facilities, canteen facilities, waste disposal and toilets); storage containers for tools and equipment; storage areas for plant, fuel storage, material and components; wash down facilities; and sufficient parking for the workforce, deliveries and visitors. Temporary offices, lunchrooms, and ablutions may also be established on turbine hardstands during the construction period.

These areas will also accommodate temporary storage of construction plant equipment, wind farm components and construction materials prior to moving to their ultimate destination. The areas may also be used for rock crushing and stockpiles, and concrete batching equipment.

The temporary construction compounds and laydown areas will be formed into a hardstand. Prior to forming the hardstand area, the topsoil will be removed and stockpiled adjacent to the hardstand area. The exact locations, nature and number of the temporary construction compounds and laydown areas will be established in consultation with the relevant landowners when a full construction methodology is determined.

Following the completion of the construction phase, these areas may be reinstated using the stockpiled topsoil depending on the landowner's requirements.

1.3.8 Borrow Pits/Quarries

Borrow pits and quarries may also be developed for the purposes of supplying fill and concrete batching material.

1.3.9 Meteorological Masts

Up to three meteorological masts may be installed to monitor the climatic conditions and wind speed throughout the life of the Proposal. The masts would be of triangular steel lattice construction, approximately 170 m in height and will be guy wired in three equilateral directions. The mast will be equipped with wind and weather sensors at various heights, allowing for the measurement of wind speed, wind direction, wind shear, wind turbulence and air density. The masts will be installed within or near to the Indicative Proposal Footprint and will not require clearing of any native vegetation.

1.3.10 Communication Towers

Up to two communication towers may be required for the Proposal. These towers will provide a secure and robust high-speed microwave radio link extending the existing Telco services. These towers will be up to 85 m tall, with microwave dishes and radio transmitter/receivers installed between 15 m and 85 m above ground level. Power for the towers will be supplied by primarily from the adjacent facility, however, may also include a tower mounted solar panel and battery system as back-up.

1.3.11 External Site Access

The main site access points to the PDE are proposed from Dandaragan Road and Rowes Road as shown in **Figure 1.3**. Secondary site access points are described in **Section 1.4.**

Existing property entrances will be utilised where possible to minimise the need for new site entrances and impact to native vegetation. However, some public roads and intersections will need to be created or upgraded to facilitate delivery of Over Size Over Mass (OSOM) Proposal components.

Appropriate signage will be installed on relevant roads during the construction period to comply with necessary health and safety requirements.

1.3.12 Internal Access Roads

Internal access roads will be required, and design criteria and mitigation measures were applied to the access track layout to mitigate potential impacts, such as:

- Access tracks will be typically 6.5 m wide and up to 10 m wide (widths will vary depending on various construction requirements [e.g. Reinforcement batters] topography and cabling requirements).
- Tracks will not be sealed but will be constructed from gravel sourced primarily from on-site borrow locations to be determined in subsequent stages of the Proposal.
- Regular passing places and turning areas will be provided to assist in vehicle circulation on-site. The access tracks will only link to the identified site access and road crossing points, with no other connections to adjacent external roads provided.
- Regular passing places and turning areas will be instated.
- Watercourse crossings have been minimised as informed by hydraulic modelling and flood study.
- Clearing of native vegetation has been avoided as far as practicable.

- The construction of access tracks will vary depending on localised ground conditions. Conditions impacting construction include the existing vegetation, nature of the topsoil, level of moisture in the ground, geotechnical base and localised topography.
- Post construction, roads will be maintained as they need to remain passable for oversize over mass loads in the event of a blade replacement during operation.

1.3.13 Water Supply

Water required during the construction period is proposed to be abstracted from an existing bore within the PDE. The proposed water supply bore is screened between 100–154 m depth and abstracts groundwater from the Leederville-Parmelia confined aquifer. The Proposal will require the existing licence to be temporarily increased to 200,000 kL per annum over a three-year period. This increase will be sought via an amendment to the existing 5C groundwater licence granted under the *Rights in Water and Irrigation Act 1914* (RIWI Act); initial discussions with DWER indicated that this approach would be acceptable.

1.3.14 Firewater Tanks

Firewater tanks providing readily available water supply for fire suppression will comprise of up to nine tanks with a height up to 4.5 m, diameter up to 13.0 m and each tank sizing will be determined as part of final design to ensure compliance with all applicable laws and guidelines.

1.3.15 Utilities

The utilities comprise of earth walled turkey nest dam with lining, created to provide onsite inventory and ensure security of water supply with a capacity of up to 1,000 m^3 of water.

The turkey nest dam will be primarily used during the construction stage however may be left in place should a permanent beneficial use be identified for it.

1.4 Transport from Port to Proposal

A Preliminary Route Assessment was undertaken in October 2024 to identify a feasible route to allow the transport of Proposal infrastructure from Port to Site. The Australian Marine Complex in Henderson was identified as the preferred option with the preferred route illustrated in **Figure 1.4.**

Up to 15 vehicular site access points will be utilised on the external road network to service both the construction and operational stages of the Proposal. Two site access points will be used off the Brand Highway, four off Dandaragan Road, three off Rowes Road, four off Bidgerabbie Road and two off Stockyard Road, with the location of these illustrated in **Figure 1.4.**

The period of peak construction traffic is expected to occur between Q1 and Q2 2028, with the main traffic generating activities being the transport of the various construction materials / equipment to site and the daily construction staff movements.

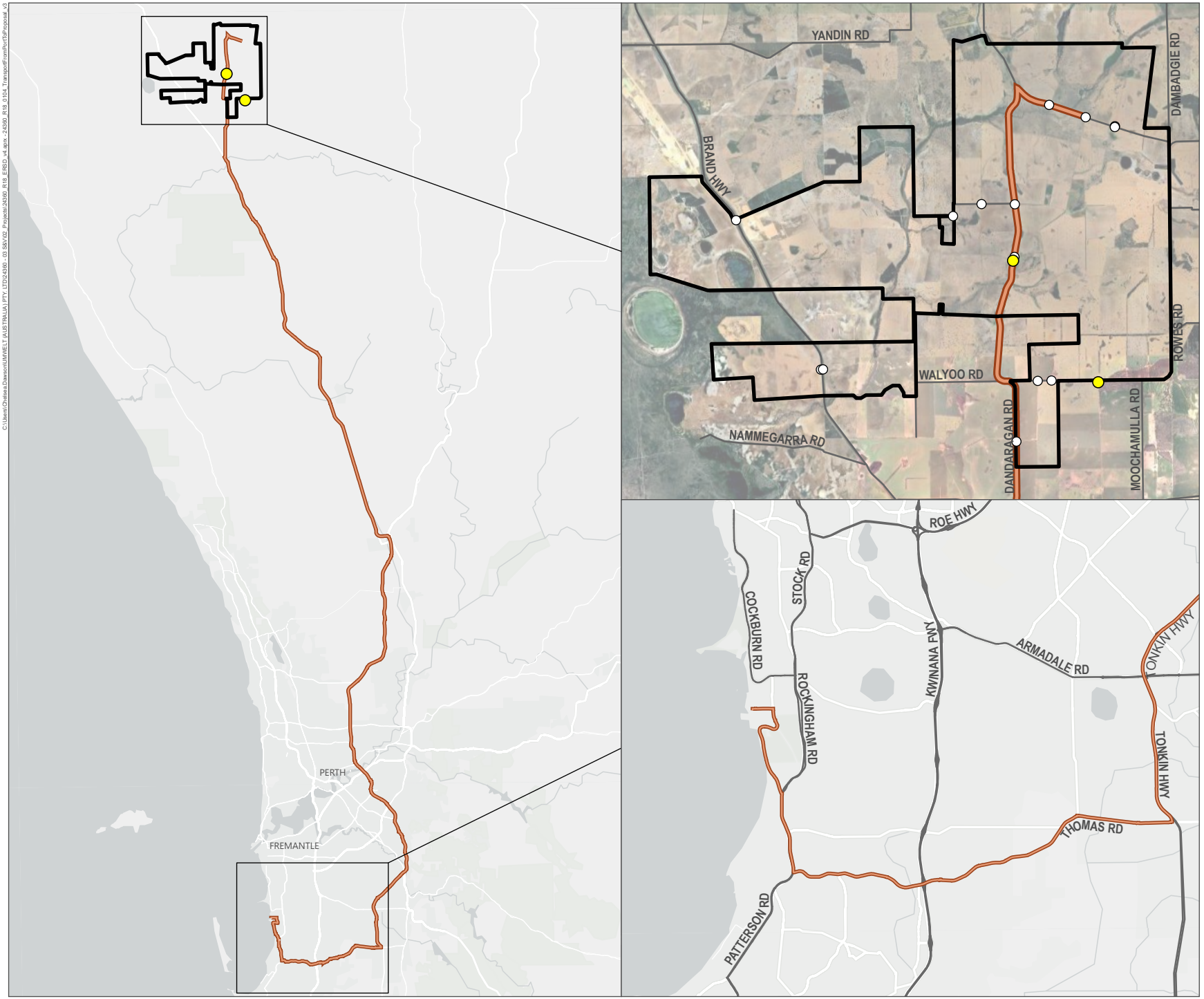
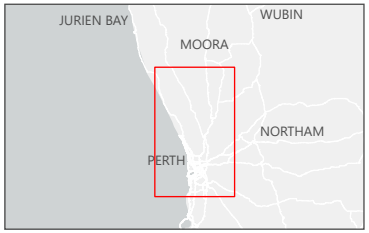


FIGURE 1.4

Transport from Port to Proposal

Legend

- Site Access
- Main Site Access
- Transport Route
- Road
- Project Development Envelope



0 2 4

Kilometres

Scale 1:195,821 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

1.5 Workforce

1.5.1 Construction Workforce

The Proposal is expected to generate multiple employment opportunities. It is estimated that the maximum (peak) workforce will comprise of up to 450 staff, throughout the 33–36 months construction period.

It is expected that some of the workforce will commute from the wider local areas such as Moora, Dandaragan and Cataby, and will not require additional accommodation. Neoen is working with the Shire of Dandaragan on the accommodation options including temporary and permanent accommodation. The Proposal is not expected to include construction of permanent or temporary accommodation within the PDE.

1.5.2 Operational Workforce

During operations, the Proposal will be managed by both on-site and off-site personnel, employed by, or contracted to Neoen. It is expected that the Proposal will generate up to 15 permanent, full-time jobs throughout its operational life. Neoen will focus first on hiring local people for the Proposal.

Aspects of the Proposal operation dealt with by on-site personnel include:

- maintenance of turbines and associated infrastructure
- safety management
- implementation of environmental conditions
- community liaison.

1.5.3 Maintenance

The chosen turbine manufacturer will be responsible for maintaining the turbines for a defined period following commissioning. Once the manufacturer's obligation expires, a suitably qualified contractor will be employed to visit the site and undertake regular inspection and maintenance activities. Ongoing maintenance of the access tracks will generally be undertaken to ensure safe access to all components requiring maintenance throughout the year.

In addition to regular maintenance activities there will be a need for unscheduled maintenance. Unscheduled maintenance is more likely to be required at the Proposal start up and towards the end of the operational period as the end of the design life is reached.

1.6 Decommissioning and Rehabilitation

The proposed technology is expected to have an economic life up to 30 years. The landowner agreements make provision for an initial lease term of 30 years as well as an additional term of 30 years. At the end of the current lease term, a decision would be made whether to either:

- decommission the Proposal permanently; or
- remove the old turbines and seek to replace them with new, upgraded models.

If the Proposal is permanently decommissioned, Neoen would take full responsibility for decommissioning and rehabilitation works. A decommissioning plan would be prepared and submitted to the relevant authority.

Decommissioning would include the following:

- de-energising and disconnecting plant and equipment from the Proposals internal network
- dismantling and removing turbines, BESS, ancillary electrical infrastructure and transmission lines, as well as all other aboveground buildings, foundations and equipment
- rehabilitation of disturbed land
- recycling of recyclable materials (including batteries).

Decommissioning of some elements may be subject to the landowner's discretion (such as access tracks).

As per accepted industry practice, decommissioning does not include the removal of infrastructure that is located more than 300 mm below the surface, as the earthworks required cause considerable and unnecessary vegetation and soil disturbance, and this infrastructure, if left in place, causes no harm to the environment or disruption to agricultural practices.

The Yathroo Wind Farm Development Application was approved by the Shire of Dandaragan on 23 October 2025, and Condition 19 requires that an updated Decommissioning and Rehabilitation Management Plan be submitted to and approved by the Shire of Dandaragan prior to decommissioning.

A Preliminary Decommissioning Plan is provided in **Appendix A**.

1.7 Proposal Alternatives

1.7.1 Need for Renewable Energy Projects

The Climate Change Act 2022 set Australia's greenhouse gas emissions reduction targets of a 43% reduction from 2005 levels by 2030 and net zero by 2050. In Western Australia, the Government has committed to a whole-of-government 2030 greenhouse gas emissions reduction target of 80% below 2020 levels.

The Proposal aims to contribute to the National and State renewable energy targets by supplying green energy to the SWIS via the committed Clean Energy Link – North, to an existing 330 kV transmission line located within the PDE. The Proposal will support an equivalent of over 360,000 households with green energy and will also create local employment and economic opportunities and support the regional development and diversification of the Dandaragan area.

Climate change is a key threat to several environmental factors in Western Australia, with increased temperatures and declining rainfall identified as a threatening process for iconic threatened fauna species such as Carnaby's Cockatoo. Renewable energy proposals such as the Yathroo Wind Farm are vital to reduce carbon emissions and to contribute to mitigating impacts of climate change.

1.7.2 Alternatives Considered

Alternatives considered for the Proposal included a larger PDE, constructing an earlier iteration of the design with a larger number of turbines, or a "do nothing" alternative.

The Wheatbelt region of WA is well suited to wind farms for the following reasons:

- consistent and high wind speeds
- low vegetation coverage and minimal need for native vegetation clearing
- a rural setting (minimal existing dwellings within proximity to the Proposal)
- access to a suitable transmission line within the PDE
- availability of reasonable road access.

Alternative areas for large-scale wind farms in the Wheatbelt to meet timelines for decarbonisation of the SWIS are limited due to the location of suitable transmission infrastructure that do not require significant upgrades or long-distance transmission corridors to provide network access. These additional requirements may delay potential renewable proposals by years and slow the overall transition of the State's energy network to green energy, particularly within the SWIS. A demand assessment undertaken for the SWIS found from initial modelling that the level of electricity required by 2042 could grow to five times that of 2022. This would necessitate almost ten times the amount of current generation capacity in the SWIS if electricity is to be generated primarily from renewable sources (DEMIRS, 2023). Therefore, it is critical that progress towards the transition is commenced as soon as possible to allow demand to be met.

The existing Western Power transmission line in the south-west and west of the PDE provides suitable network access with sufficient capacity to accommodate the Proposal. The required capacity will be provided by Western Power's Clean Energy Link North, a major transmission upgrade project designed to support the integration and transfer of renewable energy from the northern parts of the network. The Clean Energy Link North project is scheduled for completion in 2027.

The "do nothing" alternative for the Proposal would further delay the clean energy transition and decarbonisation of energy networks in Western Australia which have been identified as key goals for the Western Australian government ((Department of Treasury, 2019; DWER, 2020; Energy Transformation Taskforce, 2020; WAPC, 2021).

A key threat for many ecosystems and species, but particularly the listed fauna species considered as part of this assessment, is climate change. Changes to rainfall, temperature extremes, and bushfires may accelerate the decline of these species through a combination of range contractions in response to changing climatic conditions, impacts to suitable habitat from more intense and frequent bushfires, and effects on factors influencing breeding success and timing. Renewable energy projects are critical in addressing these challenges in the long-term by directly reducing emissions from energy production.

1.7.3 Design Evolution to Avoid and Minimise Impacts

Throughout the Proposal design life, the Proponent has sought to first avoid and then minimise environmental, heritage and social impacts as far as is practicably possible. Design evolution has been informed by technical studies, feedback from key stakeholders and site constraints. Key design changes implemented include:

- Reduction in the number of turbines from 82 to 65.
- Decrease in the PDE from 17,402 ha to 15,618 ha.
- Reduction in turbines south and north of Stockyard Road to reduce the impact to neighbours.
- Removal and relocation of turbines to ensure the *WA Environmental Protection (Noise) Regulations 1997 (Noise Regulations)* will be met at existing non-involved sensitive receptors and to reduce encroachment of the modelled 35 dB noise contour on adjoining properties.
- Relocation of turbines to provide a minimum setback of 287.5 m from the PDE boundary, representing 1.1 times the maximum blade tip height.
- Relocation of infrastructure to avoid clearing of native vegetation in Very Good condition or better, avoid clearing of Banksia Woodlands TEC/PEC in Good or better condition, and minimise clearing of native vegetation.
- Adopting a minimum turbine tip height of 59 m above ground level to minimise risk of turbine strike for Black-Cockatoo species which typically fly at canopy height and along areas of remnant vegetation in areas of lower topographic relief.
- Relocation of infrastructure to avoid clearing Rank 1 (trees with activity at hollow observed) and Rank 2 (trees with hollows of suitable size with chew marks visible) potential Black Cockatoo nest trees.

1.8 Local and Regional Context

1.8.1 Bioregion

The PDE is bisected by the boundary of two Interim Biogeographic Regionalisation of Australia (IBRA) bioregions and three subregions as summarised in **Table 1.2**.

Table 1.2 Biogeographic Subregions of the Project Development Envelope (DPIRD, 2024b)

Bioregion	Subregion	Summary	Area and % within the PDE
Swan Coastal Plan (SWA)	Dandaragan Plateau (SWA01)	The plateau is bordered by Derby and Dandaragan Faults. 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.	3,996 ha comprising the eastern portion (25.59%)

Bioregion	Subregion	Summary	Area and % within the PDE
	Perth (SWA02)	The Perth subregion is composed of 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. Includes a complex series of seasonal wetlands and also includes Rottnest, Carnac and Garden Islands etc.	11,511 ha comprising the western portion (73.71%)
Geraldton Sandplains (GS)	Lesueur Sandplain (GS2)	The Lesueur Sandplain (GS3) comprises coastal Aeolian and limestones, Jurassic siltstones and sandstones (often heavily lateritised) of central Perth Basin. Alluvials are associated with drainage systems. There are extensive yellow sandplains in south-eastern parts, especially where the subregions overlaps the western edge of the Pilbara Craton. Shrub-heaths rich in endemics occur on a mosaic of lateritic mesas, sandplains, coastal sands and limestones. Heath on lateritised sandplains along the subregions north-eastern margins.	109 ha comprising the northwest portion (0.70%)

1.8.2 Climate

The Bureau of Meteorology (BoM) monitors precipitation and temperature at the Badgingarra station (station number 9037) (BOM, 2024) which is located approximately 46 km northwest of the PDE. **Figure 1.5** presents the monthly precipitation totals and monthly maximum temperature statistics for 2024, as well as long-term average monthly precipitation and maximum temperature data recorded at this station

Throughout 2024, when ecological studies were undertaken to support this referral, the maximum temperatures were slightly higher than the average maximum temperature for each month (**Figure 1.5**). The total rainfall of 2024 of 473.6 mm was below the long-term average of 517.7 mm. However, the total rainfall in the months before the Detailed and Targeted flora and vegetation surveys (January–August 2024) was 417.7 mm, slightly above the long-term average (for this period of 403.0 mm). Thus, the spring months (September–December) were drier than average having received 53 mm, which is 30 mm less than the long-term average (83 mm).

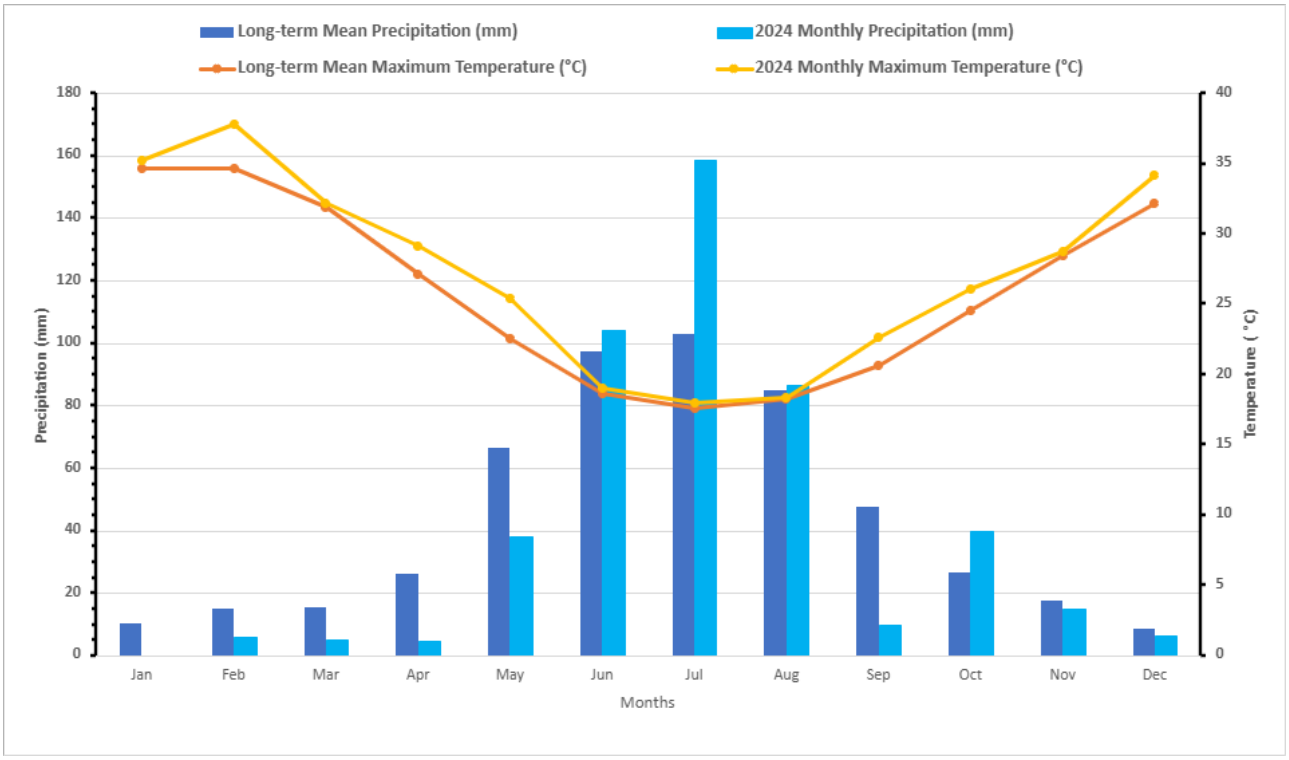


Figure 1.5 Climate Statistics for Badgingarra Research Station (9037) (BOM, 2024)

1.8.3 Geology and Soil

Land systems are broad descriptions of landform, geology and soils. The PDE intersects five land systems which are characterised as follows (DPIRD, 2024b):

- 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. This system intersects approximately 65% of the PDE.
- Rowes System: Plateau residuals, hillcrests and very gently to gently inclined hillslopes; sandy gravels, gravelly pale deep sand, some duricrust. This system intersects approximately 19% of the PDE.
- Bassendean System: Low to very low relief Pleistocene sand dunes, intervening swamps and gently undulating sand plain. Within the dunes, deep grey sands may become pale yellow with depth (usually <1.5 m). In the low lying areas adjacent to swamps the water table is relatively shallow in winter being between only one to two metres of the surface. Drainage here is often restricted by an iron/organic hardpan. The scattered rounded shallow lakes and swamps contain water, coloured brown by organic material, of low salinity and high acidity.(DPIRD, 1986). This system intersects approximately 11% of the PDE.
- 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 (DPIRD, 2024b). This system intersects less than 3% of the PDE.

- Boothendarra System: Subdued, stripped lateritic plateau with undulating rises to gently undulating plains on laterite, siltstone and sandstone in the west Midlands area. Sandy duplexes, Pale deep sand, sandy and loamy gravels and minor clays. Vegetation is wandoo woodland, *Eucalyptus todtiana* and banksia low open woodland, scrub heath and some mallee (DPIRD, 2024b). This system intersects approximately 2% of the PDE.

1.8.4 Surface Water Hydrology

There are no Ramsar sites located within the Desktop Study Area, which comprises of the PDE and a 20 km buffer (DBCA, 2017).

Guraga Lake, which is listed on the Directory of Important Wetlands (DBCA-045) (DBCA, 2018b), is located approximately 700 m west of the PDE. Guraga Lake, and numerous other wetlands present on the Leseuer Sandplains, may provide suitable habitat for migratory shorebirds and other waterbirds that occur within the region. The PDE includes Lake Yangy, which is a basin landform and lies within the Dandaragan Plateau and feeds into the Caren Caren Brook.

Caren Caren Brook is the main watercourse running through the PDE with Yathroo Brook present in the north and Lake Yangy representing the only water course connector in the PDE. The water flows east to west with some surface water feeding into Guraga Lake from Caren Caren Brook from within the PDE during 1% and 0.5% events.

A flood study has been completed for the PDE (**Appendix G**) (Walbridge Gilbert Aztec, 2025). The flood study assessed flooding for the existing condition, established and delineated catchments, developed a flood model to determine peak rates and duration for flood events, developed a 2D hydraulic TUFLOW flood model, and assessed the 0.5%, 1%, and 10% Annual Exceedance Probability (AEP) design rainfall events. Results were processed to create maximum flood maps for the AEP design rainfall events to show critical design flood parameters, which were then used to inform the design of turbine locations, access roads, the substation and BESS, the overhead powerline, and other structure associated with the Proposal. Outcomes from the flood study have been used to inform the design of the Project to avoid and mitigate hydrological risks and impacts as far as possible.

1.8.5 Groundwater

The PDE lies across three groundwater catchment areas within the Moore-Hill Rivers Basin. The majority of the PDE falls within the Minyulo-Caren Caren catchment, with the remainder intersecting minor areas of the Nambung River catchment in the north and the Moore River catchment in the south. The PDE is located within the Gingin Proclaimed Groundwater Area, and the majority intersects the Moore River and Certain Tributaries Proclaimed Surface Water Area.

The various aquifers present within the PDE are listed below in with further information provided in **Table 1.3**.

Table 1.3 Aquifers Present within the PDE

Aquifer	Description	Location	Supply Potential
Surficial	Thin rainfall dependent sands which support groundwater dependent ecosystems.	East of Brand Highway	Low
Superficial	Extensive shallow sand and clay aquifer. Supports groundwater dependent ecosystems.	West of Brand Highway	High
Mirrabooka	Thin semi-confined to confined but unlikely to be in PDE. Supports summer flows of the Moore River to the south.	East of Brand Highway	Low
Leederville-Parmelia	Confined aquifer, main aquifer.	East of Brand Highway	High
Leederville	Major semi-confined to confined, semiconfined below superficial and therefore supports wetlands indirectly.	West of Brand Highway	High
Yarragadee	Major confined aquifer of Perth Basin, but deep in the PDE.	Both sides of Brand Highway	Unknown

There are a number of bores, wells and other groundwater sampling sites within a 10 km radius of the PDE (DPIRD, 2024a), which were installed for water sampling or water supply purposes (Department of Water and Environmental Regulation 2024a). These include the bore identified as the potential water supply for the Proposal (refer Figure 2 of **Appendix P**), which is screened between 100 m and 154 m depth and abstracts from the Leederville-Parmelia confined aquifer. The Leederville-Parmelia aquifer in the PDE is generally confined by the Kardinya Shale Member of the Coolyena Group and/or the Molecap Greensand.

Long-term monitoring over approximately 50 years at two bores (refer Figure 2 of **Appendix P**) indicates that the water level has risen in the Leederville-Parmelia aquifer by between 7 m and 15 m. More recent monitoring at a DWER production bore 1.5 km to the northwest of the potential water supply bore has shown that water level has risen by more than one metre since 2018 (Water Direct, 2025; **Appendix P**).

Analysis of test pumping data at the potential water supply bore predicted that minimal drawdown would occur due to the proposed abstraction. However, it is also noted that as the aquifer is confined there would not be any actual drawdown observed, only a reduction of the potentiometric surface (**Appendix P**). This indicates that the groundwater abstraction associated with the proposal is unlikely to impact other licensed or unlicensed groundwater users.

Further discussion of the groundwater abstraction relating to groundwater dependent ecosystems is discussed in the next section.

1.8.6 Groundwater Dependent Ecosystems

Groundwater Dependent Ecosystems (GDEs) with a low to high potential for groundwater interaction are present in the PDE, based on mapping by the Bureau of Meteorology (BOM, 2024). These potential GDEs are the medium woodland' of the 'Moore-Hill Rivers Region' (low potential for groundwater interaction), medium woodland' of the 'Moore-Hill Rivers Region' (medium potential for groundwater interaction), 'low woodland', 'bare areas; salt lakes' of the 'Moore-Hill Rivers Region' (high potential for groundwater interaction). The GDE mapping for Western Australia was derived in 2012 using remote sensing from Landsat and MODIS, with GIS analysis. Accuracy of the dataset is considered high-level and limited.

There are a number of GDE's present within the PDE. These GDEs are reliant on local creeks and wetlands, which are sustained by winter rainfall and shallow subsurface groundwater flow in the surficial aquifer. The cone of depression resulting from the Proposal groundwater abstraction is unlikely to impact on the GDEs, as abstraction will be from the confined Leederville-Parmelia aquifer at greater than 100 m depth (**Section 1.8.5**).

Parts of the PDE and proposed infrastructure located west of Brand Hwy are in Special Control Area 1 (Bassendean Sands) (SCA1) per the Shire of Dandaragan Local Planning Scheme No. 7. Potential impacts and mitigations in the context of SCA1 have been considered and will be managed via the implementation of a Surface Water Management Plan as required by Condition 21 of the Development Approval that was granted on 23 October 2025 under the *Planning and Development Act 2005*.

1.8.7 National Parks, State Forests and Reserves

The PDE predominantly comprises land cleared for agriculture and livestock grazing, with interspersed patches of remnant woodland. Key environmental features in proximity to the PDE are shown in **Figure 1.2**, and include:

- Namming Nature Reserve, approximately 2 km west of the PDE. This is protected for the purposes of flora and fauna conservation and is managed by the Department of Biodiversity, Conservation and Attractions (DBCA).
- Moore River National Park situated approximately 10 km south of the PDE.
- Bundarra, Eneminga, Jam Hill, Moochamulla and Quinns Hill Nature Reserves all located within 10 km of the PDE.
- Guraga Lake, which is located approximately 1 km west of the PDE within Namming Nature Reserve.
- Badgingarra National Park located approximately 29 km northwest of the PDE.

1.8.8 Social Context

The Proposal is in the Shire of Dandaragan and the Central Coast subregion of the Wheatbelt.

The Shire of Dandaragan covers an area of approximately 6,725 km^2 (672,500 ha) and has a population of 3,355 (ABS, 2021). The Shire has a mix of agricultural land, crown land and town sites. Dandaragan is a regional centre, providing a range of services and infrastructure to the Dandaragan community, as well as for residents from surrounding localities.

The region in and around the PDE is sparsely populated, thereby allowing for the design of the Proposal to meet the relevant noise limits at existing non-involved sensitive receivers.

2.0 Legislative Context

2.1 Environmental Impact Assessment Process

2.1.1 State

In WA, the EP Act is the primary legislative document for environmental regulation and impact assessment. Environmental Impact Assessment (EIA) is covered under Part IV (Divisions 1 and 2) and is required if a proposal is deemed likely to have a significant effect on the environment. Proposals with significant effects are referred to the EPA under Section 38 of the EP Act. If deemed significant the EPA will formally assess the proposal based on any information that is provided during the referral process and sets the level of assessment required. Assessment of specific environmental factors will also be allocated in response to the submission of referral. If the EPA does not deem the environmental impact to be significant, they may issue public advice or determine that the proposal can be managed under other statutory processes.

This Environmental Referral Supporting Document forms the Proposal referral under Section 38 of the EP Act and has been prepared in accordance with the *EPA Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual* and *Instructions: How to prepare an environmental review document* (EPA, 2024).

2.1.2 Commonwealth

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). Under the EPBC Act, if the Minister for the Environment determines that an action is a "controlled action" which would have or is likely to have a significant impact on Matters of National Environmental Significance (MNES) or Commonwealth land, then the action may not be undertaken without prior approval from the Minister for the Environment and Water.

The significance of the proposed action on MNES can be determined through a self-assessment. The significant impact criteria set out in the guideline for each MNES are to assist in determining whether the impacts of the proposed action on any MNES are likely to be significant (e.g. as being important, notable or of consequence, or having regard to its context or intensity).

If after undertaking a self-assessment it is concluded that the action is likely to have a significant impact on any MNES, or if unsure, the action should be referred to the Minster. If the Minister decides that the action is likely to have a significant impact, then the action will be determined as a controlled action requiring approval under the EPBC Act. A separate referral under the EPBC Act has been submitted to DCCEEW.

2.1.3 Other Approvals and Regulation

Further approvals and regulations will be required prior to undertaking some activities during construction, operation and decommissioning/rehabilitation to minimise environmental impacts. These activities could include clearing of native vegetation, interfering with the bed and banks of watercourses, concrete batching and installation of apparatus for sewerage treatment. Other statutory decision-making processes that will mitigate the potential impacts to the environment as related to the Proposal are listed in **Table 2.1**.

Table 2.1 Other Approvals and Regulations for the Proposal

Authority	Legislation	Approval Required	Ability to Mitigate Environmental Impact
Department of Planning, Lands and Heritage (DPLH)	*Planning and Development Act 2005*	• Development Application from the Shire of Dandaragan • All elements of the Proposal.	Yes, this decision-making process can mitigate environmental impacts The DA needs to address relevant parts of the State Planning Framework, including consideration of State Planning Policy 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 as part of the DA. Development Approval was granted for the Proposal on 23 October 2025.
Department of Water and Environmental Regulation (DWER)	Part V Division 2 of the EP Act	• Native Vegetation Clearing Permit (NVCP). • Clearing of native vegetation.	Yes, this decision-making process can mitigate environmental impacts Part V of the EP Act regulates the clearing of native vegetation. DWER assesses significant flora and vegetation, areas of high biological diversity, significant fauna habitat and conservation areas. This aligns with the EPA Environmental Factor Objectives for Flora and Vegetation and Terrestrial Fauna. Any native vegetation clearing that is not exempt under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 will be the subject of an NVCP application prior to construction.
Department of Water and Environmental Regulation	Section 11, 17 and 21A of the *Rights in Water and Irrigation Act 1914* (RIWI Act)	• Bed and Banks Permit • Disturbance to beds and banks of watercourses • 26D and 5C groundwater licence • Licence to access water required for the project	Yes, this decision-making process can mitigate environmental impacts. Under the bed and banks permit application process, an assessment against key environmental considerations is typically undertaken which steps out the management measures to be implemented to minimise environmental impacts to watercourses. A bed and banks permit will be applied for in relation to proposed watercourse crossings. 26D licence to construct a groundwater bore should new bores be required on site. A 5C licence to take groundwater or surface water should groundwater and/or surface water abstraction be required on site, or an amendment to an existing licence be required.

Authority	Legislation	Approval Required	Ability to Mitigate Environmental Impact
Department of Biodiversity, Conservation and Attractions	Section 40 of *Biodiversity Conservation Act 2016*	• Authorisation to take threatened fauna • Potential impacts to threatened fauna individuals, for example due to turbine strike	Yes, this process can mitigate environmental impacts. Requirements for Section 40 Authorisation and appropriate mitigations will be discussed with DBCA in the context of potential bird collisions with turbines.
Department of Water and Environmental Regulation	Part V Section 52 of the EP Act	• Works Approval • Concrete batching	Yes, this decision-making process can mitigate environmental impacts. Should a works approval be required, (e.g. for concrete batching) it will contain appropriate conditions to prevent, control, abate or mitigate pollution or environmental harm during the construction and environmental commissioning phases of a Proposal.
Department of Health	*Health Act 1911* Health (Treatment of sewage and disposal of effluent and liquid waste) Regulations 1974	• Application to Construct or Install an Apparatus for the Treatment of Sewage • Temporary accommodation (provisional)	Yes, this decision-making process can mitigate environmental impacts Should this approval be required, details of the proposed wastewater treatment system will be assessed by the Local Shire and/or Department of Health.
Department of Mines, Petroleum and Exploration (DMPE)	*Dangerous Goods Safety Act 2004*	• Dangerous Goods Licence (DGL) • Storage of battery modules on site prior to installation	Yes, this decision-making process can mitigate environmental impacts. A DGL may be required should the BESS be stored on site for a period of time without being connected to the grid. The DGL application will be assessed by DMPE and will manage risks associated with the presence of the BESS on site.

2.2 Land Tenure

The lots intersecting the PDE are primarily Freehold Land owned by private landholders, with some extents of public land comprised of reserves managed by state and local government.

The Proponent has legal access to freehold land under an 'Option to Lease' agreement with the landowners. Once construction has been completed the Option will be exercised and the land occupied by the Proponent's assets will be covered by a lease, and access will be secured via easements.

The appropriate approvals will be sought for access to reserves managed by state and local government, and consultation has commenced with relevant stakeholders.

3.0 Stakeholder Engagement

3.1 Stakeholder Identification and Engagement Mechanisms

Neoen commenced engagement with key stakeholders regarding the Proposal in September 2022. The key objectives of the engagement to date have been:

- To inform stakeholders of the Proposal and its potential impacts to the environment and community.
- To understand the perspectives of local community stakeholders and stakeholder groups such that these perspectives can be considered as part of the Proposal design evolution.
- To engage early with regulators to understand areas of interest and potential concerns, such that these can be considered as part of the Proposal design evolution.

To identify key community stakeholders, a stakeholder identification process was undertaken as part of the development of the Proposals Community and Stakeholder Engagement Plan (CSEP) (**Appendix B**). This process involved identifying community stakeholders with an interest in the Proposal, or those that may be directly and/or indirectly affected, including any potentially vulnerable or marginalised groups.

Stakeholders and their areas of interest that have been identified are summarised in **Table 3.1**.

Table 3.1 Areas of Interest for Different Stakeholder Groups

Stakeholder Group	Stakeholder	Primary Area of Interest
State Government	Department of Water and Environmental Regulation (DWER) • Green Energy Approvals • Environmental Noise Branch (ENB) • Water Regulations	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
	Main Roads WA (MRWA) – Wheatbelt Division and South-West Division	Transport of infrastructure from port to site
		Road upgrades and modifications
		Approvals and permits
	Western Power (WP)	Requires additional WP terminal to be built for connection
	AMC Australian Marine Complex Western Australia	Use of port for delivery of infrastructure
	Local Bushfire Control	Bushfire Control
	Energy Policy WA and Powering WA	Proposal energy potential

Stakeholder Group	Stakeholder	Primary Area of Interest
Federal Government	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Impact on Matters of National Environmental Significance
		Referral under the EPBC Act
	Airservices Australia	Aviation Safety
	Bureau of Meteorology (BOM)	Weather Station assessment
	Geoscience Australia	Survey Points
	Civil Aviation Safety Authority (CASA)	Turbine locations
Local Government	Shire of Dandaragan	Community benefit sharing options
		Workforce accommodation
		Proposal layout and setback distances
		Road use and maintenance
Traditional Owners	Yued Aboriginal Corporation	Heritage protection and surveys
		Employment and contracting opportunities
Surrounding Landowners	Multiple	Overview of Proposal
		Near neighbour benefits
Local Community	General	Proposal details
		Community benefit sharing options
Service Groups, Businesses and Service Providers	Refer **Appendix B**	Impacts on services and business

Early community and stakeholder identification and engagement has been undertaken by Neoen with the objective of building relationships with near neighbours and key stakeholders in relation to the Proposal. The stakeholder engagement mechanisms adopted are presented in **Table 3.2**.

Table 3.2 Stakeholder Engagement Mechanisms

Mechanism	Objective	Targeted Stakeholder	Description
Project Briefings / Meetings	To understand approvals required and key issues to be considered/assessed	Federal, State and Local government agencies and Traditional Owners	Project briefing meetings, update meetings and pre-referral meetings to identify items to be considered for proposal design, approval and construction and operation
Letter Correspondence	To inform adjacent landowners of the assessment and development process through the provision of Proposal information and additional opportunity for further engagement	Federal, State and Local government agencies and neighbouring landholders / residents	Letters correspondence containing Proposal information and key engagement mechanisms
Website	To inform the community about key Proposal information and updates	Broader Community / All	Proposal website established to provide updates throughout Proposal life for all stakeholders and a mechanism to provide input/ feedback, including an online feedback form. Website updated with newsletters and information regarding Proposal milestones including advertising the community information sessions
Local Media	To inform the broader community about key Proposal milestones and extend invitations to community information sessions	Broader Community / All	Utilisation of local newspapers to inform the broader community about the Proposal and promotional information regarding the community information sessions and Proposal team contact details included with opportunities to provide feedback
Community Information Booklet	To inform various stakeholder groups and the community about key Proposal information, provide project updates and outline who Neoen is	Broader community	Neoen has developed a Community Information Booklet which provides an overview of Neoen and the Proposal
Personal Meetings / Interviews	To involve stakeholder groups to understand their concerns and ensure aspirations are considered	• Local Government • Business / Industry Representatives • Local Service Providers • Education Providers	Semi-structured meetings to identify potential Proposal impacts and opportunities from various stakeholder perspectives and suggestions with regards to mitigation/enhancement strategies Interviews with key stakeholders conducted between May 2024 – Present.

Mechanism	Objective	Targeted Stakeholder	Description
Community Information Sessions	To involve various stakeholder groups about key Proposal information	• Community members • Community and special interest group	Three community sessions were carried out by Neoen to provide updated information on Proposal developments and to gather further feedback on the Proposal The community sessions were held on 12 and 13 March 2025

3.2 Stakeholder Consultation Outcomes

Significant consultation has been undertaken with key Federal, State and Local regulatory authorities in additional to consultation with key landholders, Traditional Owner groups, the community and local service providers.

A summary of outcomes from consultation undertaken to date is presented in **Table 3.3**.

Table 3.3 Stakeholder Consultation Outcomes

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
State Government Agencies and Regulators			
DWER – Green Energy Approvals	3 July 2025	• Pre-referral meeting to discuss referral of the Proposal under Part IV of the EP Act. • Project overview • Discussion on potential environmental impacts associated with the Proposal • Identification of possible preliminary key environmental factors and other environmental factors • Mitigation hierarchy – avoidance and minimisation discussed • Stakeholder consultation to date and Proposal timings and assessment pathway	• Ensure assessment and referrals undertaken in accordance with relevant guidelines • Continue to engage with Green Energy Approvals

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
	30 October 2025	• Pre-referral meeting to provide an update on the Proposal under Part IV of the EP Act • Proposal overview and update from the meeting in July 2025 • Discussion on updated potential environmental impacts and key environmental and other environmental factors • Ongoing correspondence	• Ensure discussions from the meeting are considered in the referral • Continue to engage with Green Energy Approvals • Meet again post referral lodgement to discuss impact assessment findings
DWER – Environmental Noise Branch (ENB)	7 Feb 2025	• Meeting held with DWER ENB to introduce Proposal and discuss application of noise limits for noise assessment purposes. • Noise limits were proposed by the Project team for involved sensitive receivers, non-involved sensitive receivers and receivers involved in an existing wind farm. DWER ENB aligned with the proposed noise limits except for those nominated for non-involved sensitive receivers. • DWER ENB advised that background noise per the SA Guidelines could not be used for determining noise limits. The criteria per the WA Noise Regulations should solely be applied. • DWER ENB open to considering one-directional noise modelling and would like to see results from background noise monitoring	• Seek to design Proposal so it complies with noise criteria as per WA Noise Regulations • Analyse background noise monitoring data to understand if elevated night-time noise levels are common at sensitive receivers

DWER – Water Regulations	22 July 2025	• Meeting with DWER – Water Regulations to introduce Proposal and discuss licencing requirements for the Project and following discussed:
		  ○ Capacity of aquifer for construction water demands
		  ○ Temporary groundwater licence
			• Three major aquifer systems identified
			• Temporary licence would likely be granted
			• Assessment may be required to support temporary licence
			• Licence required and standalone bore suggested for permanent water supply

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
		○ Level of hydrological assessment required for the licence applications ○ Mechanism for seeking approval to use existing bore ○ Permanent water supply	
MRWA - Wheatbelt Division and South-West Division	6 June 2025	• Primary OSOM Access – Brand Highway / Dandaragan Road intersection • Intersection upgrades and environmental clearing permits • Eastern Access – Intersections SO1 and SO2 (Private Land) • WP Terminal Access – SO2 or SO3 • Parking and rest area provisions • Traffic Management Plan (TMP) for OSOM movements • DA referral	• Intersections are generally suitable for OSOM delivery, with some hardstand upgrades potentially required to support turning movements • Neoen will be responsible for securing all necessary intersection upgrades and obtaining relevant environmental clearing permits. Temporary access to be sought from the private landowner; access to be reinstated for general landowner/leaseholder use post-delivery • Standard access to be maintained; SO2 or SO3 under consideration based on site layout and infrastructure design • Neoen to consider incorporating temporary parking, laydown, and rest areas for heavy vehicle operators • Ongoing consultation with Main Roads WA to inform development and approval of the OSOM TMP • The DA will be formally referred to Main Roads WA by the Shire of Dandaragan for review and comment
Local Bushfire Control	June 2025	• Concern about lack of fire planning at other wind farms • Communications need multiple layers; WhatsApp preferred by local brigades. Dandaragan area lacks sufficient firefighting equipment (only two light tankers) • Need for brigade familiarisation with site and emergency planning	• Neoen to engage again to discuss Bushfire Management Plan, Risk Report, and Emergency Response Plan. Neoen to ensure strong fire planning during construction and operations • Neoen to align communication protocols with local practices, including potential WhatsApp use • Neoen will consider investing in a firefighting vehicle (e.g. Tatra) to support site and local response

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
		• Concern about construction works during movement bans • Static water supply concerns	• Neoen to organise site familiarisation with local brigades and VFRS • Neoen to detail movement ban protocols, including available firefighting resources and trained operators. Brigade familiarisation to be conducted via desktop presentations, brigade meetings, or preseason briefings, not individual on-site visits • Static water tanks to be located near property entrances on main access roads where possible Tanks to be fed by bore with solar pump and accessible for fire suppression, including neighbouring properties
Energy Policy WA and Powering WA	January 2025	• Presented Yathroo Proposal summary, community engagement, community benefit fund and the project program	• Consultation to be ongoing
Western Power	May 2024 to Present	• Consulted on commencing a detailed enquiry assessment for the Project • Neoen attended two enquiry assessment workshops with WP. This workshop provided a highlevel scope, cost, and timeframe of various connection options were presented to Neoen, to consider how the Proposal may connect to the SWIS • Neoen submitted Connection Access Application to Western Power which has been accepted and progressing through relevant studies • Neoen received critical project Status for Yathroo Wind Farm prioritising resources for connection to Clean Energy Link North	• Submitted detailed assessment to WP, working through the initiation phase, and undertaking technical assessments • High-level cost estimates provided; scope of works under assessment by WP
AMC Australian Marine Complex	October 2024-Present	• Contractor ARES discussed the potential use of the Port of Henderson to deliver equipment and/or infrastructure to the PDE which was deemed viable	• Confirmed the Port is a viable option. • Neoen to confirm shipping types and numbers once confirm turbine model has been selected

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
Western Australia		• Ongoing discussion to understand committed availability	
Federal Government			
Airservices Australia	June 2025	• Ongoing consultation	• Awaiting specified feedback
BOM	May 2025	• Discussed Proposal layout • Concerns raised on potential risk to Watheroo weather station	• Ongoing consultation and studies required to assess mitigation methods
DCCEWW	23 June 2025	• Neoen presented to DCCEEW to outline the Proposal and provide an overview of potential impacts on MNES and the mitigation and avoidance strategies utilised to reduce the impacts • Discussions on referral under the EPBC Act	• Complete studies, confirm impacts and their significance and provide further updates to DCCEEW prior to submission of EPBC referral
DCCEWW	27 October 2025	• Neoen presented to DCCEEW to provide an update on the Proposal since the meeting in June 2025 • Provided specific updates on MNES species	• Complete studies and consider the discussions on specific matters for the EPBC referral • Meet again post referral lodgement to discuss impact assessment findings
Geoscience Australia	May 2025	Consultation on geoscience Australia survey points	• No concerns raised
CASA	June 2025	Ongoing consultation	• Awaiting specified feedback

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
Local Government			
Shire of Dandaragan	Initial contact May 2024 Formal presentations: 16 May 2024, 1 Aug 2024, 25 Feb 2025 and 9 June 2025. Multiple informal calls and meetings.	• Across a number of meetings the following key items were discussed: ○ Administration of Neoen Community Benefit Sharing Fund ○ Accommodation for workforce ○ Road use and maintenance ○ Development Approval pathway and level of details required ○ Use of Walyer Walyer road for transmission line infrastructure ○ Draft Local Planning Policy 9.14 concerning Renewable Energy facilities, in particular the nominated turbine setbacks from property boundaries	• Continue to liaise with Shire on the most appropriate way to administer the Community Benefit Sharing Fund • Work with Shire to create legacy accommodation benefits • Road payments likely required for use of Shire roads • Shire to consider Neoen feedback on impacts the nominated setbacks will have on the Project
	23 October 2025	• Shire of Dandaragan Development Application decision meeting • Development Application was approved by the Shire of Dandaragan in the meeting	• Development Application conditions to be addressed prior to construction
Traditional Owners			
Yued Aboriginal Council (YAC)	May–October 2024	• Initial engagement via email and phone to inform of proposed Proposal	• Neoen introduced the Proposal and sought to initiate engagement • First phone call achieved on 17 October 2024
	17 October 2024	• Received Yued Heritage Protection Agreement (YHPA)	• Neoen began reviewing YHPA. YHPA executed on 28 May 2025
	5–6 December 2024	• Neoen invited YAC to First Nations in Energy Transition Conference in Perth	

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
	17 December 2024	• First in-person meeting. Introductions and discussion of met mast activity • YAC accepted activity notice without YHPA due to ongoing negotiation	• Neoen delayed met mast construction from 6 January to 2 April 2025 to allow Activity Notice process and heritage monitoring
	28 January 2025	• Meeting to discuss: ○ Survey/monitoring prior to met mast install ○ Cultural Advice Committee (CAC) meeting ○ Community day planning ○ Cultural awareness initiatives ○ Benefits ○ YHPA negotiation ○ Support letter from WP	• Neoen committed to: ○ Install met mast later ○ Provide Activity Notice for Feb CAC ○ Attend April CAC ○ Support community event promotion ○ Continue discussion on benefits and employment targets
	Feb–Mar 2025	• Neoen lodged Activity Notice (Feb), responded (Mar), met mast installed April with Yued heritage monitors	• Construction aligned with Activity Notice • Heritage monitoring undertaken with Yued representatives present
	12 March 2025	• First Nations Community Day in Moora	• Meeting attended by various Yued community members. • Yued stakeholders expressed desire to stay engaged and for youth employment opportunities.
	13 March 2025	• Wider Community Day – Jurien Bay and Dandaragan	• First Nations business's gave feedback on services they could provide
	20 May 2025	• Neoen presented to the CAC	• Neoen gave overview of company, Proposal, and First Nations outcomes • Took cultural advice committee on site visit • Discussed commitment to early cultural induction and future engagement
	Apr–Jun 2025	• Ongoing engagement on benefit, employment, procurement	• Neoen continue to collaboration to align Proposal benefits with community expectations and protocols

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
	September 2025	• Activity Notice submitted	• Neoen submitted an Activity Notice for Geotech work to commence in the future
	August 2025-Current	• Neoen is currently hosting monthly meetings until end of this year to discuss benefits to be provided to YAC through procurement targets, benefit fund, employment targets	
	October 2025	• Neoen submitted an Activity Notice for the PDE for work to commence in the future	

Local Elders and Yued Community Members	March 2025 to present	• Neoen hosted a Yued community day in Moora as well as wider community days in March
		• All community days were attended by various Yued community members
		• Topics Raised:
		  ○ Employment opportunities
		  ○ Local environment concerns
		  ○ Benefits
		  ○ Protecting Heritage
			• Neoen shared information on Indigenous participation targets of 5% for previous projects that were exceed to 11%
			• Suggested ongoing discussion to set targets preconstruction
			• Neoen explained rigorous environmental survey and application process through government agencies and discussed opportunity for ongoing ranger programme support
			• Neoen shared past benefit sharing models on previous wind projects and responded with committing to benefit sharing through the YAC and local YUED community to ensure wider funding is available
			• Neoen has executed a YHPA with YAC
			• Neoen is engaging with YAC to progress conversions on key topics raised

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
Surrounding landowners			
Surrounding landholders	October 2023 to Present	• Opportunity for involvement in Yathroo Wind Farm as an involved landowner hosting turbines • Neoen's development process and different developmental milestones, likely timing of submissions Neoen's community and neighbour benefit funds, which have been implemented on other projects Invitation to partake in background noise studies • Face to face meeting invites to talk through Neighbour Benefit Sharing Scheme • Detailed information on Neighbour Benefit Sharing Scheme including annual renumeration • Detailed information on the community benefit fund Visual impact	• Neoen is committed to delivering an NBS on the Yathroo Wind Farm to ensure near-neighbours can directly benefit from the region's energy transition • It is based on the number of wind turbines within certain distances of a neighbour's primary residence • The nearer the turbines to a primary residence, the higher the amount on offer. Neoen will continue to engage with surrounding neighbours throughout the projects lifecycle • Neighbours would like to see community benefit fund have funding opportunity for major projects • Neoen reduced number of turbines near certain dwellings and work through visual impact assessments for individual neighbours with key concerns of visual impact Neoen has included transmission line impact to the neighbour benefit fund from direct feedback of its visual impact
Local Community			

Community members	January 2025 to Present	• Community consultation commenced in January 2025 and involved telephone calls and information booklet distribution and three community information sessions in 2025
		• The following key community concerns and benefits were identified
		• Key Concerns:
		  ○ Visual amenity concerns related to Proposal especially from near neighbours
		  ○ Benefit sharing to community
		  ○ Local Employment opportunity
			• The Proposal has already commenced implementation of social impact management measures to address the social impacts of the Proposal, including the development of a Community Benefit Sharing program
			• A number of Community Benefit Sharing initiatives were presented by Neoen during community information sessions, with the community asked to provide ideas for funding in the following areas: Sporting & Recreation; Arts, Culture & Events; Energy Efficiency & Environment; Health & Wellbeing;

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
		○ Benefit funding to be local to Dandaragan and have major project funding • Key Benefits: ○ Procurement opportunities for local businesses and service providers ○ Opportunities for employment, training, and upskilling of local people ○ Economic benefits due to incoming construction workforce using local businesses ○ Increased diversification of the local economy and industry	Education & Training; Disaster Relief & Emergency Services; and Tourism • Larger Proposal funding will be available and ongoing discussion to decide on how localised funding will be administered • The Proposal will also deliver a neighbour benefit scheme, going 'above and beyond' the state government's planning requirements for large-scale renewable energy project in WA. This will include benefit for impact from Proposal transmission lines which was direct feedback from the community
Service providers, businesses, not for profits and community groups			
Optus	May 2025	• Proposed new link across site and set back distances	• Neoen has designed to accommodate new Optus tower
Telstra	July 2025	• Letter sent for consultation on EMI impacts	• Ongoing consultation until construction
St John Ambulance	June and July 2025	• Letter sent for consultation on EMI impacts	• Responses and consultation on going
WA Police	June 2025	• Letter sent for consultation on Proposal	• No concerns with Proposal
WA Country Health Service – Wheatbelt	April 2025	• Reached out to Moora Hospital & Health Centre Ongoing communication with Director of Nursing /Health Services Manager	• No concerns raised
Advance Dandaragan	January 2025 to present	• Community Day invitation Ongoing consultation for Community Benefit Fund	• Assisted in gathering feedback for Community Funding Priorities by sharing to in community groups
Dandaragan Primary School	May 2025 to present	• Provided information on Community Benefit Fund to School Manager for Corporate Services	• Ongoing consultation for Benefit Funding priorities
Wheatbelt Development Commission (WDC)	March 2025	• Invited staff to attend Community Days – unavailable • Arranged for meeting: ○ Presented Proposal summary and ongoing community benefit	• Foster an ongoing relationship with Local Content contact for the WDC and Neoen to support use of "work with us" section on Yathroo Windfarm website and local jobs session

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
		○ Workforce accommodation and work opportunities were raised topics by the WDC	
Dandaragan Heritage and Cultural Centre (DHCC)	February 2025	• Approached Neoen for the proposed Dandaragan Heritage and Cultural Centre project • The project seeks support for the construction of a new community building in Dandaragan, which will feature the Peter Brown Collection—a showcase of historic, renovated machinery and household items • Interactive displays will highlight current local industries, such as mineral sands mining projects, wind farms, modern farming practices, and Indigenous cultural exhibits • Future plans include showcasing Cretaceous-period fossils from the Dandaragan Hills surrounding the townsite to promote tourism	• Provided information of the set up and timeline of the Community Benefit Fund
Community Resource Centre (CRC)	2025 and ongoing	• Keeping community informed about Proposal in general and ongoing progress via various channels to capture a broad age range of community members	• Utilised local newspaper “Redgum” to target older community members who do not rely on social media for information
Royal flying doctor service	May 2025	• Grid LSALT raise of 100 ft is a minor impact to operations out of Moora	• No action required
Vodafone/TPG	July 2025	• EMI –new TPG licence within 2 km of turbines (not present at the time of the Stage 1 EMI assessment), mobile phone services	• No concerns raised
Iluka Resources	July 2025	• EMI – point-to-multipoint licences near the project, previously considered low priority	• Awaiting a response
Department of Defence	July 2025	• EMI – point-to-multipoint licences within 60 km	• Awaiting a response
Department of Biodiversity	July 2025	• EMI – emergency service within 60 km	• No concerns raised

Stakeholder	Date/s	Issues / Topics Raised	Proponent Responses / Outcomes
Conservation and Attractions			
Department of Fire and Emergency Services	July 2025	• EMI – emergency service within 60 km	• No concerns raised
Field Solutions Group	July 2025	• EMI – possible internet service provider in the area around the Proposal	• No concerns raised
BAI Communications	July 2025	• EMI – ABC and SBS broadcasting	• Awaiting a response
Dunn Aviation	June 2025	• Proposal presented, potential issues discussed and ongoing consultation agreed upon as the Project progresses	• Ongoing consultation

4.0 Environmental Principles and Factors

Environmental principles, factors and associated objectives are fundamental to the environmental impact assessment process. The EPA use these as the basis for assessing whether a proposal's impact on the environment is acceptable. This section describes how the principles and factors as defined by the EPA have been considered as part of this Proposal.

4.1 How the Principles Have Been Considered by This Proposal

Table 4.1 describes how the principles for protection of the environment as defined in section 4A of the EP Act have been considered in relation to the Proposal.

Table 4.1 Consideration of EP Act Principles

Principle	Proposal Consideration
1. The precautionary principle	A range of environmental, heritage and social studies have been undertaken to determine the baseline values associated with the PDE and to identify the environmental factors that could be potentially impacted by the Proposal. The various studies have been undertaken by suitably qualified consultants and undertaken in accordance with relevant EPA guidelines where available. The Proposal design has strongly focussed on avoidance of impacts based on the studies completed. Avoiding impacts to the point of the lowest possible impact is a precautionary approach which limits reliance on minimise, rehabilitate, and offset impacts.
2. The principle of intergenerational equity	Renewable energy projects such as this Proposal promote intergenerational equity by reducing reliance on fossil fuels and lowering greenhouse gas emissions, thereby helping to mitigate climate change and its long-term impacts. The Proposal will seek to create lasting economic benefits, such as job opportunities and technological advancements, and establish an ongoing Neighbour Benefit Scheme providing an annual contribution of $1,050 per MW of installed Wind Capacity and $150 per MW of installed BESS capacity benefit fund which can provide a stable foundation for future economic growth. Measures to avoid and minimise impacts to the environment have been identified and implemented to ensure the value of the environmental and ecological functions are maintained for future generations. The Proposal will use a small proportion of agricultural land and will enable the remainder of the PDE to continue to be used for productive purposes.

Principle	Proposal Consideration
3. Principles relating to improved valuation, pricing and incentive mechanisms	The economic costs associated with the Proposal will be borne by the proponent. The proponent has factored in the costs associated with implementing environmental management, monitoring and offsetting costs which are likely to be required under a Part V native vegetation clearing permit. Further, the selected PDE is an appropriate environmental setting for a wind farm (predominantly cleared land), while having a strong wind resource and being able to directly connect to the SWIS without requiring significant transmission upgrades.
4. The principle of the conservation of biological diversity and ecological integrity	The Proposal has considered the principle of conservation of biological diversity and ecological integrity primarily through site selection and Proposal design, and via the completion of studies to understand biodiversity values in accordance with EPA guidelines. Infrastructure will be primarily located within previously cleared land, areas of higher environmental significance such as TECs will be avoided where possible, and any clearing of vegetation in good or better condition will be minimised as far as practicable.
5. The principle of waste minimisation	The Proposal will adopt waste management hierarchy of reduce, re-use, recycle. The majority of the waste is anticipated to be generated during the construction period, and key measures to be implemented include: Consideration of specific material needs during design to avoid over-estimating requirements and excessive waste generation. Provision of an adequate number of skips and bins to allow segregation and recycling of material. All Proposal infrastructure metallic components are expected to be sold or recycled as described in the Decommissioning Plan.

4.2 Environmental Factors Relevant to this Proposal

The EPA uses environmental principles, factors, and associated objectives as the basis for assessing a proposal. There are 14 environmental factors defined by the EPA, grouped under the themes of sea, land, water, air and people. Each factor has an associated environmental objective, which are used to determine whether the impact can be deemed significant. The environmental factors provide a systematic approach to structure information for the environmental impact assessment (EPA, 2023b).

Due to the location of the Proposal being inland, the 'Sea' theme environmental factors are not relevant and have been excluded from consideration.

Key environmental factors that might be relevant to the Proposal were identified through a preliminary environmental risk assessment that involved:

- Identification of significant environmental values in the receiving environment, using baseline studies and other available information.
- Identification of potential impacts to significant environment values relevant to the Proposal.
- Categorisation of the risk to the EPA objective for each environmental factor.
- Recording the basis of the preliminary assessment and assumptions.
- Identification of further work required to inform the environmental impact assessment.

The environmental factors were classified based on the preliminary environmental risk assessment and further work as either a:

- *Key environmental factor* – detailed assessment and quantification of impacts required, likely to be considered a key environmental factor by the EPA.
- *Other environmental factor* – delineation of receiving environment and quantification of impact included to a level sufficient to demonstrate significance of impact; not expected to be a key environmental factor. Likely to meet EPA Objectives without requiring any specific mitigation and able to be managed by other decision-making authorities.

Table 4.2 lists the environmental factors and classification relevant to this Proposal and indicates the Supporting Document section number for each factor. Supporting reasons are provided for determining environmental factors as not relevant to the Proposal.

The preliminary key environmental factors deemed relevant to the construction and operation of the Proposal are:

- Flora and Vegetation
- Terrestrial Fauna.

The other environmental factors deemed relevant to the Proposal are:

- Social Surrounds.

The remaining environmental factors are not deemed to be relevant to the Proposal and are not discussed further beyond the information presented in **Table 4.2.**

Table 4.2 Classification of Environmental Factors for this Assessment

Theme	Factor	Section	Classification	Basis of Classification
Land	Flora and Vegetation	**Section 5.0**	Key environmental factor	Native vegetation clearing will be required. The Proposal will remove up to 10.28 ha of remnant native vegetation, 5.45 ha of native isolated trees and shrubs, and 7.33 ha of planted vegetation (native and non-native).
	Landforms	NA	Not assessed environmental factor	No significant landforms identified to be impacted by the Proposal.
	Subterranean fauna	NA	Not assessed environmental factor	Groundwater abstraction will be required for the Proposal, with expected construction volumes of up to 200,000 kL per annum for a three year construction period. Groundwater is proposed to be abstracted from an existing bore screened between 100–154 m depth that abstracts water from the confined Leederville-Parmelia aquifer. A temporary increase to the current permitted licence allocation will be sought under the RIWI Act. In consideration of the proposed abstraction volumes and the temporary nature of groundwater abstraction, impacts to subterranean fauna are not expected.
	Terrestrial Environmental Quality	NA	Not assessed environmental factor	The majority of the PDE is used for agricultural purposes (primarily sheep, cattle and cropping), and approximately 5% will be disturbed as a result of the Proposal. The Proposal will not result in extensive clearing, irrigation, waste rock storage, disturbance of Acid Sulphate Soils and storage/use of large volumes of contaminants. The quality of the terrestrial environment is not expected to be impacted by the Proposal.
	Terrestrial Fauna	**Section 6.0**	Key environmental factor	The Proposal will remove up to 10.28 ha of remnant native vegetation, 5.45 ha of isolated remnant trees and shrubs in cleared agricultural land, and 7.33 ha of planted vegetation (native and non-native), all of which provide fauna habitat values. Ten listed terrestrial vertebrate fauna species have been recorded in the PDE with another eight listed vertebrate species having a Moderate to High likelihood of occurrence in the PDE.

Theme	Factor	Section	Classification	Basis of Classification
				A high-level assessment of habitats to support Short Range Endemics was also performed with only Low values identified due to the amount of existing clearing and habitat types present within the PDE.
Water	Inland Waters	NA	Not assessed environmental factor	No wetlands of importance are located within the PDE. Lake Guraga, which is a salt lake and has been identified as an important wetland in Australia's Directory of Important Wetlands, is located approximately 500 m south-west of the PDE. No works will be undertaken within 2 km of the Lake Guraga boundary. The majority of infrastructure is located outside the 1% AEP flood areas. Access tracks will utilise existing creek crossings where possible, however some of these may need to be upgraded, typically via installation of culverts or a floodway. Water supply requirements for the Proposal are expected to comprise up to 200,000 kL per annum over three years and up to 1 kL per day during operations. Groundwater is proposed to be abstracted from an existing bore screened between 100–154 m depth that abstracts water from the confined Leederville-Parmelia aquifer. Analysis of test pumping data at the potential water supply bore predicted that minimal drawdown would occur due to the proposed abstraction. GDEs are present within the PDE, and wetlands and creeks in the PDE are sustained by rainfall and subsurface groundwater movement. Groundwater abstraction as a result of the Proposal is unlikely to impact on the GDEs, as abstraction will be from the confined Leederville-Parmelia aquifer at greater than 100 m depth. Further details are provided in **Appendix P.** Inland waters are not expected to be impacted by the Proposal.

Theme	Factor	Section	Classification	Basis of Classification
Air	Air Quality	NA	Not assessed environmental factor	The main potential impact to air quality will be the generation of dust during construction. Dust impacts will be managed using standard practices and implementation of the Proposal Construction Environmental Management Plan (CEMP). The Proposal is not expected to impact on air quality.
	Greenhouse Gas Emissions	NA	Not assessed environmental factor	Greenhouse gas emissions will be less than 100,000 tonnes CO2-e per annum. Per the EPA Environmental Factor Guideline for Greenhouse Gas Emissions (EPA, 2024), proposals should be considered where they are reasonably likely to exceed 100,000 tonnes CO2-e of scope 1 emissions in any year, or 100,000 tonnes CO2-e of scope 2 emissions in any year. The Proposal seeks to ultimately reduce greenhouse gas emissions through the production of renewable energy.
People	Social Surroundings	**Section 7.0**	Other environmental factor	No known Aboriginal or historical heritage sites will be impacted by the Proposal. A field survey will be undertaken prior to ground disturbing activities. The Proposal has been designed to ensure compliance with the WA Noise Regulations at existing non-involved sensitive receptors. A Landscape and Visual Impact Assessment (LVIA) has been undertaken for the Proposal and has concluded that there are no significant landscape or visual impacts except for passing motorists on a short section of the Brand Highway where it passes through the PDE and very close views toward wind turbines are possible.
	Human Health	NA	Not assessed environmental factor	There will be no mining, processing, transporting, storage or emission of radioactive materials.

5.0 Flora and Vegetation

The flora and vegetation factor under 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". The guidelines also specify that the factor flora and vegetation excludes any plantation-based, marine or estuarine plant species/communities (EPA, 2016b).

5.1 EPA Objective

The EPA objective of the factor flora and vegetation is:

'To protect flora and vegetation so that biological diversity and ecological integrity are maintained.'

Ecological integrity is defined by the EPA as the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements (EPA, 2016b).

5.2 Relevant Policy and Guidance

Policy and guidelines relevant to the consideration of flora and vegetation are summarised in **Table 5.1**.

Table 5.1 Policy and Guidance – Flora and Vegetation

Policy / Guidance	Consideration
Environmental Factor Guideline: Flora and Vegetation (EPA, 2016b)	This guidance was used to inform the impact assessment undertaken for flora and vegetation.
Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016d)	This document was used to guide flora and vegetation survey and reporting methods.
Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA) (EPA, 2020a)	All data gathered from field surveys has been prepared and submitted in accordance with IBSA guidelines.
Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (Department of the Environment, 2013)	Considered for assessment of flora and vegetation values listed under the EPBC Act.
Other State or Commonwealth Policy or Guidance	
Biodiversity Conservation Act 2016 (BC Act) (WA)	The Proposal has considered and sought to avoid where possible BC Act listed plants or communities.
Biosecurity and Agriculture Management Act 2007 (BAM Act) (WA)	Declared pests under the BAM Act will be considered and managed during the construction and operational phases of the Proposal

Policy / Guidance	Consideration
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)	The Proposal has been referred under the EPBC Act. An assessment against MNES has been undertaken to support the EPBC Act referral.

5.3 Supporting Studies

Several surveys and assessments have been undertaken to determine the flora and vegetation values in the PDE. The studies have been used to inform Proposal design and provide suitable information for an environmental impact assessment. Details of these studies are presented in **Table 5.2**.

In the context of flora and vegetation, the following study areas are defined and are depicted in **Figure 5.1**.

The **F&V Survey Area** is 15,835 ha and refers to the area subject to flora and vegetation surveys based on a previous PDE. Approximately 1,167 ha of the current PDE were not included in the F&V Survey Area. These areas have been avoided and are not included in the Indicative Proposal Footprint.

The **D&T Survey Area** is a subset of the F&V Survey Area within which the Detailed and Targeted Survey was undertaken, targeting specific species and habitat. The D&T Survey Area is 130.5 ha.

Within the following flora and vegetation sections, reference to the PDE pertains exclusively to the surveyed area, with the unsurveyed area excluded from consideration.

Table 5.2 Flora and Vegetation Surveys

Field Survey	Study Area	Survey Timing	Survey Methods and Effort
Flora and Vegetation Reconnaissance Survey (Umwelt, 2025b) (**Appendix C**)	The F&V Survey Area (15,835 ha)	2–4 July 2024	Literature review and database searches 2 botanists over 3 days 6 relevés 143 vegetation mapping notes
Flora and Vegetation Detailed and Targeted Survey (Umwelt, 2025b) (**Appendix C**)	The D&T Survey Area (130.5 ha)	24–27 September 2024	2 botanists over 4 days 3 relevés 3 quadrats 99 vegetation mapping notes
Flora and Vegetation Detailed Survey (Umwelt, 2025b) (**Appendix C**)	The D&T Survey Area (130.5 ha)	1–4 October 2024	2 botanists over 4 days 1 relevé 14 quadrats 19 vegetation mapping notes
Flora and Vegetation Reconnaissance Survey (Umwelt, 2025b) (**Appendix C**)	North-eastern area of the PDE (3,758 ha)	11 December 2024	1 botanist over 1 day No relevés 21 vegetation mapping notes

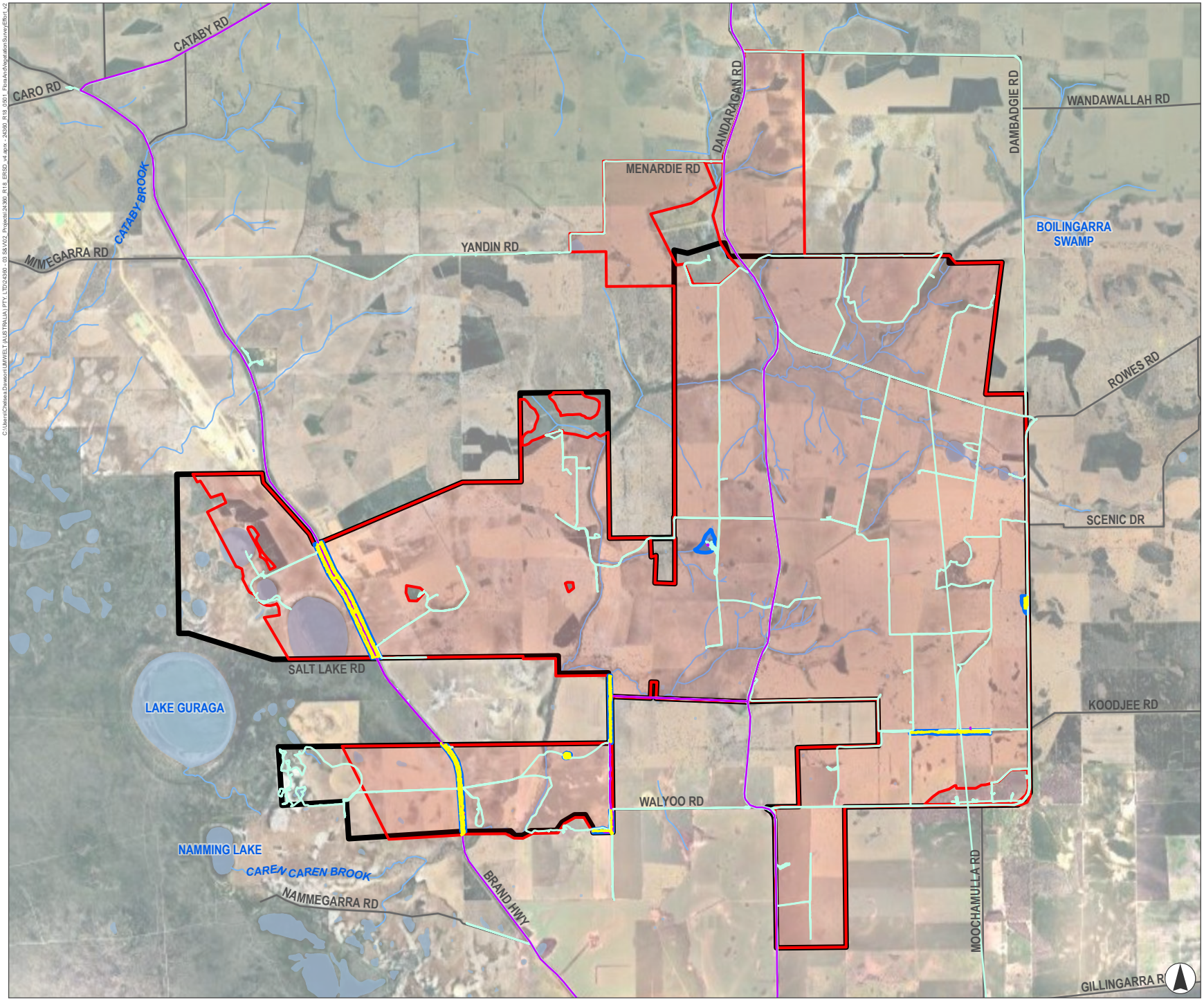


FIGURE 5.1

Flora and Vegetation Survey Area and Effort

Legend

- Reconnaissance track logs
- Quadrat track logs
- Targeted Searching track logs
- Road
- Watercourse
- Waterbody
- F&V Survey Area
- D&T Survey Area
- Project Development Envelope

0 2 4

Kilometres

Scale 1:120,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

5.3.1 Adequacy of Surveys

Surveys were undertaken in accordance relevant policy and guidance as outlined in **Table 5.1**, by suitably qualified and experienced botanists.

The flora and vegetation studies involved Reconnaissance, Detailed and Targeted surveys as defined by EPA guidelines (EPA, 2016d). Detailed and Targeted survey in all areas of remnant vegetation within the D&T Survey Area is considered the appropriate level of survey, based on the location of the Proposal within the Swan Coastal Plain (SCP) and Dandaragan Plateau and the presence of intact vegetation in 'Good' or better condition. The SCP and Dandaragan Plateau is known to support a high diversity of flora and vegetation relative to other areas of the State, including significant flora taxa and vegetation (EPA, 2016b). Reconnaissance survey within all other parts of the F&V Survey Area is considered appropriate, given the high level of disturbance in this area and the relative lack of native vegetation in 'Good' or better condition. These areas are less likely to support significant flora or vegetation.

The timing of the Phase 1 Reconnaissance survey (2–4 June 2024) did not coincide with the recommended survey timing (EPA, 2016d) of September to November. This was not considered to be a limitation as the purpose of this survey was to characterise the vegetation types. The remaining targeted surveys for significant flora taxa were undertaken in Spring 2024 as per the guidance.

The spring surveys were preceded by higher rainfall in July and less rainfall in September than the long-term average, however, this is not considered to have significantly affected the survey regarding identification of flora taxa. There were no issues related to flora sampling and identification with both annual and perennial flora in good condition. Seasonal conditions were not a limitation for flora and vegetation surveys.

Sampling effort for the Detailed surveys was deemed to be adequate based on the number of quadrats sampled and the species accumulation curve, which indicated a high proportion of flora taxa being recorded. There were no access limitations.

The flora and vegetation surveys provide suitable information on which to base an environmental assessment of flora and vegetation for the Proposal.

5.4 Receiving Environment

This section presents the flora and vegetation values as described in the surveys.

5.4.1 Flora Species Recorded

A total of 248 discrete flora taxa, including 45 introduced taxa (18.1% of all taxa recorded), were recorded in the F&V Survey Area (Umwelt, 2025b). The 248 flora taxa represent a total of 53 families and 146 genera. The most well-represented families were Myrtaceae (36 taxa), Fabaceae (24 taxa), Proteaceae (23 taxa), Poaceae (17 taxa) and Asteraceae (16 taxa).

5.4.2 Significant Flora Recorded

EPA (2016a) provides reasons why flora may be considered significant. For this Proposal, the following types of significant flora were recorded:

- Listed protected flora, i.e. identified as Priority species under the *Biodiversity Conservation Act 2016* (BC Act).
- New species or anomalous features that indicate a potential new species.

Locations of significant flora are shown in **Figure 5.2**. Further details regarding the significant flora recorded in the F&V Survey Area are provided below.

5.4.2.1 Listed Protected Flora Recorded

Within the F&V Survey Area, a total of five significant flora taxa were recorded as listed in **Table 5.3.** All significant flora taxa were located within the Brand Highway road verges, except for one occurrence of *Haemodorum loratum* (P3) located in remnant vegetation in the southwest of the F&V Area.

One Threatened taxon listed under the BC Act and EPBC Act (*Grevillea curviloba*) was recorded in an area of planted vegetation outside its natural range. *Grevillea curviloba* (T) has a restricted distribution, with the northernmost records located along the entrance road to RAAF Gingin (located over 60 km to the south of the PDE), and the southernmost records located in Ellenbrook (located over 95 km to the south of the PDE). It has a very narrow east-west distribution, occurring in a line between Gingin and Ellenbrook (WA Herbarium, 1998). This taxon is a common cultivar and is often planted outside of its range throughout Perth and the southwest. It is likely that the 10 individuals recorded were either planted or are a garden escape.

Table 5.3 Summary of Significant Flora Taxa Recorded in the F&V Survey Area

Taxon	Status	Number of Locations	Number of Individuals	VTs*
Calytix ecalycata subsp. *brevis*	P3 (BC Act)	1	5	VT3
Eucalyptus macrocarpa subsp. *elachantha*	P4 (BC Act)	4	14	VT1, VT3, PE
Grevillea curviloba	T (EPBC Act and BC Act)	1	10	PE
Haemodorum loratum	P3 (BC Act)	13	29	VT1, VT2, VT3
Poranthera moorokatta	P2 (BC Act)	2	24	VT3

Refer to **Table 5.5 for VT descriptions.*

5.4.2.2 Listed Protected Flora Likelihood of Occurrence

The flora and vegetation studies included an assessment of the likelihood of listed flora occurring in the F&V Survey Area. The assessment considers the listed flora recorded from desktop assessments, whether suitable habitat is likely to be present, distance of closest record, and currency of records.

A detailed likelihood of occurrence for conservation significant flora is provided in Appendix F of the 'Detailed and Targeted Flora and Vegetation Assessment' report (**Appendix C**). Except for the five taxa that were recorded during the field surveys, the remaining 173 significant flora taxa identified from the desktop assessment were considered 'Unlikely' to occur in the D&T Survey Area. Seventy-seven conservation significant flora taxa may possibly occur outside the D&T Survey Area. However, the remainder of the Indicative Proposal Footprint that was not within the D&T Survey Area is Degraded or Completely Degraded and there is a low likelihood of significant flora taxa being present in these areas due to the disturbed nature of the vegetation.

5.4.2.3 Other Flora Taxa of Interest Recorded

One collection of a *Hypocalymma* species was made during the 2024 survey due to it's potential to be the Priority 1 *Hypocalymma lateriticola*, located within the road reserve of Walyoo Road, outside the Indicative Proposal Footprint (**Figure 5.2**). However, the specimen was sterile and without reproductive material, and it could not be identified with confidence by Umwelt or the WA Herbarium.

Therefore, this entity is potentially significant under the 'new species or species with anomalous features that indicate a potential new species' reason from EPA (2016a, 2016b). No further collections were made of this taxon; further investigation would be required to determine whether this taxon is an undescribed species, however this is unlikely to be required given the recorded location is outside the Indicative Proposal Footprint.

Nine flora taxa recorded in the F&V Survey Area represent range extensions as they were recorded greater than 20 km from their current known distributions. None of these taxa are listed species, and they are not considered significant in this context, as they are known from wide distributions (Umwelt, 2025b).

FIGURE 5.2

Significant Flora Locations

5.4.3 Introduced Flora Recorded

A total of 45 introduced flora were recorded in the F&V Survey Area, including nine taxa that are native to Australia, but considered 'introduced' as they are planted outside their natural range. Introduced flora represents an overall high percentage of flora taxa recorded (18.1% of the total number of taxa recorded). This is indicative of the high levels of human impact evident throughout the F&V Survey Area.

Except for the native taxa, the introduced flora recorded are all listed in the Midwest Impact and Invasiveness Rating Lists (DBCA, 2014). None of the introduced flora recorded are weeds of national significance, however one species is a declared pest under the BAM Act (**Zantedeschia aethiopica*).

Further detail on the introduced flora recorded during the various surveys is provided in **Appendix C**.

5.4.4 Vegetation

5.4.4.1 Regional Vegetation in the Project Development Envelope

Vegetation communities in the region have been described using established classifications and mappings. According to the IBRA system, the Proposal is in the Swan Coastal Plain (SWA01 and SWA02) and Geraldton Sandplain (GES02) bioregions of the South West province.

Vegetation associations are mapped across WA and at a more granular scale than the IBRA mapping (Beard, 1976), as refined by Shepherd et al., (2002). **Table 5.4** presents the State-wide vegetation associations which occur in the PDE, which are also used in the cumulative impact assessment (see **Section 11.0**).

Table 5.4 Statewide Vegetation Associations in the Project Development Envelope

Vegetation Association	Description
SWA01: 1035	Mosaic: Medium open woodland; marri / Shrublands; dryandra heath
SWA01: 999	Medium woodland; marri
SWA02: 125	Salt lake, lagoon, clay pan
SWA02: 1030	Low woodland; *Banksia attenuata* & *B. menziesii*
GES02: 1031	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath

5.4.4.2 Vegetation Types Mapped in the Project Development Envelope

Eight native vegetation types (VT) were identified and mapped within the F&V Survey Area through floristic composition classification. Several Highly Modified Areas (HMAs) were also mapped, being areas where natural vegetation has been almost or entirely removed, cleared, or replaced with introduced or non-endemic taxa. These VTs and HMAs are all present in the PDE.

Vegetation types and HMAs of the PDE are described in **Table 5.5** and presented in **Figure 5.3**. More detailed mapping of the vegetation types are provided in **Appendix C**.

Table 5.5 Vegetation of the Project Development Envelope

Code	Brief Description	Area (ha/%) in PDE
VT1	Low isolated trees to open woodland of *Corymbia calophylla*, occasionally with *Eucalyptus todtiana*, occasionally with a tall shrubland of *Banksia hewardiana* over mid open shrubland of *Hakea trifurcata*, *Xanthorrhoea preissii*, *Allocasuarina humilis*, and *Calothamnus sanguineus*	218.67 (1.40%)
VT2	Occasional low woodland of *Banksia prionotes*, sometimes with *Eucalyptus todtiana*, over tall open shrubland to shrubland of *Acacia blakelyi* over mid sparse shrubland of *Allocasuarina humilis*, *Calothamnus quadrifidus* subsp. *quadrifidus* and *Xanthorrhoea preissii* over low sparse shrubland of *Dianella revoluta* and *Conostylis aculeata* subsp. *aculeata*	15.97 (0.10%)
VT3	Occasional low open woodland of *Eucalyptus todtiana*, *Banksia attenuata* and *Banksia menziesii*, sometimes with *Banksia prionotes*, occasionally with a mid shrubland of *Leptospermopsis erubescens*, over mid sparse shrubland of *Xanthorrhoea preissii* and *Jacksonia floribunda*	79.26 (0.51%)
VT4	Low open woodland of *Eucalyptus rudis* subsp. *rudis* over tall open shrubland of *Melaleuca rhaphiophylla* over mid closed rushland of *Lepidosperma longitudinale* and *Machaerina preissii*, on drainage lines and open depressions with brown loam	418.79 (2.68%)
VT5	Low woodland of *Melaleuca preissiana* and/or *Melaleuca rhaphiophylla* occasionally over low isolated sedges of *Schoenus subfascularis* over low closed grassland of pasture weeds, on open depressions, sometimes with standing water, with brown loam	26.42 (0.17%)
VT6	Low isolated trees to low open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over low closed grassland of pasture weeds, on plains or slopes with grey/brown loam	5.35 (0.03%)
VT7	Isolated low trees to low open woodland of *Eucalyptus todtiana* over low closed grassland of pasture weeds, on plains and slopes or grey/brown sand or loam	3.60 (0.02%)
VT8	Isolated mid shrubland of *Xanthorrhoea ?drummondii* over low open shrubland of *Acacia pulchella* and *Hibbertia hypericoides* subsp. h*ypericoides* over low open sedgeland of *Mesomelaena pseudostygia*, *Schoenus brevisetis*, *Schoenus clandestinus* and *Morelotia octandra*, over isolated low tussock grasses of *Amphipogon turbinatus*, on slopes of yellow-grey sand or red-brown clay loam with laterite	0.26 (<0.01%)
IT	Isolated remnant trees, largely consisting of native remnant paddock and road verge trees and shrubs	166.38 (1.07%)
PD	Paddocks and Infrastructure; areas where natural vegetation has been completely and apparently permanently removed, with either no or very scattered native taxa (trees) remaining, such as paddocks, infrastructure, tracks and firebreaks	12,975.02 (83.08%)

Code	Brief Description	Area (ha/%) in PDE
PP	Planted vegetation, where the natural vegetation has been cleared and replaced by plantations of **Pinus* sp.	167.96 (1.08%)
PE	Planted vegetation, where the natural vegetation has been cleared and replaced by plantations of native or exotic *Eucalyptus* spp.	44.32 (0.28%)
TP	Planted vegetation, where the natural vegetation has been cleared and replaced by plantations of **Chamaecytisus palmensis* or **Vitis vinifera* (Tagasaste)	51.82 (0.33%)
WB	Artificial dams and natural or artificial lakes and pooling water (water bodies)	96.00 (0.61%)
JD	Mid to tall sedgeland to open sedgeland of **Juncus acutus* over low closed grasslands of pasture weeds, on drainage lines and sump areas	179.95 (1.15%)
Unsurveyed	NA	1,167.86 (7.48%)
	Total	**15,617.63**

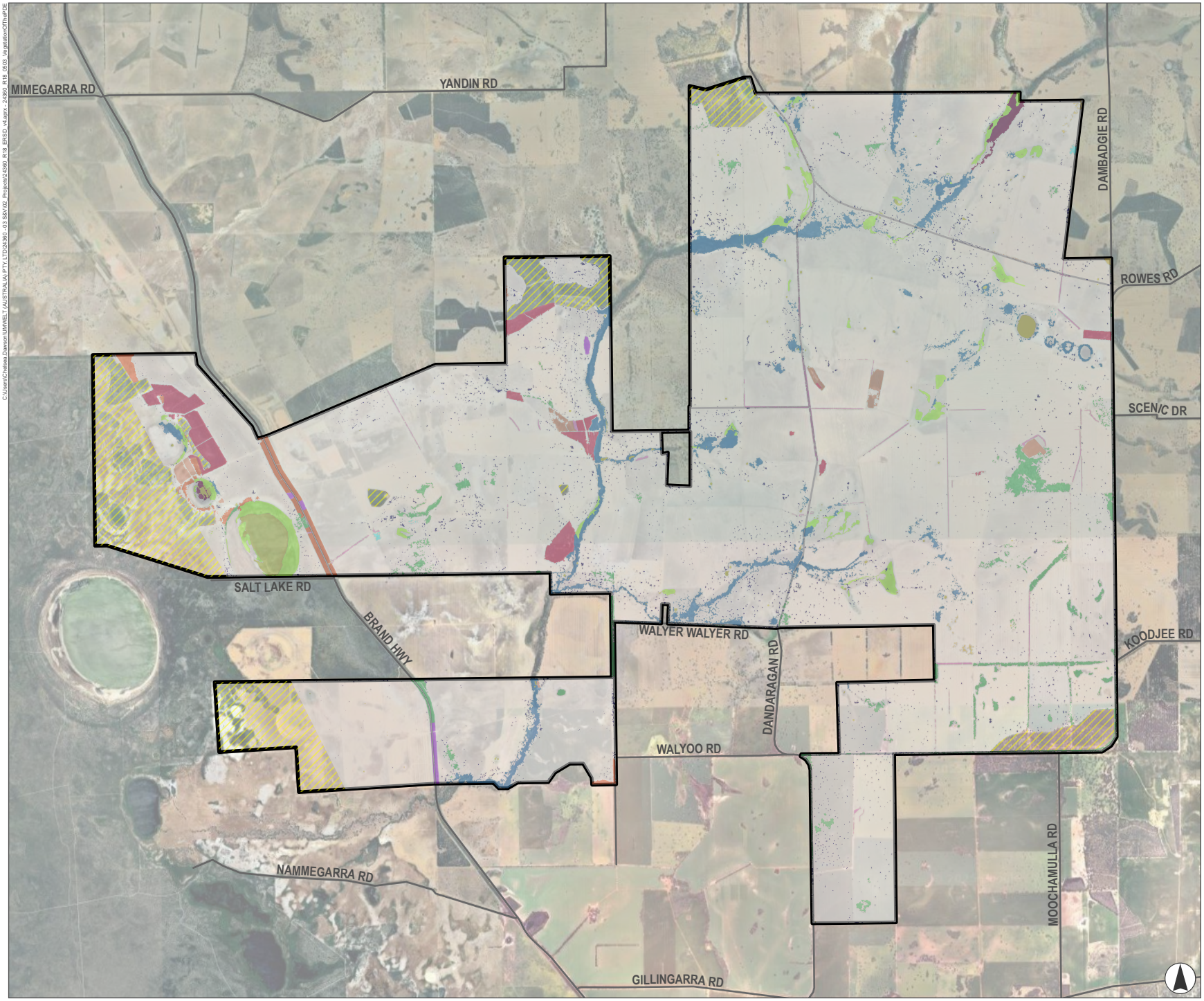


FIGURE 5.3

Vegetation of the Project Development Envelope

Legend

- Road
- Project Development Envelope

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB
- Unsurveyed

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

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Legend

Vegetation Types

VT1	Low isolated trees to open woodland of *Corymbia calophylla*, occasionally with *Eucalyptus todtiana*, occasionally with a tall shrubland of *Banksia hewardiana* over mid open shrubland of *Hakea trifurcata*, *Xanthorrhoea preissii*, *Allocasuarina humilis*, and *Calothamnus sanguineus* over low isolated shrubs of *Babingtonia grandiflora* and *Hibbertia hypericoides* subsp. *hypericoides* over low isolated tussock grasses of *Austrostipa elegantissima* and occasionally *Neurachne alophecuroidea* over low isolated sedges of *Morelotia octandra* occasionally over low open rushland of *Lepidosperma* cf. *pubisquameum* or *Lepidosperma apricola* and/or *Desmocladus asper* over low isolated clumps of forbs of *Opercularia vaginata*, occasionally with *Chamaescilla corymbosa*, *Trachymene pilosa* and *Podotheca gnaphaloides*; on undulating plains with grey/yellow/white sand-sandy loam or on slopes with red/brown clay loam and laterite pebbles.
VT2	Occasional low woodland of *Banksia prionotes*, sometimes with *Eucalyptus todtiana*, over tall open shrubland to shrubland of *Acacia blakelyi* over mid sparse shrubland of *Allocasuarina humilis*, *Calothamnus quadrifidus* subsp. *quadrifidus* and *Xanthorrhoea preissii* over low sparse shrubland of *Dianella revoluta* and *Conostylis aculeata* subsp. *aculeata* over low isolated grasses of *Austrostipa macalpinei* over low clumps of sedges of *Mesomelaena pseudostygia* over low isolated forbs of *Calandrinia corriguloides*, *Centrolepis drummondiana*, *Drosera erythrorhiza*, *Poranthera microphylla* and *Trachymene pilosa*; on sand plains with grey/yellow/brown sand.
VT3	Occasional low open woodland of *Eucalyptus todtiana*, *Banksia attenuata* and *Banksia menziesii*, sometimes with *Banksia prionotes*, occasionally with a mid shrubland of *Leptospermopsis erubescens*, over mid sparse shrubland of *Xanthorrhoea preissii* and *Jacksonia floribunda* over low sparse shrubland of *Banksia dallanneyi* subsp. *dallanneyi* var. *dallanneyi*, *Hibbertia hypericoides* subsp. *hypericoides*, *Melaleuca ciliosa* and *Petrophile macrostachya* over low isolated clumps of grasses of *Austrostipa elgantissima* and *Austrostipa macalpinei* over low sparse sedgeland to isolated clumps of sedges of *Mesomelaena pseudostygia*, *Schoenus clandestinus* and *Schoenus nanus* over isolated clumps of rushes of *Lepidobolus preissianus* subsp. *preissianus* and *Caustis dioica* over low isolated clumps of forbs of *Burchardia congesta*, *Drosera erythrorhiza*, *Phyllangium divergens*, *Podotheca gnaphaloides* and *Trachymene pilosa*, on sand plains with white/ grey/yellow sand.
VT4	Low open woodland of *Eucalyptus rudis* subsp. *rudis* over tall open shrubland of *Melaleuca rhaphiophylla* over mid closed rushland of *Lepidosperma longitudinale* and *Machaerina preissii*, on drainage lines and open depressions with brown loam.
VT5	Low woodland of *Melaleuca preissiana* and/or *Melaleuca rhaphiophylla* occasionally over low isolated sedges of *Schoenus subfascularis* over low closed grassland of pasture weeds, on open depressions, sometimes with standing water, with brown loam.
VT6	Low isolated trees to low open woodland of *Eucalyptus loxophleba* subsp. *loxophleba* over low closed grassland of pasture weeds, on plains or slopes with grey/ brown loam.
VT7	Isolated low trees to low open woodland of *Eucalyptus todtiana* over low closed grassland of pasture weeds, on plains and slopes or grey/brown sand or loam.
VT8	Isolated mid shrubland of *Xanthorrhoea* ?*drummondii* over low open shrubland of *Acacia pulchella* and *Hibbertia hypericoides* subsp. *hypericoides* over low open sedgeland of *Mesomelaena pseudostygia*, *Schoenus brevisetis*, *Schoenus clandestinus* and *Morelotia octandra*, over isolated low tussock grasses of *Amphipogon turbinatus*, on slopes of yellow-grey sand or red-brown clay loam with laterite.

Highly Modified Areas

IT	Isolated remnant trees and shrubs, sometimes low open woodlands, typically *Corymbia calophylla*, *Eucalyptus rudis* subsp. *rudis*, *Eucalyptus todtiana*, *Jacksonia sternbergiana* and *Acacia saligna*.
PP	Plantations of *Pinus* sp.
PE	Planted trees of *Eucalyptus*, of either native or exotic taxa.
TP	Plantations of **Chamaecytisus palmensis* or **Vitis vinifera*.
JD	Mid to tall sedgeland to open sedgeland of **Juncus acutus* over low closed grasslands of pasture weeds, on drainage lines and sump areas.
PD	Paddocks and Infrastructure, cleared land.
WB	Water Bodies and Artificial Dams.
	Unsurveyed

FIGURE 5.3

Vegetation of the Project Development Envelope

5.4.4.3 Vegetation Condition Mapped in the Project Development Envelope

The majority of the surveyed PDE (13,585 ha, 87%) is in 'Completely Degraded' condition, having largely been cleared for pasture or cropping with only isolated remnant trees remaining. A total of 4.3% of the PDE was in 'Degraded' condition (677.61 ha); these areas predominately consisted of native trees over no or very little understorey taxa, and high levels of introduced (weed) taxa.

A small portion of the PDE is in 'Good' condition (63.7 ha, 0.4%). This comprised the majority of the D&T Survey Area, along Brand Highway, Walyer Walyer Road and Walyoo Road, with some small portions occurring within the remnant vegetation within the PDE. An even smaller portion of the PDE is in 'Very Good' condition (26.9 ha, 0.2%). This condition rating was given to portions of the Brand Highway Road verge in the northern section, as well as a small portion of VT4, located south of Stockyard Road.

No vegetation was in 'Pristine' or 'Excellent' condition.

Vegetation condition mapping is shown in **Figure 5.4**.

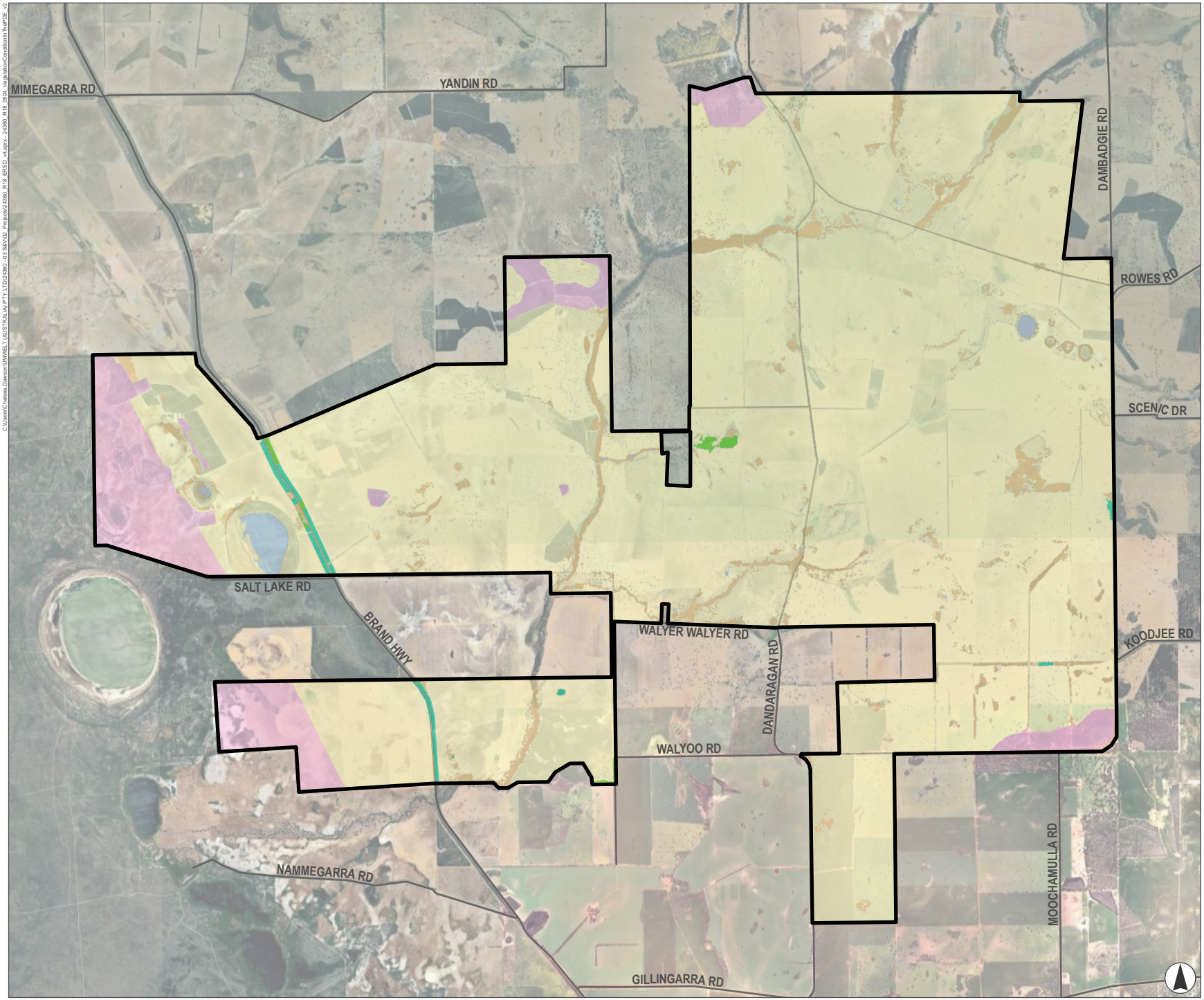


FIGURE 5.4

Vegetation Condition in the Project Development Envelope

Legend

- Road
- Project Development Envelope

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA
- Unsurveyed

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

5.4.5 Significant Vegetation in the Project Development Envelope

An assessment of the potential significance of vegetation types occurring in the PDE was conducted. EPA (EPA, 2016a) provides the following reasons why vegetation may be considered significant:

- being identified as threatened or priority ecological communities
- restricted distribution
- degree of historical impact from threatening processes
- a role as a refuge
- providing an important function required to maintain ecological integrity of a significant ecosystem.

Based on the above criteria, **Table 5.6** identifies vegetation within the PDE may be considered significant.

Table 5.6 Significant Vegetation Types in the Project Development Envelope

Vegetation Type	Significance Level	Reason for Significance	Comments
Remnant native vegetation within Dandaragan_999 VSA	Regional	Degree of historical impact from threatening processes	Dandaragan_999 VSA has less than 30% of its pre-European extent remaining. Dandaragan_999 is described as medium woodland Marri
Vegetation mapped as PEC	Regional	Being identified as threatened or priority ecological communities	Patches of 'Banksia Woodland of the Swan Coastal Plain' PEC have been mapped in the PDE (see Section 5.4.5.1 for further details)

5.4.5.1 Banksia Woodlands of the Swan Coastal Plain Community was Recorded

The 'Banksia Woodlands of the Swan Coastal Plain' community is a P3 PEC in WA, and an Endangered TEC under the EPBC Act. DBCA state that the description, area and condition thresholds that apply to the EPBC-listed TEC also apply to the PEC (DBCA, 2023).

The 'Banksia Woodland of the Swan Coastal Plain' TEC is largely confined to the Perth and Dandaragan Plateau IBRA subregions of the SCP IBRA region. It is mainly located on the deep Bassendean and Spearwood sands, and occasionally Quindalup sands (typically on the eastern edge), on shallow sands overlying more complex stratigraphic sequences on the foothills of the Ridge Hill Shelf, Whicher Scarp and Gingin/Dandaragan Scarp. This TEC occurs within an area of strong seasonal variation in climate and a fire-prone environment and therefore supports species with a range of life history traits that allow them to persist in fire-prone environments (DoEE, 2016).

This community is herein referred to as the 'Banksia Woodlands of the Swan Coastal Plain PEC' in the context of this assessment under State legislation.

The 27 potential patches of the Banksia Woodlands of the Swan Coastal Plain PEC recorded in the F&V Survey Area were assessed by Umwelt against the key diagnostic characteristics (DBCA, 2023) and in accordance with the process outlined in the Approved Conservation Advice for the TEC (DoEE, 2016). Detailed results from this assessment can be found in **Appendix C**.

In summary, 14 patches do not meet the patch size criteria, and are not considered to contribute significantly to the overall function of the ecological community; they are therefore not considered to be patches of the PEC.

Three patches located inside the PDE met both the patch size and vegetation condition criteria of Good or better. Ten patches did not meet the patch size criteria and/or the vegetation condition criteria for their mapped extents in the PDE, but they represent vegetation that is contiguous with the occurrence of the PEC immediately adjacent, which in some cases are part of the unsurveyed portion of the PDE. These 13 patches of the PEC comprise a total area of 41.3 ha within the PDE. No surveyed patches (either wholly or partially) of the PEC were in 'Pristine' or 'Excellent' condition.

Locations of the PEC in the PDE are shown in **Figure 5.5.**

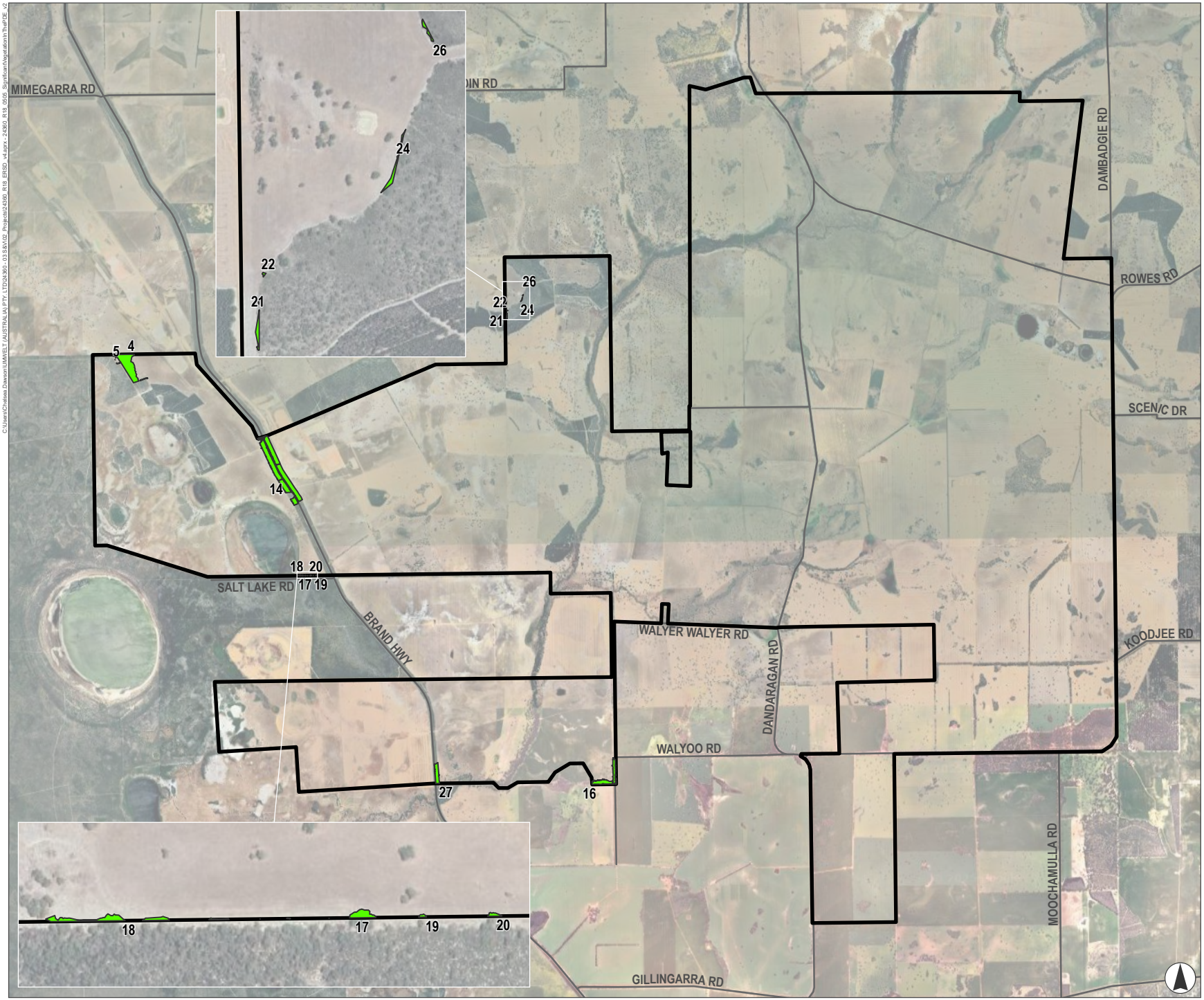


FIGURE 5.5

Banksia Woodlands of the Swan Coastal Plain Priority Ecological Community in the Project Development Envelope

Legend

- Road
- Project Area
- Banksia Woodlands of the Swan Coastal Plain ecological community (TEC – Endangered)

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

5.5 Potential Impacts of the Proposal on Flora and Vegetation

This section lists the Proposal activities that may potentially impact on flora and vegetation, including direct, indirect, and cumulative impacts. An assessment of residual impacts, following implementation of the mitigation measures outlined in **Section 5.6**, is presented in **Section 5.7** for both direct and indirect impacts.

5.5.1 Direct Impacts

The potential direct impacts to flora and vegetation from Proposal activities are listed in **Table 5.7**. Direct impacts are assessed based on the Indicative Proposal Footprint.

Table 5.7 Potential Direct Impacts to Flora and Vegetation from the Proposal

Proposal Activity	Potential Direct Impact
Clearing of native vegetation	Direct loss of native flora, including significant flora
	Direct loss of vegetation, including significant vegetation types

The maximum area of disturbance (direct impact) within the Indicative Proposal Footprint, as a proportion of the PDE is provided in **Table 5.8**. A maximum of 4.7% of the PDE would be disturbed for the Proposal. Of this area, only a small proportion has native vegetation due to the avoidance measures described in **Section 5.6**.

Table 5.8 Proposal Maximum Disturbance Area as Proportion of Development Envelope

PDE Area (ha)	Maximum Direct Disturbance Area (Indicative Proposal Footprint) (ha)	Maximum Proportion of PDE Potentially Disturbed
15,617.6	729.1	4.7%

5.5.2 Indirect Impacts

The Proposal activities and threats that might lead to indirect impacts to native flora or degradation of vegetation types are listed in **Table 5.9**. Although indirect impacts might lead to loss of flora and degradation of vegetation types, the loss is not directly caused by Proposal activities or is difficult to predict.

Table 5.9 Potential Indirect Impacts to Flora and Vegetation from the Proposal

Proposal Activity	Potential Indirect Impact
Establishment of linear infrastructure	• Fragmentation of vegetation types separated by areas of clearing. • Edge effects leading to reduced vegetation condition in proximity to cleared areas. • Introduction or increased spread of weeds.
Native vegetation clearing. Contractors and equipment entering site	• Introduction or increased spread of weeds. • Reduced vegetation condition in proximity to cleared areas. • Unnecessary or unapproved clearing of flora and vegetation. • Increased dust generation leading to dust settling on adjacent vegetation. • Erosion leading to sedimentation on adjacent vegetation.
Hot works	• Loss of flora and vegetation in the event of a fire.

5.5.3 Cumulative Impacts

Cumulative impacts to flora and vegetation could occur from the combination of this Proposal and other proposals in the region.

Cumulative impacts are assessed in **Section 11.0**.

5.6 Mitigation to Minimise Impacts on Flora and Vegetation

This section describes the mitigation measures that have been applied during preliminary design of the Proposal, and the management measures that will be applied during detailed design, construction, and operations, to minimise the Proposal's impact on significant flora and vegetation. These management measures are included in the Preliminary Construction and Environmental Management Plan (CEMP) (**Appendix D**). The Preliminary CEMP will support approvals and be used as a foundation for the detailed CEMP which will be developed as the Proposal progresses to the detailed design phase.

The mitigation hierarchy of avoid, minimise, rehabilitate, and offset has been applied in accordance with the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023b). Avoiding and minimising impacts has been applied rigorously to the design process to date on the Proposal, and will continue during detailed design, construction, and operations, to mitigate the Proposal's impact on flora and vegetation. Numerous Proposal design iterations were undertaken with consideration of ecological values identified and mapped during the field survey program.

5.6.1 Measures to Avoid Impacts on Flora and Vegetation

The following measures have been implemented to **avoid** potential impacts to flora and vegetation:

- Early identification and avoidance of some key blocks of native remnant vegetation (300ha) presumed to be in Good condition or better.
- Avoidance of all Banksia Woodland of the Swan Coastal Plain PEC in Good condition or better. The access route from the Brand Highway was relocated from its original planned location within a patch of PEC in Good condition, to a location comprising existing cleared tracks and Degraded vegetation. As result of the relocation, no PEC in Good condition will be cleared, and clearing will not exceed 0.11 ha of degraded PEC.
- Avoidance of all native vegetation mapped as 'Very Good' condition or better. The Project sought to avoid clearing native vegetation in 'Good' condition, however 'Good' condition vegetation has been found in many of the road reserves that infrastructure will need to traverse. At these locations, clearing widths have been minimised and infrastructure will seek to cross in a perpendicular fashion where practicable.
- Avoidance of over 98% of native vegetation within the PDE.
- Avoidance of known locations of Threatened and Priority flora recorded from the surveys. Known records of Threatened and Priority flora recorded from Proposal surveys will be protected from land clearing through procedures in the CEMP.
- Avoidance of larger areas of intact native vegetation.

- Avoidance of an additional 5 ha of native vegetation clearing through the relocation of turbine positions and road placement from optimum design.

5.6.2 Measures to Minimise Impacts on Flora and Vegetation

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

The below listed industry standard and best practice measures will be implemented to **minimise** potential impacts to significant flora and vegetation:

- Utilise existing disturbed areas where possible to minimise clearing of native vegetation, particularly vegetation in Good condition where conservation significant vegetation have potential to occur.
- Minimise clearing of riparian vegetation. This has been achieved by setting turbines back from riparian vegetation and utilising existing creek crossings where possible.
- The CEMP will include a vegetation clearing procedure to minimise unnecessary native vegetation clearing. This will include:
    - Regulatory requirements, management actions or controls to be implemented
    - Proposal specific land clearing training for personnel to minimise the risk of unplanned, unnecessary, or unauthorised clearing
    - Clear roles and responsibilities for approving and checking vegetation clearing
    - Approved areas of native vegetation clearing will be marked out prior to clearing and records of native vegetation clearing will be kept in a register to support compliance audits and reporting
    - Independent third-party audits and inspections.
- The potential for the import and spread of weeds will be minimised through implementation of the CEMP that will include the following measures:
    - Procedures for inspection of plant and equipment for weeds or dieback
    - Avoidance of weed infested areas where practicable and procedures for inspection and cleaning of plant and equipment before leaving a weed infested area
    - Prior to entering the Proposal area, the origin of fill material will be determined and certified where applicable. Where practicable, the fill should be from a quarry (i.e. not reused from another site) that has a Dieback Management Plan in place.
- The generation of dust and potential impacts will be minimised via implementation of the CEMP that will include:
    - Use of dust suppression techniques to minimise generation of dust (e.g., watering access roads)
    - Implementation of speed limits on access roads, informed by appropriate signage as required
    - Undertaking clearing activities in a progressive manner thereby limiting exposed areas.

- Erosion and sedimentation will be mitigated and managed through measures in the CEMP including the establishment of temporary erosion and sediment control measures during construction such as silt fences, diversion bunds, rock check dams and sedimentation ponds.
- The potential for fire will be minimised via implementation of the CEMP and Project Bushfire Management Plan. Key measures to be implemented include:
    - Hot / hazardous works will not be undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic
    - Fire extinguishers will be in place at high-risk facilities and in site plant and vehicles
    - The under carriage and radiators of site plant and vehicles shall be free from vegetation.

5.6.3 Rehabilitation Measures for Flora and Vegetation

Most of the proposed native vegetation clearing in the Indicative Proposal Footprint is required to support permanent infrastructure. This limits the potential for rehabilitation of native vegetation clearing areas.

Areas cleared for temporary infrastructure in the Indicative Proposal Footprint will be confined to previously disturbed areas as far as practicable and will be rehabilitated to their pre-disturbance conditions when no longer required. Disturbance of a small area (up to1 ha) of degraded vegetation on the edge of one of the wetlands is required to connect to existing transmission infrastructure. This area is already subject to agricultural activities and will be rehabilitated at the end of construction.

5.6.4 Offsets for Residual Impacts on Flora and Vegetation

Offsets are expected to be required via a Part V EP Act Native Vegetation Clearing Permit. Offsets are described in **Section 8.0**.

5.7 Assessment of Residual Impacts on Flora and Vegetation

The assessment of impacts focuses on potential residual impacts from the Proposal on significant flora (**Section 5.4.2**), all vegetation types (**Section 5.4.4.2**) and vegetation condition (**Section 5.4.4.3**), as well as cumulative impacts (**Section 11.0**) following mitigation as described in the above section.

The Proposal would result in direct loss of a maximum of 10.28 ha of remnant native vegetation, 5.45 ha of isolated native trees and shrubs, and 5.05 ha of planted native vegetation. The direct residual impacts have been assessed based on the Indicative Proposal Footprint. To provide flexibility for adjustment in the Indicative Proposal Footprint, the impact assessment also quantifies areas within the PDE.

The following sections present an assessment of residual direct, indirect and cumulative impacts to significant flora and vegetation in the Indicative Proposal Footprint.

5.7.1 Residual Impacts on Significant Flora

One threatened significant flora species (planted), four Priority flora species and one potentially significant flora taxa were recorded in the PDE. The Proposal will avoid directly impacting the known records of these significant flora.

Apart from the five conservation listed flora taxa recorded within the D&T Survey Area, no others are likely to occur within the D&T Survey Area.

Seventy-seven conservation significant flora taxa were identified as possibly occurring outside the D&T Survey Area, including the Indicative Proposal Footprint. However, the vegetation in the portion of the Indicative Proposal Footprint outside the D&T Survey Area is in Degraded or Completely Degraded condition, and it is considered unlikely that significant flora taxa occur in these degraded areas.

Potential indirect impacts to significant flora as outlined in **Section 5.5.2** are likely to be avoided through measures outlined in **Section 5.6.2**.

The potential impact to significant flora species is quantified in **Table 5.10**. The table states the number of individual plants recorded.

Table 5.10 Quantitative Impact Assessment to Significant Flora

Significant Flora Species	Records in PDE	Records in Indicative Proposal Footprint (Direct Impact)
Grevillea curviloba (T)	10	0
Calytrix ecalycata subsp. *brevis* (P3)	5	1*
Eucalyptus macrocarpa subsp. *elachantha* (P4)	14	0
Haemodorum loratum (P3)	29	0
Poranthera moorokatta (P2)	24	1*
Hypocalymma species (potentially significant)	1	0

*The Proposal will avoid the locations where these were recorded.

5.7.2 Residual Impacts on Vegetation Types

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

Vegetation System Associations

Comparison with Statewide Vegetation Statistics (DPIRD 2018) indicates that three Vegetation System Associations (VSAs) that occur in the Indicative Proposal Footprint have more than 30% of pre-European extent remaining statewide. The fourth VSA, being Dandaragan 999, has 11.26% of its pre-European extent remaining (**Table 5.11**).

The proportion of each VSA affected by native vegetation clearing associated with the Proposal ranges from less than 0.0002% for Bassendean 125, to 0.06% for Dandaragan 999. Therefore, although some of these VSAs have undergone regional decline associated with clearing on the Swan Coastal Plain, the direct impact of the Proposal does not materially reduce their extent or distribution within the bioregion.

Native Vegetation Types

Vegetation clearing for the Proposal has been avoided and minimised as far as practicable and consists primarily of the removal of vegetation at the perimeter of degraded patches. Up to 15.73 ha of remnant native vegetation including 5.45 ha isolated native trees and shrubs, and 5.05 ha of planted native vegetation is proposed to be cleared in the Indicative Proposal Footprint. **Table 5.12** presents the area of each vegetation type or highly modified area in the PDE and the Indicative Proposal Footprint and illustrated in **Figure 5.6**.

Significant Vegetation

The following vegetation types in the PDE were classified as significant based on the criteria outlined in **Section 5.4.5** and **Table 5.6:**

- Remnant native vegetation within Dandaragan_999 VSA
- Vegetation mapped as PEC.

The Proposal will result in the clearing of up to 7.75 ha of native vegetation within the Dandaragan 999 VSA. This accounts for 0.06% of the current extent of the VSA and this reduction is not expected to materially impact the current extent of this VSA.

The Proposal will result in clearing of up to 0.11 ha of a patch of the Banksia Woodlands of the Swan Coastal Plain PEC, however the vegetation proposed for clearing is in Degraded condition and includes an existing cleared track. This clearing is required to facilitate a turning point for transport of BESS and terminal components from the Brand Highway transport route to the Proposal site, via land that is managed by an involved landowner. The turning point footprint has been relocated to avoid PEC vegetation in Good condition, will use the existing cleared tracks where practicable and minimise clearing of native Banksia tree species as far as possible.

The Approved Conservation Advice for the Banksia Woodlands of the Swan Coastal Plain TEC, which also applies to the BC Act PEC, states that areas critical to the survival of the Banksia Woodlands covers all patches that meet the key diagnostic characteristics and condition thresholds (DoEE, 2016). Areas of vegetation in Good condition that meet the diagnostic criteria for Banksia Woodlands of the Swan Coastal Plain PEC (41.23 ha) have been avoided and remain outside the Indicative Proposal Footprint. The 0.11 ha of Degraded PEC proposed for clearing is not considered likely to be critical for survival of the Banksia Woodlands PEC.

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

Table 5.11 Regional and Local Extent of Vegetation System Associations

Vegetation System Association	Pre-European Extent (ha)	Current Extent (ha)	Remaining Statewide (%)	Current Extent in DBCA lands (%)	Total area of native vegetation in Indicative Proposal Footprint (ha)
Bassendean 125	3,485,785	3,146,487	90.27	8.11	0.62
Bassendean 1030	139,012	88,949	63.99	19.24	2.24
Bassendean 1031	269,490	88,668	32.90	42.66	5.11
Bassendean 999	115,706	13,024	11.26	23.91	7.75
Total	**4,009,993**	**3,337,128**	**N/A**	**N/A**	**15.72**

Table 5.12 Predited Impacts to Vegetation Types

Vegetation Code	Extent within PDE (ha)	Direct Impact to Vegetation Types (based on Indicative Proposal Footprint)	
		Area (ha)	Proportion impacted within PDE (%)
VT1	218.67	4.99	2.28%
VT2	15.97	0.35	2.19%
VT3	79.26	2.69	3.39%
VT4	418.79	2.18	0.52%
VT5	26.42	0.00	0.00%
VT6	5.35	0.07	1.31%
VT7	3.60	0.00	0.00%
VT8	0.26	0.00	0.00%
IT	166.38	5.45	3.28%
PD	12,975.02	705.52	5.44%
PP	167.96	1.00	0.60%
PE	44.32	5.05	11.39%
TP	51.82	1.28	2.47%
WB	96.00	0.01	0.01%
JD	179.95	0.53	0.29%
Unsurveyed	1,167.86	0.00	0.00
TOTAL	**15,617.63**	**729.11**	

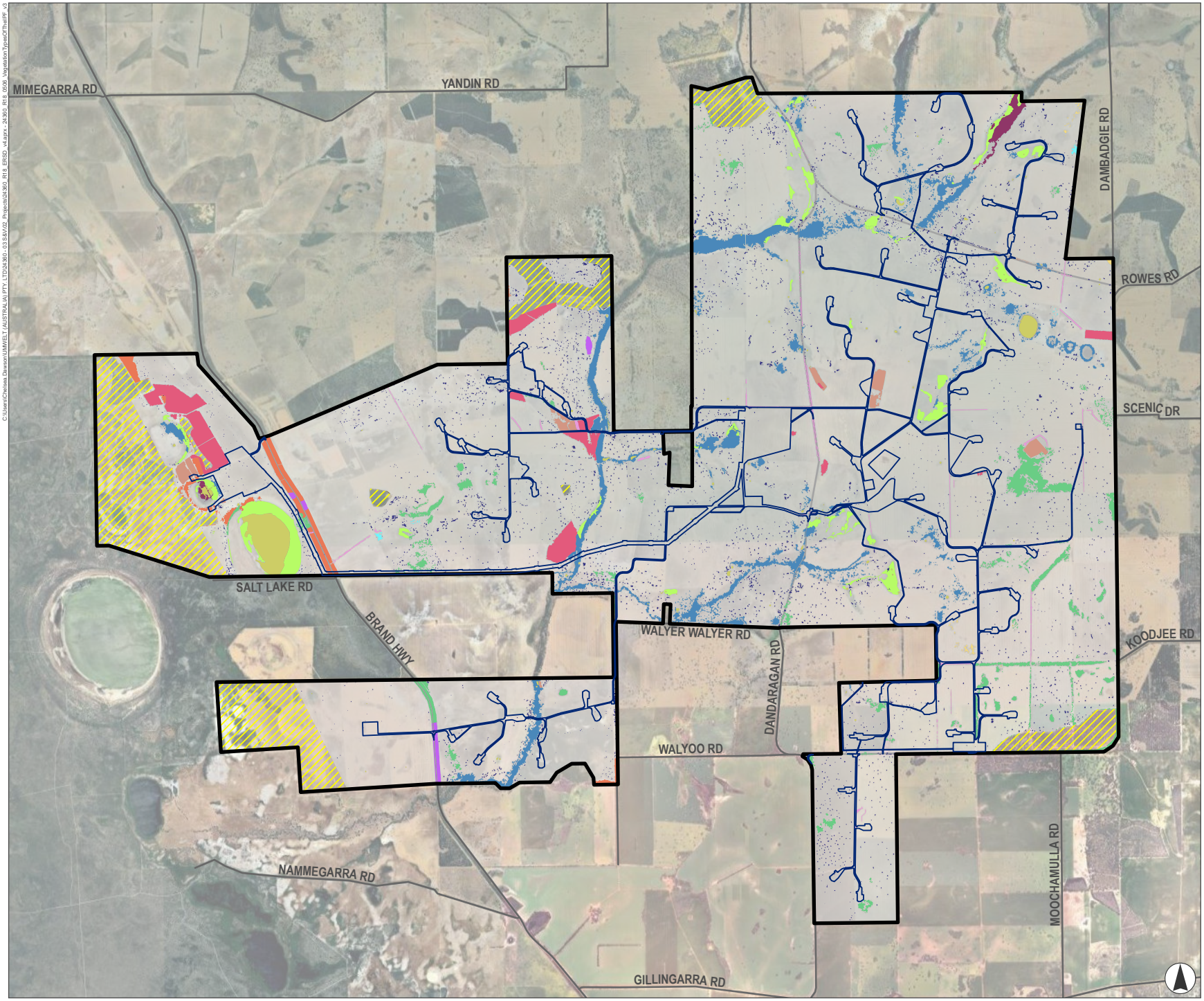


FIGURE 5.6

Vegetation Types in the Indicative Proposal Footprint

Legend

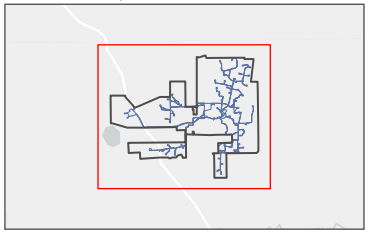
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT1
- VT2
- VT3
- VT4
- VT5
- VT6
- VT7
- VT8

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- WB
- Unsurveyed



0 0.5 1
Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

FIGURE 5.6.1

Vegetation Types in the Indicative Proposal Footprint

Legend

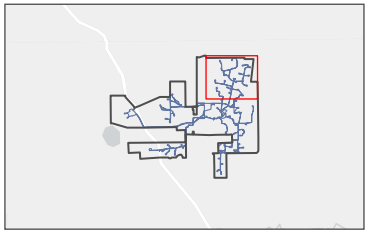
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT4

Highly Modified Areas

- IT
- PE
- TP
- JD
- PD
- WB



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Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

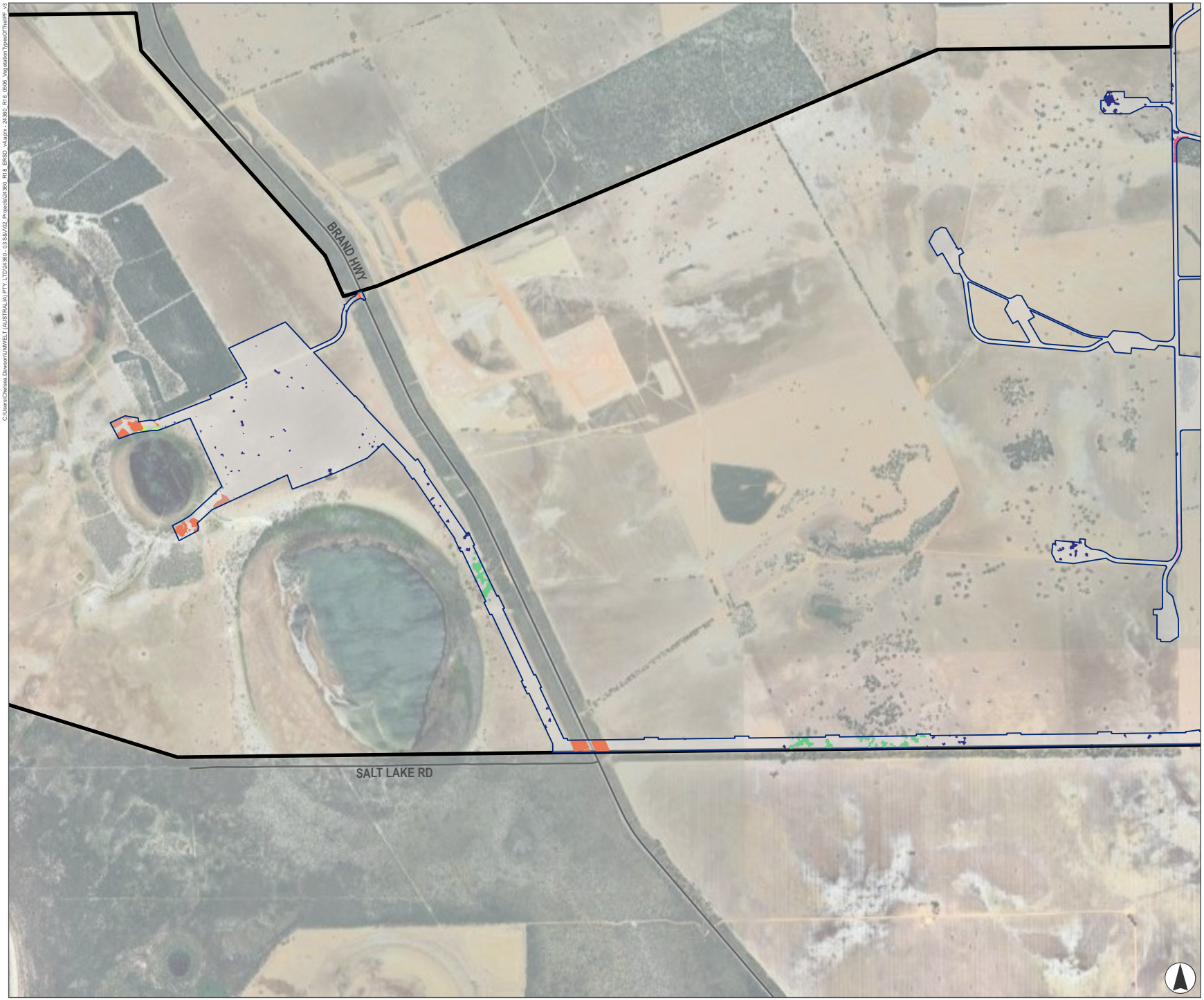


FIGURE 5.6.2

Vegetation Types in the Indicative Proposal Footprint

Legend

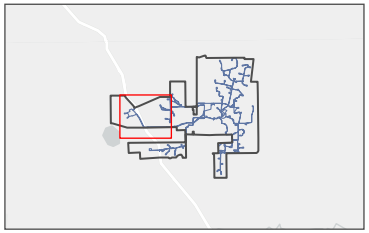
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT1
- VT3
- VT4

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD
- Unsurveyed



0 0.5 1

Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

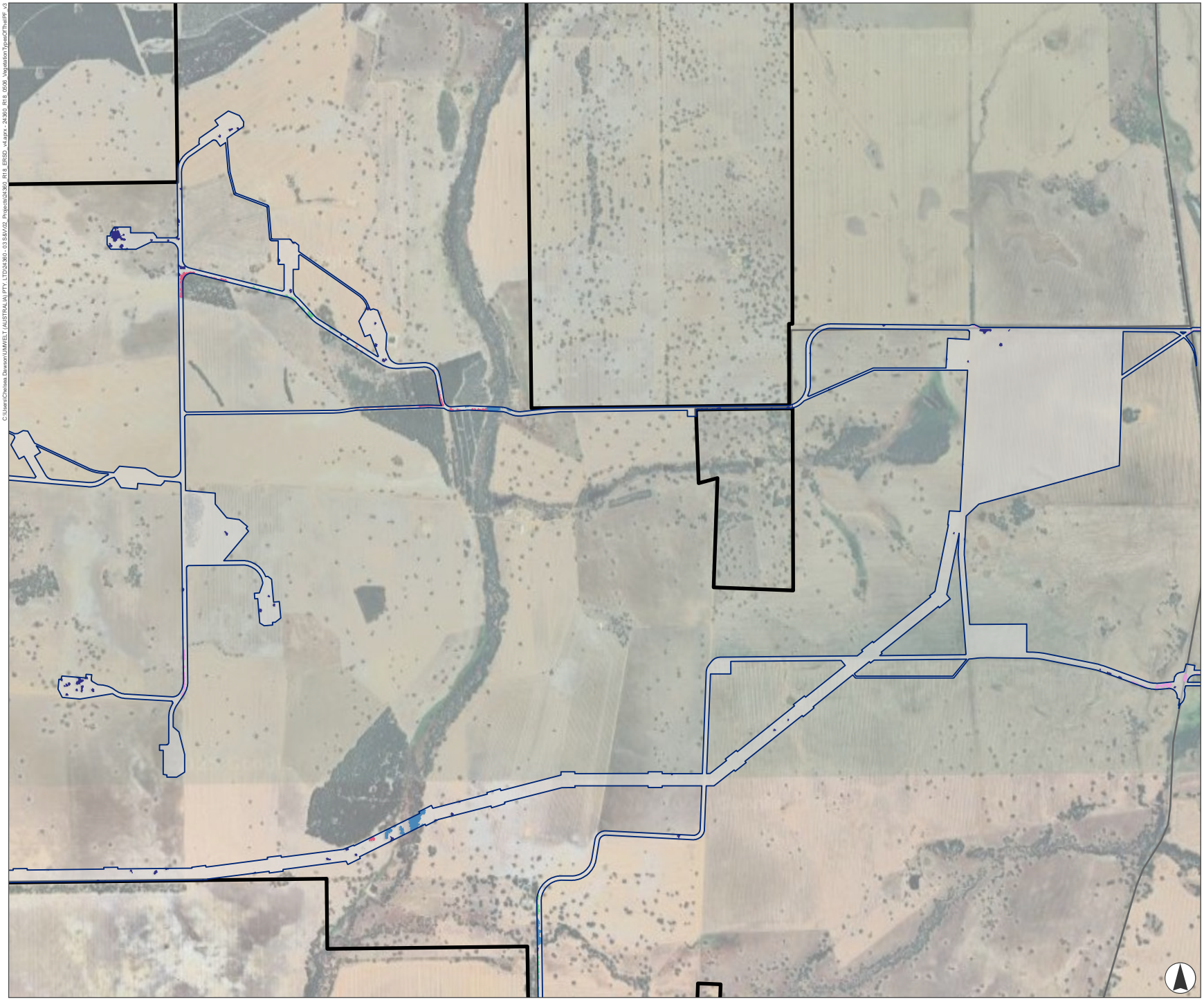


FIGURE 5.6.3

Vegetation Types in the Indicative Proposal Footprint

Legend

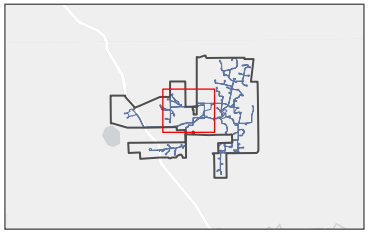
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT1
- VT4

Highly Modified Areas

- IT
- PP
- PE
- TP
- PD



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Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

FIGURE 5.6.4

Vegetation Types in the Indicative Proposal Footprint

Legend

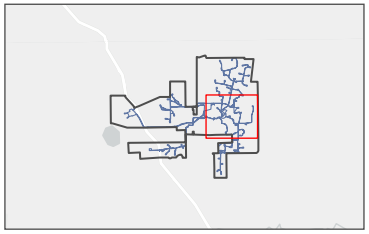
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT1
- VT4
- VT6

Highly Modified Areas

- IT
- PP
- PE
- TP
- JD
- PD



0 0.5 1

Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

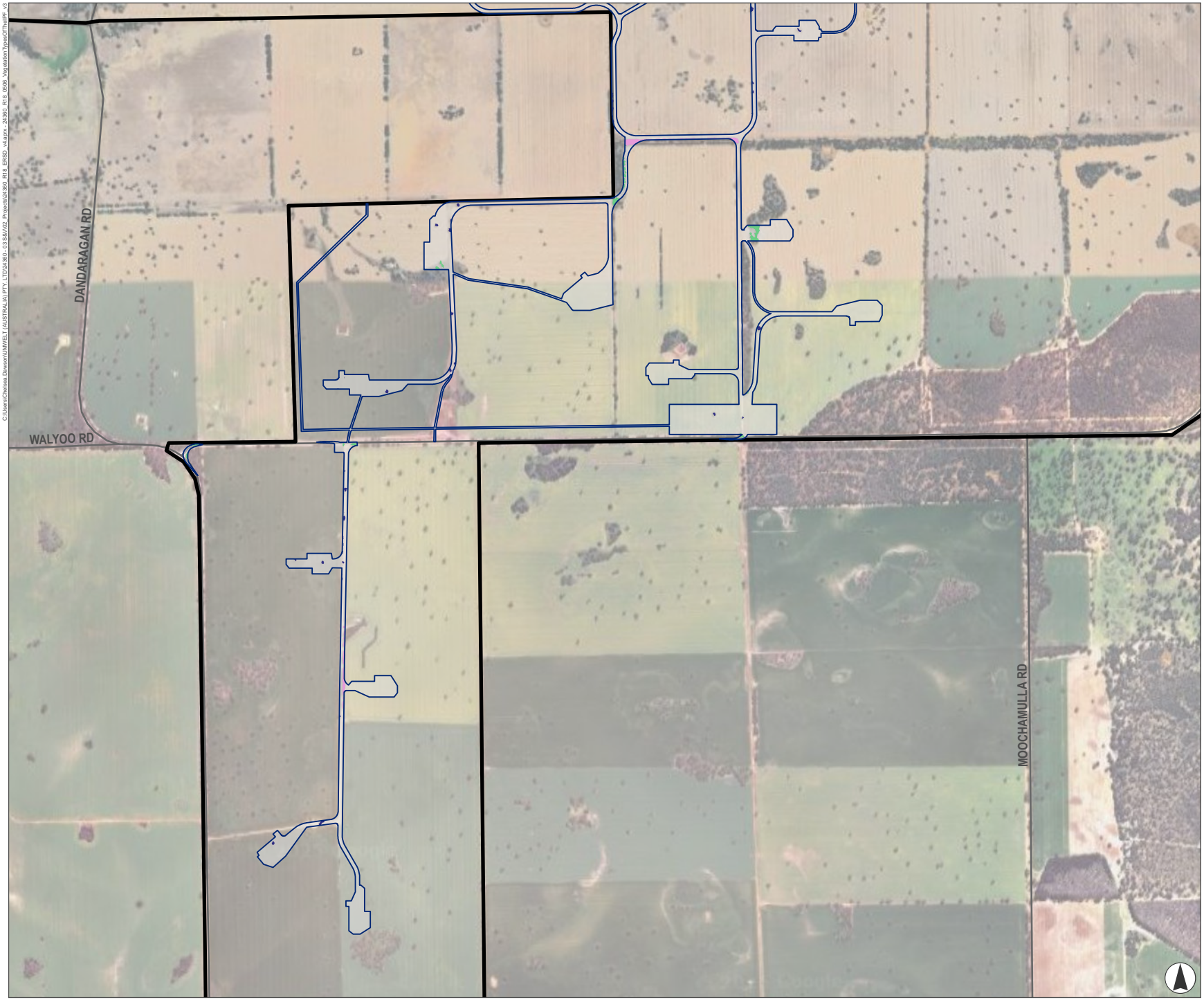


FIGURE 5.6.5

Vegetation Types in the Indicative Proposal Footprint

Legend

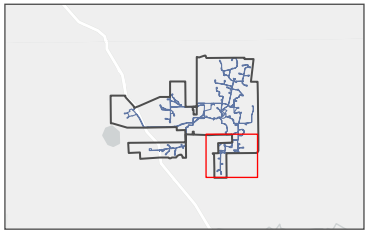
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT1

Highly Modified Areas

- IT
- PE
- PD



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Kilometres

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GDA2020 MGA Zone 50

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

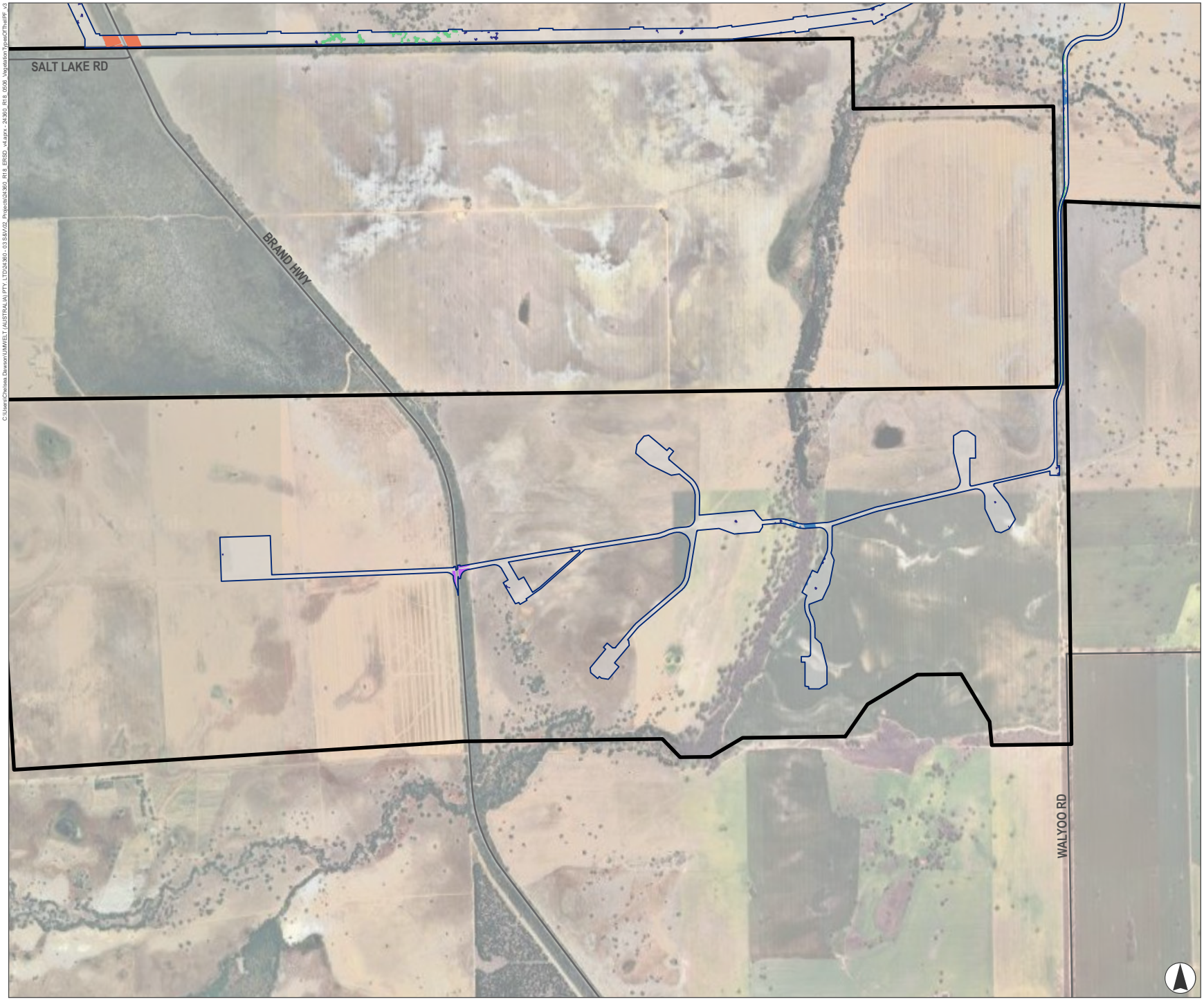


FIGURE 5.6.6

Vegetation Types in the Indicative Proposal Footprint

Legend

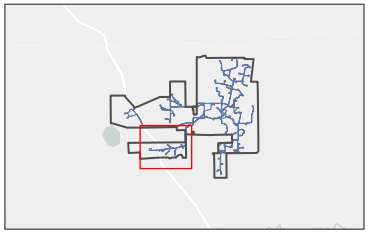
- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Types

- VT1
- VT2
- VT3
- VT4

Highly Modified Areas

- IT
- PD



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Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

5.7.3 Residual Impacts on Vegetation Condition

Impacts to vegetation condition are presented in **Table 5.13** and **Figure 5.7**.

The impacts to vegetation condition were assessed only for direct impacts and within the Indicative Proposal Footprint. There is a high confidence that potential indirect impacts to vegetation condition can be managed through the measures as described in **Section 5.6.2**.

No vegetation in Excellent or Very good condition is present in the Indicative Proposal Footprint. The majority (99.69%) of the Indicative Proposal Footprint is in Degraded or Completely Degraded condition. Of the 15.73 ha of native vegetation in the Indicative Proposal Footprint, 85.8% is in Degraded or Completely Degraded condition.

The Proposal is predicted to directly impact 2.23 ha of vegetation in Good condition which represents 0.31% of the Indicative Proposal Footprint and 3.50% of Good condition vegetation mapped in the surveyed areas of the PDE. At least 96.5% of vegetation mapped as Good condition will remain outside of the Indicative Proposal Footprint.

Vegetation outside the Indicative Proposal Footprint will remain outside of direct impacts.

Table 5.13 Direct Impact to Vegetation Condition

Vegetation Condition	Area of Vegetation Condition within PDE		Direct Impacts to Vegetation Condition (Indicative Proposal Footprint)		
	Area (ha)	Proportion of PDE (%)	Area (ha)	Proportion of Indicative Proposal Footprint (%)	Proportion of PDE Condition Extent (%)
Very Good	26.95	0.17	0.00	0.00	0.00
Good	63.75	0.41	2.23	0.31	3.50
Degraded	677.61	4.34	8.05	1.10	1.19
Completely Degraded	13,585.46	86.99	718.82	98.59	5.29
Unassessed	1,263.86	8.09	0.00	0.00	0.00
TOTAL	**15,617.63**	**100**	**729.1**	**100**	

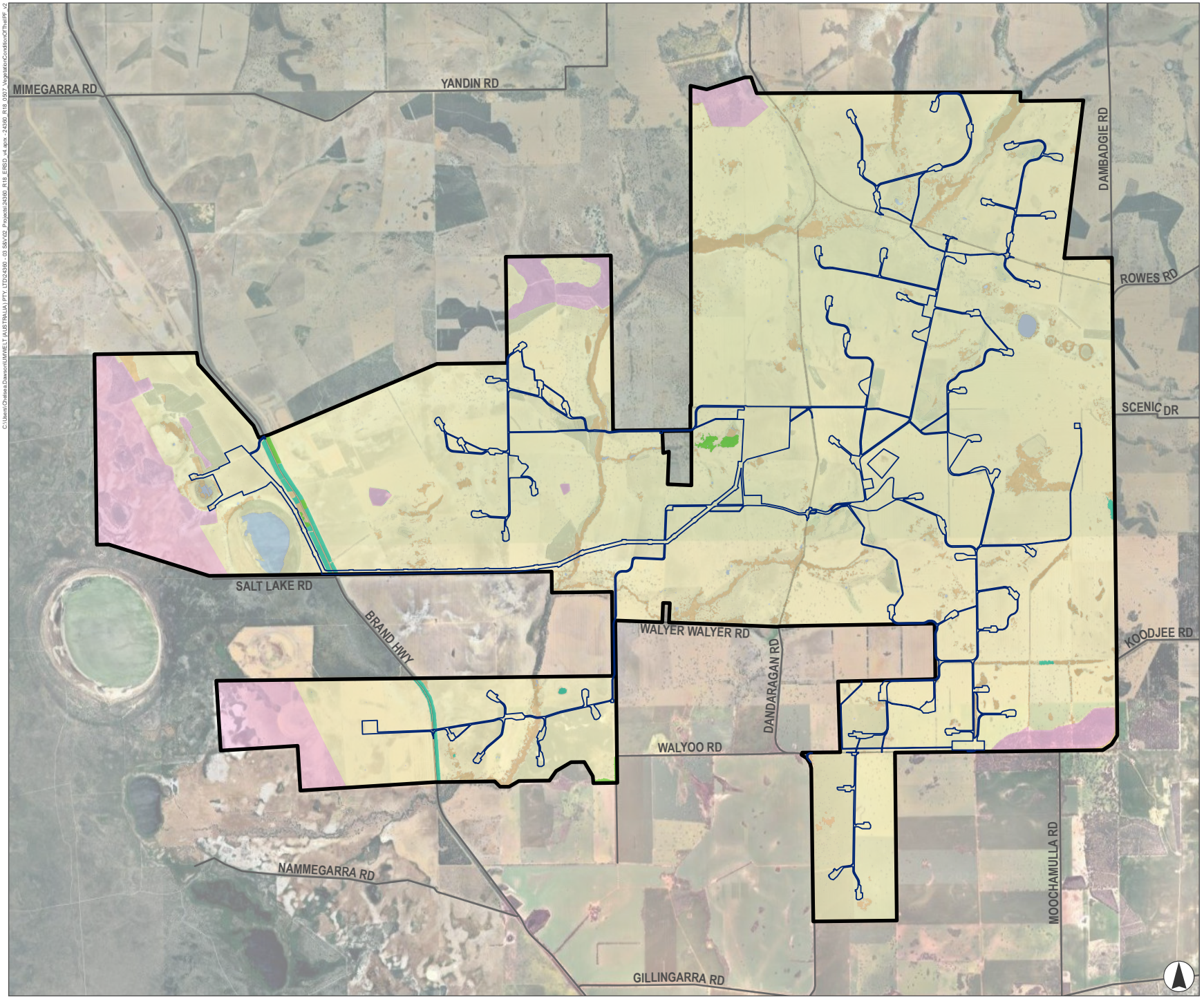


FIGURE 5.7

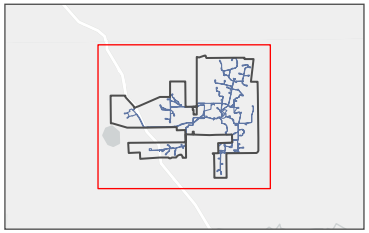
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Very Good
- Good
- Degraded
- Completely Degraded
- NA
- Unsurveyed



0 0.5 1
Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

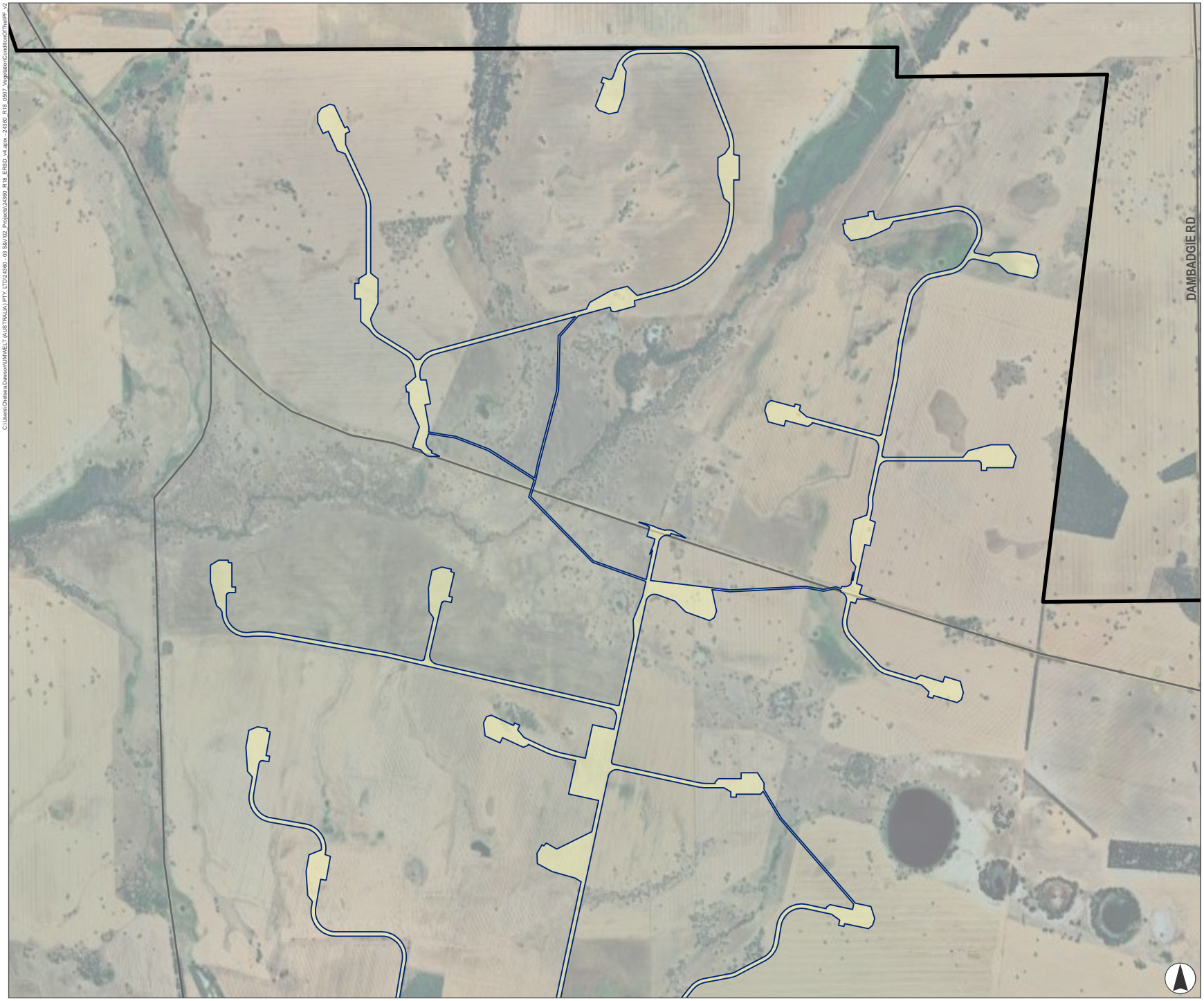


FIGURE 5.7.1

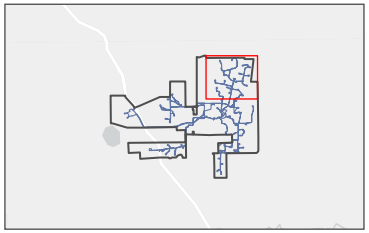
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Degraded
- Completely Degraded
- NA



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Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

FIGURE 5.7.2

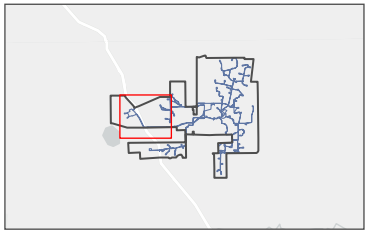
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Good
- Degraded
- Completely Degraded
- Unsurveyed



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Scale 1:30,000 at A4
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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

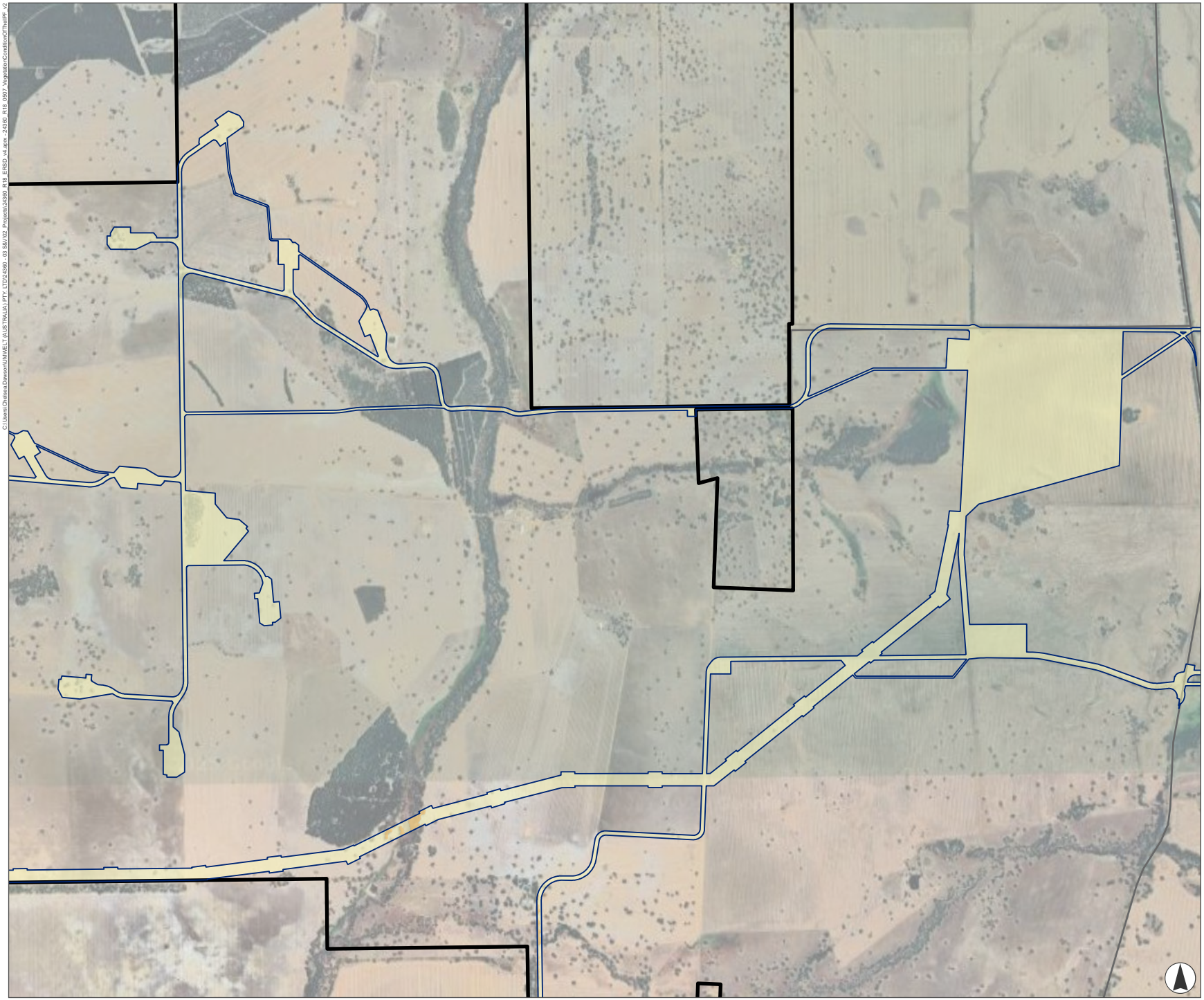


FIGURE 5.7.3

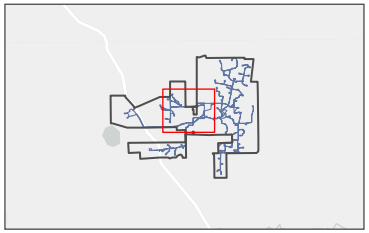
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Degraded
- Completely Degraded



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Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

FIGURE 5.7.4

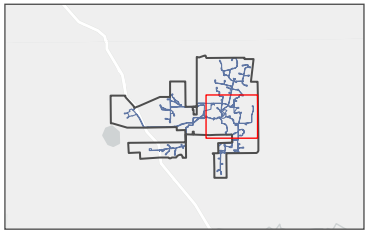
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Degraded
- Completely Degraded



0 0.5 1

Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

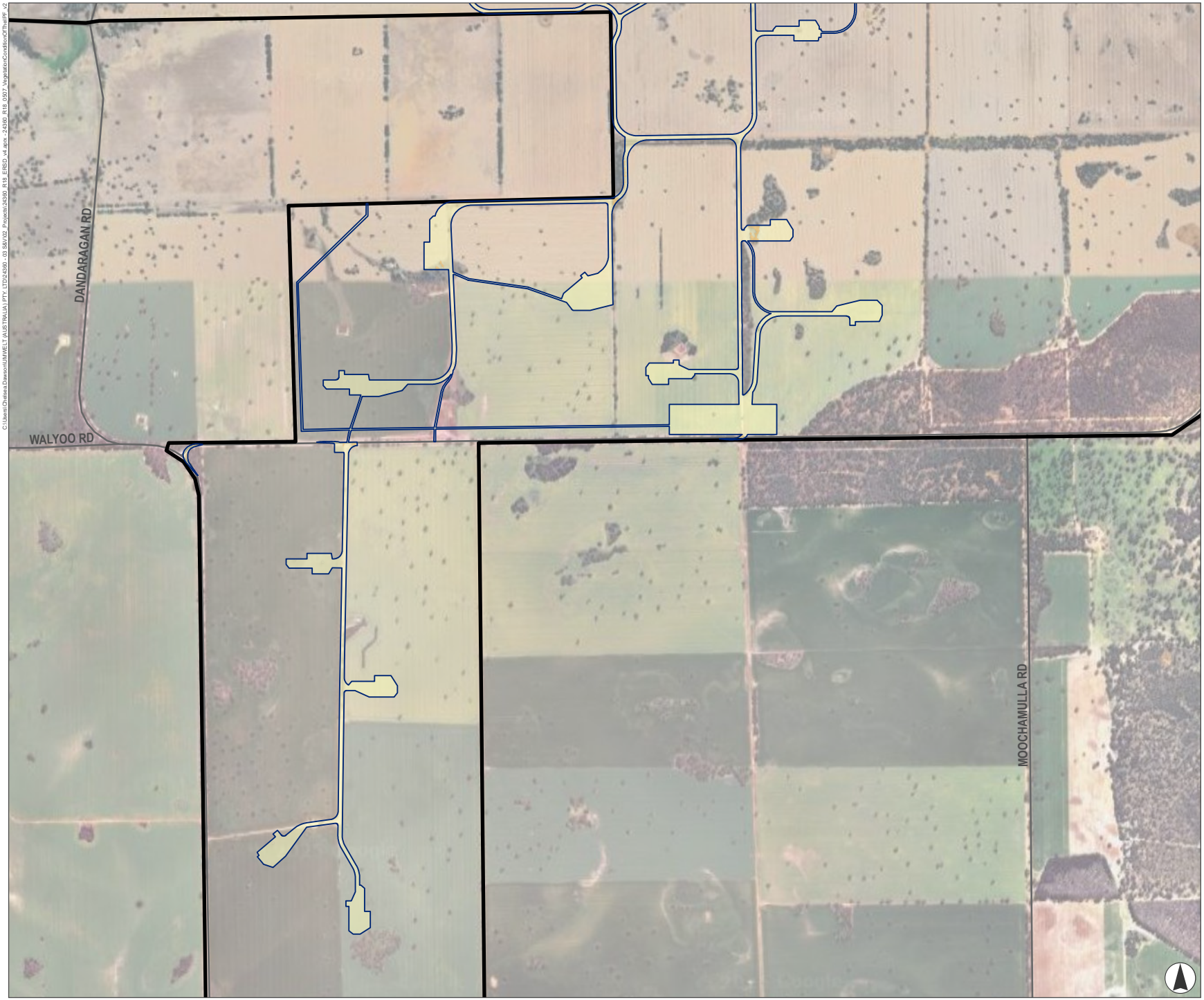


FIGURE 5.7.5

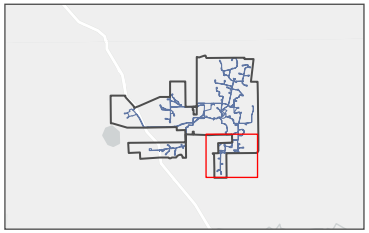
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Degraded
- Completely Degraded



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Kilometres

Scale 1:30,000 at A4
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Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

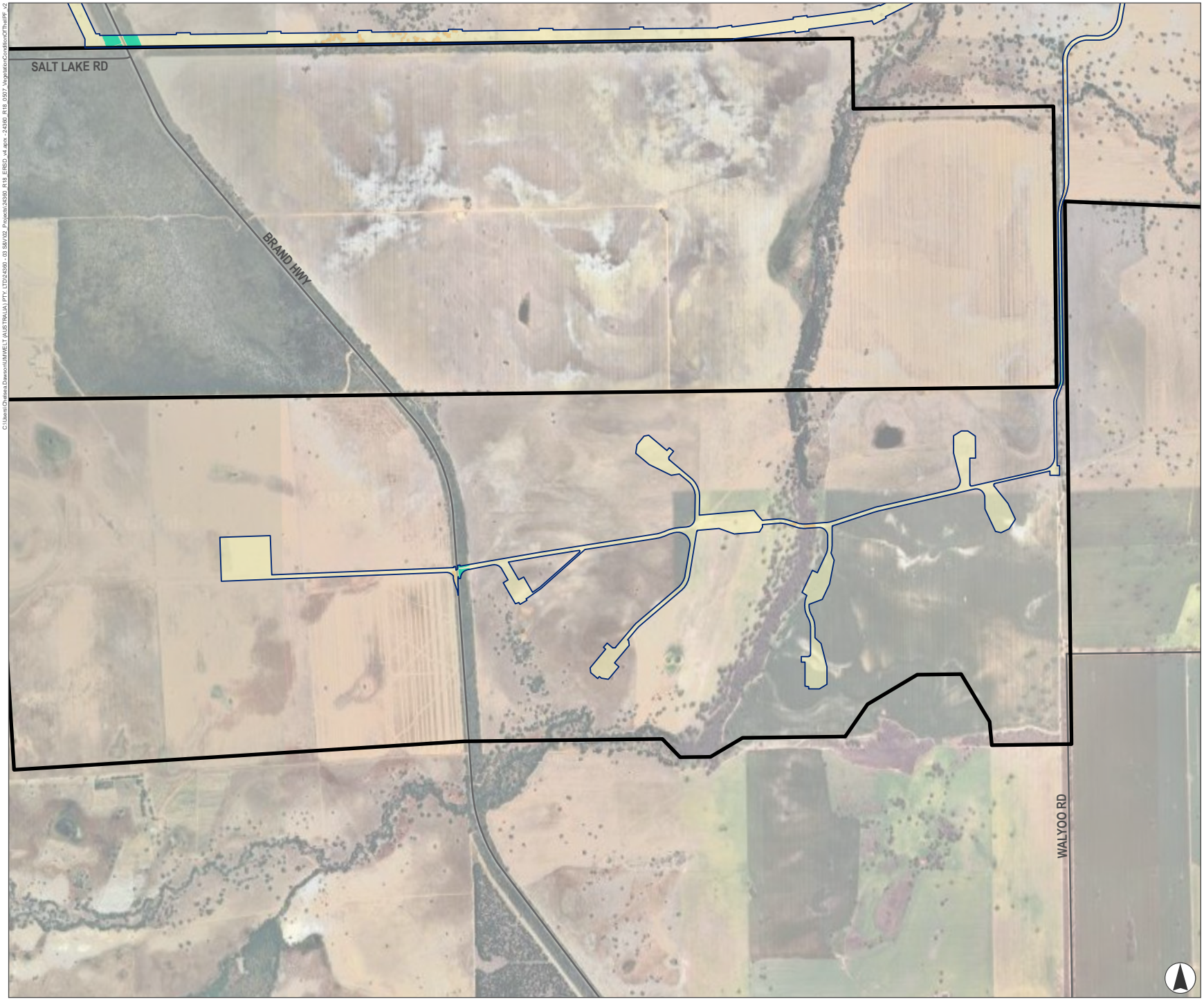


FIGURE 5.7.6

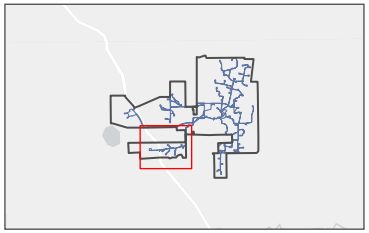
Vegetation Condition in the Indicative Proposal Footprint

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Vegetation Condition

- Good
- Degraded
- Completely Degraded



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Kilometres

Scale 1:30,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

5.7.4 Significance of Residual Impact

The residual impact of the Proposal to flora and vegetation in the region is not likely to be significant. **Table 5.14** provides an assessment of the significance of residual impacts with reference to the "consideration of significance" matters listed in the Statement of environmental principles, factors, objectives and aims of EIA (EPA, 2023b).

Table 5.14 Significance of Residual Impact to Flora and Vegetation

Significance Matters	Significance Of Residual Impact of the Proposal in the Regional Context
Object and principles of the Act – precautionary principle	Specialist surveys and assessments have been undertaken to reduce scientific uncertainty. The studies have been undertaken by suitably qualified consultants and includes flora and vegetation surveys of the PDE and Indicative Proposal Footprint in accordance with EPA guidelines. Based on the likelihood of occurrence for listed protected flora, there is a low likelihood of listed species occurring that have not been recorded. Proposal design has strongly focussed on avoidance of impacts based on the studies completed. Avoiding impacts to the point of the lowest possible impact is a precautionary approach which limits reliance on minimise, rehabilitate, and offset impacts.
Values, sensitivity, and quality of the environment that is likely to be impacted	No Threatened Flora were identified within the Indicative Proposal Footprint. Two Priority flora were recorded in the Indicative Proposal Footprint, however these will be avoided. Up to 0.11 ha of Degraded Banksia Woodlands of the Swan Coastal Plain PEC and 2.23 ha of vegetation in Good condition will be impacted in the Indicative Proposal Footprint. Vegetation associations in the region have been impacted by high historic levels of clearing for development and agriculture. The Proposal will reduce each VSA by between 0.00002% and 0.06% of current extent, which is not likely to materially reduce their extent or distribution within the bioregion. Remnant native vegetation in the PDE is patchy and degraded noting the primary land use is for agriculture.
All stages and components of the proposal	The impact assessment considers all stages and components of the Proposal that might directly impact flora and vegetation.
Extent (intensity, duration, magnitude, and footprint) of likely impacts	The quantitative impact assessment to significant flora and all vegetation types assumes that all values within the Indicative Proposal Footprint will be directly impacted. The maximum extent of vegetation clearing will comprise 10.28 ha of native remnant vegetation, 5.45 of isolated native trees and shrubs, and 5.05 ha of planted native vegetation in the Indicative Proposal Footprint. This results in 1.68% of current native remnant vegetation in the PDE being cleared and 11.4% of the current planted native vegetation present being cleared. Vegetation clearing will be undertaken progressively and will be done so in accordance with the Proposal land disturbance clearing procedure to avoid unnecessary or over clearing.

Significance Matters	Significance Of Residual Impact of the Proposal in the Regional Context
Resilience of the environment to cope with the impacts, including pressures such as climate change	The majority of the PDE has already been cleared for agricultural purposes. Climate change is predicted to lead to increased drought and extreme weather events in the region, which would increase pressure on native vegetation. The Proposal seeks to generate renewable energy, thereby seeking to address climate change pressures.
Application of the mitigation hierarchy	The Indicative Proposal Footprint has been designed to avoid where practicable known occurrences of significant flora and vegetation identified in the region. Actual impacts to significant flora and vegetation will be minimised during Proposal implementation.
Consequence of the likely impacts	Impact assessment considers both direct and indirect impacts. Direct impacts are not expected to extend outside the Indicative Proposal Footprint.
Cumulative effects	Cumulative impacts from foreseeable proposals in the region have been assessed (refer **Section 11.0**).
Level of confidence in the predicted residual impacts and success of the proposed mitigation	There is high confidence in the surveys completed to inform the mitigation measures and prediction of residual impact. Impact assessments were based on assessing the maximum area of land that will be cleared for installation of all Proposal infrastructure. Actual disturbance is likely to be lower, therefore the predicted residual impacts over-estimate the likely direct impact to flora and vegetation. The proposed mitigation measures are intended to reduce the impact to native vegetation as low as practicable. Management measures in the CEMP are standard industry practice and as such there is high confidence in these to be effective. The residual impacts to significant flora and vegetation are expected to be low.
Public interest about the likely effect on the environment	The Proposal is in the wider public interest, as it will: • be consistent with the WA Government's vision for a secure, reliable, affordable and clean energy future for the state. • assist in meeting Australia's renewable energy targets as well as future electricity demands without the production of additional greenhouse gases. • facilitate direct employment for up to approximately 450 personnel during construction and 10 – 15 permanent personnel during operations. The Yued Aboriginal Corporation has raised queries on avoiding clearing along creek lines, which the Proposal has demonstrated where possible. Community consultation has not indicated significant concerns about impacts to flora and vegetation.

5.8 Proposed Environmental Outcomes for Flora and Vegetation

Proposed environmental outcomes and conditions to protect significant flora and vegetation values are proposed in **Table 5.15**.

Implementation of the Proposal in accordance with the Proposal Content Document and the below proposed outcomes will protect flora and vegetation so that biological diversity and ecological integrity in the region are maintained.

Table 5.15 Proposed Environmental Outcomes for Significant Flora and Vegetation

Proposed environmental outcomes	Consistent with EPA objective	How environmental outcomes can be measured and assured	Manageable under Other Statutory Mechanism
Native vegetation clearing will be limited to the native vegetation clearing limits specified in the Proposal Content Document, which will not result in significant impacts to flora and vegetation	Yes	Proposal Content Document defines extent of Development Envelopes and clearing limits.	Yes via NVCP under Part V of EP Act.
Clearing of potential PEC within the Indicative Proposal Footprint not to exceed 0.11 ha of Degraded vegetation	Yes	Internal land disturbance procedures and record keeping. Regular environmental compliance reporting.	Yes via NVCP under Part V of EP Act.
Clearing of potential vegetation in Good condition or better in the Indicative Proposal Footprint not to exceed 2.23 ha	Yes	Internal land disturbance procedures and record keeping. Regular environmental compliance reporting.	Yes via NVCP under Part V of EP Act.

6.0 Terrestrial Fauna

The terrestrial fauna factor, under EPA guidelines, defines terrestrial fauna as "animals living on 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 defines fauna habitat as "the natural environment of an animal or assemblage of animals, including biotic and abiotic elements, that provides a suitable place for them to live (e.g. breed, forage, roost or seek refuge)" (EPA, 2016c).

6.1 EPA Objective

The EPA's environmental objective for terrestrial fauna is "To protect terrestrial fauna so that biological diversity and ecological integrity are maintained" (EPA, 2016c).

6.2 Relevant Policy and Guidance

Policy and guidelines relevant to the consideration of terrestrial fauna are summarised in **Table 6.1.**

Table 6.1 Policy and Guidance – Terrestrial Fauna

Policy / Guidance	Consideration
Environmental Factor Guideline: Terrestrial Fauna (EPA, 2016c).	This guidance was used to inform the impact assessment undertaken for terrestrial fauna.
Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020b).	This document was used to guide terrestrial fauna survey and reporting methods.
Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA) (EPA, 2020a).	All data gathered from field surveys has been prepared and submitted in accordance with IBSA guidelines.
EPBC Act Referral Guidelines for 3 threatened black cockatoo species: Carnaby's Black Cockatoo (endangered) Calyptorhynchus latirostris, Baudin's Black Cockatoo (vulnerable) Calyptorhynchus baudinii, and Forest Red-tailed Black Cockatoo (vulnerable) Calyptorhynchus banksii naso (BCE, 2020).	Guidelines for the referral of 3 species of Western Australian black cockatoos listed as threatened under the EPBC Act.
Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the EPBC Act (DCCEEW, 2010).	This document was used to guide bird surveys and reporting methods.
Survey guidelines for Australia's threatened bats. Guidelines for detecting bats listed as threatened under the EPBC Act (DCCEEW, 2010a).	This document was used to guide bat surveys and reporting methods.
Survey guidelines for Australia's threatened mammals. Guidelines for detecting mammals as threatened under the EPBC Act (DCCEEW, 2011a).	This document was used to guide terrestrial fauna surveys and reporting methods.

Policy / Guidance	Consideration
Survey guidelines for Australia's threatened reptiles. Guidelines for detecting reptiles listed as threatened under the EPBC Act (DCCEEW, 2011b).	This document was used to guide terrestrial fauna surveys and reporting methods.
EPBC act policy statement 3.21 – Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (Department of Environment and Energy, 2017).	This document was used to guide migratory shorebird surveys and assessing potential impacts.
Referral Guideline for 14 Birds Listed as Migratory Species under the EPBC Act (2015).	This document was used to guide assessing potential impacts to Migratory species.
Onshore Wind Farm Guidance - best practice approaches when seeking approval under Australia's national environment law (draft) (DCCEEW, 2024).	This document was used to guide the development of the Preliminary Bird and Bat Adaptive Management Plan (BBAMP).

6.3 Supporting Studies

A summary of survey methods and effort for the terrestrial fauna studies completed to date is provided in **Table 6.2.** Survey methods for terrestrial fauna were developed and implemented in accordance with the policy and guidance outlined in **Section 6.2**.

Detailed survey and analysis methods can be found in the terrestrial fauna survey report (**AppendixE**). Specific survey approaches for Threatened and Migratory fauna considered to have a moderate or greater likelihood of occurrence within the PDE are outlined in **Section 6.3.1** and **Section 6.3.2.**

In the context of terrestrial fauna, the following study areas are defined and are depicted in **Figure 6.1.**

- The **Fauna Survey Area** refers to the area subject to fauna surveys. It is based on a previous larger PDE of 17,213 ha.
- The **Targeted Fauna Habitat Survey Area** refers to the 3,443 ha area subject to targeted fauna surveys, which includes the Indicative Proposal Footprint. This area is analogous to the 'Development Corridor' used in the EPBC referral.
- The **Targeted Shorebird Survey Area** refers to the four wetlands subject to monthly surveys for the presence and use by shorebird species.

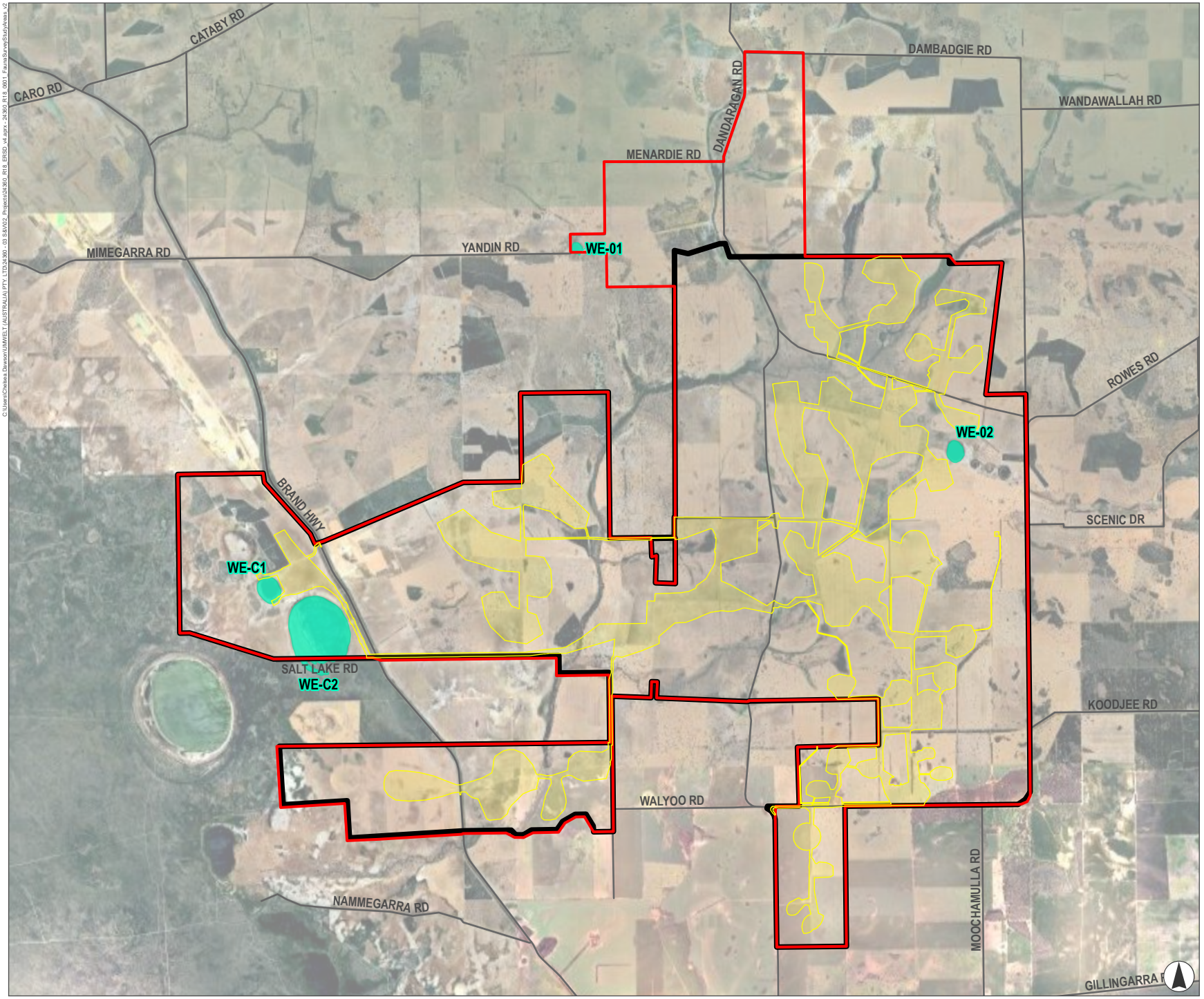

FIGURE 6.1

Fauna Survey Study Areas

Legend

- Road
- Project Area
- Fauna Survey Area
- Targeted Fauna Habitat Survey Area
- Targeted Shorebird Survey Area

0 2 4

Kilometres

Scale 1:120,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

Table 6.2 Terrestrial Fauna Studies Summary

Study	Study Extent	Timing	Survey Methods and Effort
Basic and targeted fauna assessment (Umwelt, 2025a) (**Appendix E**)	Fauna Survey Area (17,213 ha)	2–3 July 2024. 29 October and 5 November 2024. Supplementary Survey 10 December 2024	A basic and targeted vertebrate fauna assessment, including desktop study, was undertaken to characterise fauna habitats and identify occurrence of terrestrial vertebrate fauna species. Survey methods included: • 16 person days of survey • Habitat assessments (92 locations) and mapping • Camera trapping (54 trap nights) • Ultrasonic bat recorders; 3 nights at five sites (total 15 nights) • Incidental observations. Transversed by vehicle and on foot over eight days. The fauna habitat types were assessed at a broad ('landscape') scale due to the large size of the survey area. The most suitable habitats for breeding were identified to inform more targeted surveys in 2025.
Bird and Bat Utilisation Surveys (BBUS) (Umwelt, 2025d) (**Appendix F**)	PDE (15,618 ha)	BBUS01: 9–15 Sep 2024 (spring) BBUS02: 13–17 Feb 2025 (summer) BBUS03: 4–8 May 2025 (autumn) BBUS04: 21–25 July 2025 (winter) BBUS05: 13–17 October (spring)	The assessment was undertaken to determine utilisation of the PDE by birds and bats, involving: • Desktop site characterisation and species likelihood of occurrence assessment. • BBUS comprising sampling at sites representative of habitat types in the PDE. The total survey effort across all BBUS events was 1,068 hours. Methods included: • Ultrasonic bat recorders, 3 nights at between 9 and 12 sites each BBUS (total 149 nights). • Incidental observations. • Wetland census. Further details of BBUS methods are provided in **Section 6.3.3.**

Study	Study Extent	Timing	Survey Methods and Effort
Targeted Fauna Habitat Assessment (Umwelt, 2025a) (**Appendix H**)	Targeted Fauna Survey Area (3,443 ha). Four wetlands within the PDE were surveyed for migratory shorebirds.	23–27 June 2025 21 July 2025 13–17 October 2025	Black-Cockatoo Habitat Assessment Targeted surveys to investigate and record the following ecological values for Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoo: • breeding habitat • foraging habitat • night roosting sites. Observations of Black-Cockatoos were recorded opportunistically, and a flock was followed during one late afternoon. Further detail on methods is provided in **Section 6.3.1.** Migratory Shorebird Habitat Assessment • Wetland habitat suitability assessment. Further detail on methods is provided in **Section 6.3.2.**
Migratory Shorebird Survey and Habitat Assessment (Umwelt, 2025a) (**Appendix H**)	Four wetlands in and adjacent to PDE	Monthly from September 2025. Completed to date: • September 2025 • October 2025 • December 2025	Wetland surveys for waterfowl and shorebirds. Waterbird census was undertaken at four open-water wetlands. Opportunistic surveys were undertaken where time permitted at other wetlands that held water (and waterbirds) at the time of survey. Wetlands will be surveyed monthly through the summer months until March 2026. Outcomes from this monitoring will be used to inform the Project detailed design and the management and mitigation measures in the Project BBAMP Further detail on methods is provided in **Section 6.3.2.**

6.3.1 Black-Cockatoo Habitat Assessment

A summary of specific methods for assessing Black-Cockatoo habitat is described in this section. Detailed methods for the targeted Black-Cockatoo habitat assessment are provided in the Targeted Fauna Habitat Assessment report in **Appendix H**.

Mapping and characterising foraging and breeding habitat was undertaken using the methods defined by DCCEEW (DAWE, 2022) *Referral Guideline for 3 WA Threatened Black Cockatoo Species* and Bamford Consulting Ecologists (BCE) (BCE, 2020).

Broad fauna habitat type suitability for Black-Cockatoos was initially assessed at a landscape scale across the PDE due to the large spatial size (Umwelt, 2025a). This mapping was used for early Proposal design, avoidance of potentially significant habitat, and to focus the targeted Black-Cockatoo habitat survey effort. Specific assessment and mapping for Black-Cockatoo foraging habitat quality was then assessed based on site vegetation characteristics as per the BCE (Bamford, 2020) scale within the Targeted Fauna Habitat Survey Area. The Targeted Fauna Habitat Survey Area includes the Indicative Proposal Footprint as explained in **Section 6.3**.

Survey for Black-Cockatoo night-roosting habitat was assessed in conjunction with the foraging habitat assessment. Additionally late afternoon flock follows were undertaken.

Due to the size of the PDE, Black-Cockatoo nest trees were assessed within the Targeted Fauna Habitat Survey Area using a tiered survey effort to prioritise the detection of the highest-value potential Black-Cockatoo nest-trees. The survey effort was either:

- 'Comprehensive', whereby potential nest trees of all BCE (2020) rankings were recorded and assessed. Conducted across approximately 2,596.65 ha (75.4%) of the Targeted Fauna Survey Area, or
- 'Partial', whereby all Rank 1 to 3 potential nest trees (Bamford, 2020) were recorded and assessed, and Rank 4 and 5 trees were opportunistically surveyed. Conducted over 762.3 ha (22.1%) of the Targeted Fauna Survey Area.

Within the Targeted Fauna Habitat Survey Area, the majority (95.7%) of the Indicative Proposal Footprint was comprehensively surveyed for potential Black-Cockatoo nest-trees. A 'partial' survey was undertaken within 26 ha (3.6%) of the Indicative Proposal Footprint, and 5.1 ha (0.7%) was not assessed, however this area is mostly already cleared of vegetation (**Figure 6.2**).

6.3.2 Migratory Shorebird Survey

The PDE contains a number of waterbodies and wetlands that may provide suitable habitat for migratory shorebirds listed under the EPBC and BC Act.

Using the geomorphic wetlands of the Swan Coastal Plain DBCA (2025b) mapping (**Figure 6.5**), in conjunction with in-field assessments (of wetland features and bird presence) and existing data (i.e. database searches), four wetlands within and adjacent to the PDE were identified as being the most likely to support migratory shorebirds (**Figure 6.6**).

Monthly targeted migratory shorebird surveys are being undertaken from September 2025 to March 2026 (non-breeding season) at these four wetlands, when shorebird species are expected to occur within the region. They are being surveyed by two personnel, one day a month, using binoculars and a telescope to gather information on species presence, abundance, behaviour, and site utilisation.

Three monthly surveys have been undertaken to date. These were undertaken on 23 September 2025, 17 October 2025 and 2 December 2025. Flight height data is also being gathered on species of interest, whenever possible, to supplement analysis of flight behaviours.

6.3.3 Bird and Bat Utilisation Surveys

Bird and bat utilisation surveys (BBUS) were undertaken at sampling sites stratified across each major fauna habitat type. The number of sampling sites varied during each BBUS event due to adjustments made to sampling design to accommodate PDE changes and to ensure appropriate spatial distribution. A total of 15 sites were sampled in BBUS01, then between 23 and 29 sites for the remaining BBUS events.

BBUS events were specifically timed to capture seasonal variation of species' presence, while also coinciding with the seasonal migration of conservation significant birds identified from desktop assessments, such as the Blue-billed Duck (*Oxyura australis*), Carnaby's Black-Cockatoo (*Zanda latirostris*), Forest Red-Tailed Black-Cockatoo (*Calyptorhynchus banksii naso*), and migratory shorebird species.

BBUS events involved sampling of fixed vantage points at each site for a 30-minute duration, three times a day. During each fixed-point count, a single observer recorded the following information for each observation:

- species
- abundance
- observation type (visual or aural)
- minimum, maximum, and modal flight height AGL of the observed bird/s (to the nearest meter beneath 100 m and in 10 m increments thereafter)
- flight duration (not recorded during BBUS01).

Methods were updated after BBUS01 to also include a timed 20-minute, 400 m transect survey, three times a day at each site. A total bird census was collected during this period.

Opportunistic records of conservation significant birds and raptors were also collected.

Data from vantage points and transects were used to develop Exposure Risk Models (ERM) to:

- assess the relative risk of rotor strike at different heights, and
- determine whether data collected for a given species adequately captures the variation and general patterns of flight behaviour.

ERMs were prepared for all species of interest with flight observations recorded during the BBUS program including:

- conservation significant bird species
- raptor species
- non-listed and non-raptor bird species recorded flying within RSA.

6.3.4 Bird and Bat Utilisation Risk Assessment

Fauna mortality and injury at wind farms can result from birds or bats colliding with wind turbine blades, towers, nacelles, guy cable, power lines and meteorological masts. There are a range of factors that influence risk of collisions with such infrastructure (Drewitt & Langston, 2008), including:

- Physical attributes of a wind turbine generator (i.e. turbine dimensions, lighting).
- Species-specific variables (i.e. abundance, flight behaviour, turbine avoidance capacity).
- Biophysical attributes (i.e. landscape position, topography, vegetation type).

Following the BBUS study, a collision risk assessment was undertaken as part of the Bird and Bat Utilisation Assessment (BBUA) to assess the pre-mitigation collision risk for bird and bat species that are present or that may occur in the vicinity of wind turbines in the PDE based on occurrence and flight data gathered from completed surveys and published literature. This assists in identifying what species may require further consideration for impact assessment, mitigation and collision risk modelling. The BBUA also summarises potential impacts to bird and bat species documented in published literature and outlines potential mitigation and management measures to be considered as part of the Proposal. The methodology used for the risk assessment was adapted from Lumsden et al. (2019) and the full risk assessment is provided in Appendix A of the Preliminary Bird and Bat Adaptive Management Plan (refer **Appendix I**).

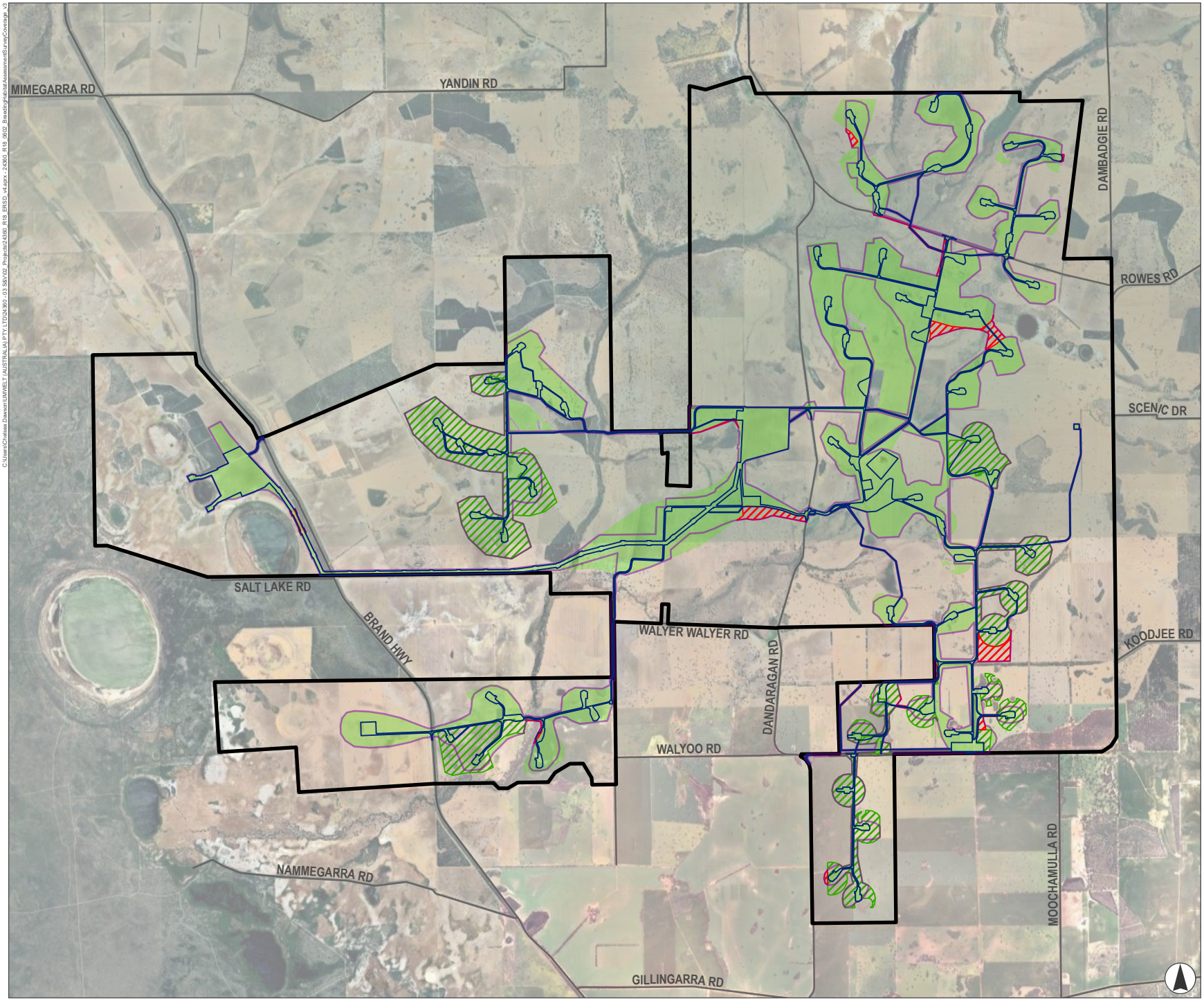

FIGURE 6.2

Black-cockatoo Breeding Habitat Assessment Survey Coverage

Legend

- Road
- Project Development Envelope
- Targeted Fauna Survey Area
- Indicative Proposal Footprint

Potential Black Cockatoo Nest Tree Coverage

- Complete survey (Rank 1 to 5 trees)
- Partial survey (Rank 1 to 3 trees only)
- Unassessed

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

6.3.5 Adequacy of Surveys

The fauna studies provide suitable information on which to base the environmental impact assessment for terrestrial fauna. Information is provided regarding survey adequacy in the following sections.

All surveys were completed by suitably qualified and experienced ecologists in accordance with relevant guidelines as outlined in **Section 6.2**.

6.3.5.1 Terrestrial Fauna Surveys

No limitations were identified that affect the adequacy of the terrestrial fauna surveys.

The scope was a basic level vertebrate fauna survey with targeted sampling components. This was conducted within the EPA framework and relevant species-specific survey guidelines (EPA, 2020). Sampling methods and intensity is considered adequate for the level of survey and given the high level of disturbance across the Fauna Survey Area. The majority of the Fauna Survey Area was accessed; however, some habitat assessments were conducted using binoculars; this is not considered to be a limitation. Fauna surveys were conducted within representative locations of all fauna habitat types.

The objective of the basic fauna survey was to identify broad fauna and fauna habitat information. As such, the Fauna Survey Area was sampled opportunistically and via low-intensity sampling using cameras and remote recording devices. The survey likely detected a representative proportion of the vertebrate fauna assemblage, particularly birds, mammals, and reptiles based on habitat suitability and survey techniques. Targeted species were actively searched for using species-specific methods as part of the targeted component of the survey, increasing detection probability for those of conservation interest.

The field survey was conducted in October/November and December 2024, which is considered optimal timing to survey reptiles, amphibians, birds and mammals in the Southern Climatic Region (EPA, 2020). The October/November survey was within recommended survey timing for Carnaby's Black-Cockatoo breeding habitat (DCCEEW, 2022).

6.3.5.2 Targeted Black-Cockatoo Surveys

No limitations were identified that affect the adequacy of the targeted habitat assessment data for the purposes of the impact assessment.

Subsequent Black-Cockatoo targeted habitat assessments were undertaken using a tiered approach as described in **Section 6.3.1** due to the large size of the PDE. Survey effort focused on identifying habitat values within the Indicative Proposal Footprint and then in the Targeted Fauna Survey Area. Almost the entire (95.7%) Indicative Proposal Footprint was comprehensively surveyed for potential Black-Cockatoo nest-trees (698 ha) with the exception of 26.0 ha (3.6%) that was partially surveyed and 5.1 ha (0.7%) that remains unassessed (**Figure 6.3**). This area is predominantly already cleared of vegetation and will be covered by pre-clearance surveys; any Rank 1 or 2 trees identified will be avoided.

The breeding tree survey was undertaken within recommended survey timing for Carnaby's Black-Cockatoo breeding habitat (DCCEEW, 2022).

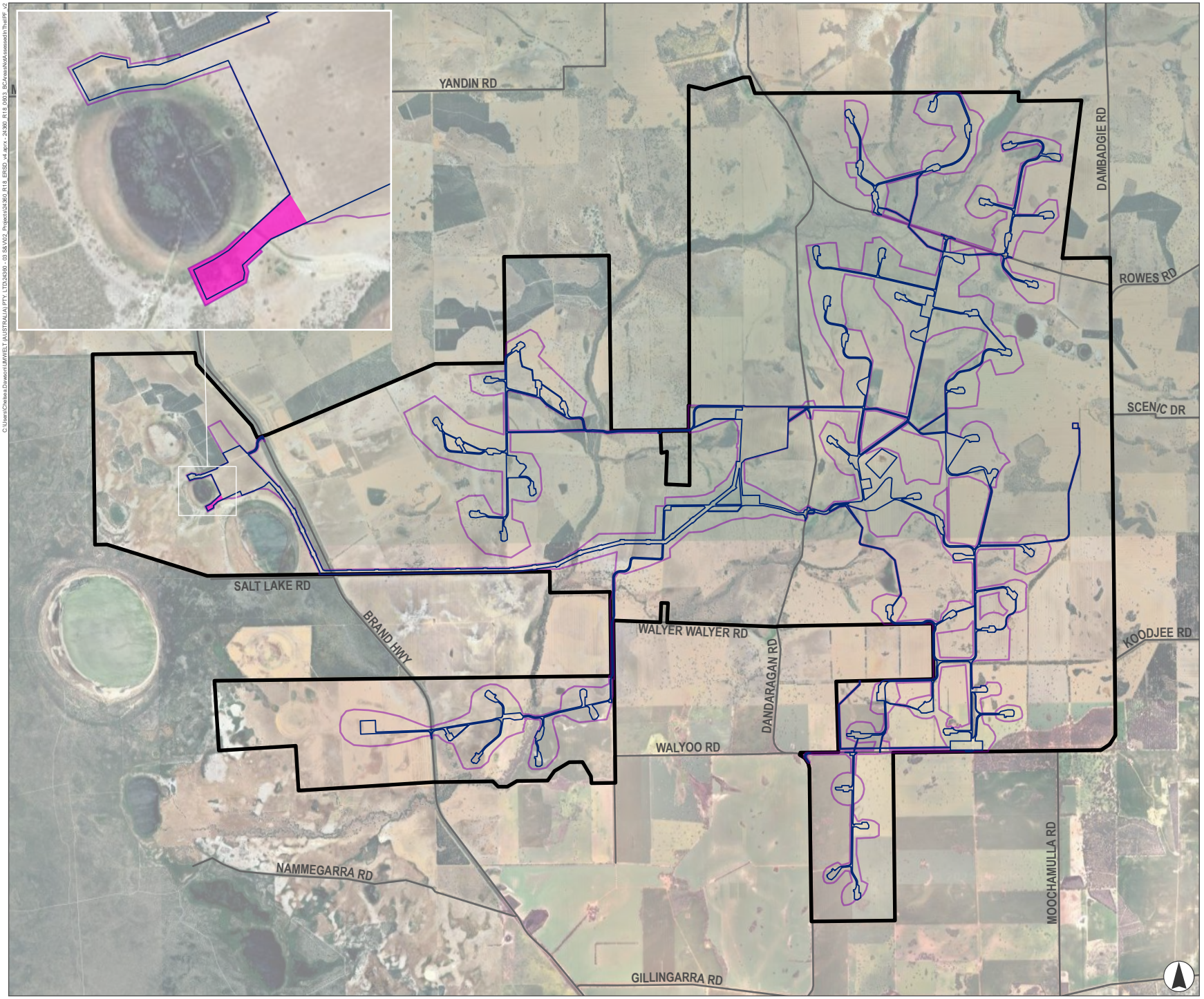

FIGURE 6.3

Areas of the Indicative Proposal Footprint Not Assessed During Black-cockatoo Habitat Survey

Legend

- Road
- Project Development Envelope
- Targeted Fauna Survey Area
- Indicative Proposal Footprint
- Unassessed Area

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

6.3.5.3 Bird and Bat Utilisation Surveys

No limitations were identified that affect the adequacy of the BBUS data for the purposes of the impact assessment.

BBUS were conducted across all four seasons to provide baseline data on the utilisation of the PDE and its surrounds by relevant species. Two BBUS events have been undertaken in Spring, and one event each in Summer, Autumn and Winter.

Surveys were completed by suitably qualified ecologists with expertise in birds and/or bats.

There are some limitations inherent in data from visual observations associated with estimating distances and height. Efforts were made to minimise error and standardise estimates through records of canopy height, which provided known measurements for comparison.

Bat surveys were limited to the use of stationary bat-detector devices near to ground level for recording calls of bat species. Therefore, data is not available for bat species' density or bat abundance in vertical space. Bat presence at a series of sites is substituted as an approximate guide to the relative numbers of each species using the PDE.

6.3.5.4 Migratory Shorebird Surveys

Targeted surveys for migratory shorebirds commenced in September 2025 and as a precautionary and conservative approach, will continue to March 2026 to gather further information on flight heights, population density and usage of the various wetlands within the PDE. Outcomes from this monitoring will be used to inform the Proposal detailed design and the management and mitigation measures in the Project BBAMP.

6.4 Receiving Environment

6.4.1 Fauna Habitat Types Mapped in the Project Development Envelope

Twelve broad fauna habitat types were identified within the PDE, with the majority (11,014.3 ha, 70.5%) being categorised as 'Cleared', mainly consisting of paddocks and areas of infrastructure. The second largest habitat type extent in the PDE is 'Scattered Trees' (2,281.9 ha, 14.6%), however a large proportion of the mapped area comprises bare paddock in between isolated trees.

Table 6.3 summarises the broad fauna habitat types in the PDE, and their suitability for conservation significant fauna. Detailed fauna habitat type descriptions are provided in the Basic and Targeted Fauna Survey Report (Umwelt, 2025a) (**Appendix H**). Fauna habitat types across the PDE are shown in

The habitat types of Marri Jarrah Forest, Banksia Woodland, Low Shrubland and Flooded Gum Forest are of the highest value to Black-Cockatoos, while Wetlands and Water Bodies are of the most value to Migratory Shorebirds. Conservation significant invertebrates and Short-range endemics were also assessed with overall low habitat values identified in the PDE.

The fauna habitat types in the PDE were used to guide early Proposal design and avoidance of potentially significant habitat values. Fauna habitat type mapping was refined and updated within the Targeted Fauna Habitat Survey Area, as described in **Section 6.4.4**.

Table 6.3 Fauna Habitat Types of the PDE

Fauna Habitat Type	Suitability for Conservation Significant Terrestrial Fauna	Area (ha) and Proportion (%) of PDE
Wetlands (WET)	• Suitable habitat for migratory shorebirds and waterbirds. • May provide suitable roosting and foraging habitat for Black-Cockatoo species if present. • Suitable habitat for Rakali. • Low potential to support SRE species due to degraded nature.	404.5 ha (2.6%)
Water Bodies (WB)	• Suitable habitat for migratory shorebirds and waterbirds. • Important watering point for Black-Cockatoo species. • Suitable habitat for Rakali. • Inundated areas provide no habitat for SREs.	93.7 ha (0.6%
Paperbark Dampland (MEL)	• Important watering points and some foraging value for Black-Cockatoos. • Suitable habitat for Rakali. • Low potential to support SRE species due to degraded nature.	39.8 ha (0.3%)
Flooded Gum Forest (FG)	• May provide some nesting and roosting habitat for Black-Cockatoo species if present. • May provide suitable nesting habitat for the Peregrine Falcon in tall trees. • May support SREs in suitable microhabitats such as fallen logs and leaf litter.	356.3 ha (2.3%)
Marri Jarrah Forest (MJ)	• Foraging habitat for Black-Cockatoo species if present. • May provide suitable nesting habitat for the Peregrine Falcon in tall trees. • May support SREs in suitable microhabitats such as fallen logs and leaf litter.	114.9 ha (0.7%)
Disturbed Woodland (DW)	• May provide suitable nesting habitat for the Peregrine Falcon in tall trees. • Potentially some foraging habitat for Black-Cockatoos depending on flora species presence. • Low potential to support SRE species due to degraded nature.	799.9 ha (4.9%)
Scattered Trees (ST)	• Potential foraging and breeding habitat for Black-Cockatoo species. • May provide suitable nesting habitat for the Peregrine Falcon in tall trees. • Cleared areas provide no habitat for SREs.	2,281.9 ha (14.6%)
Banksia Woodland (BW)	• Foraging habitat for black cockatoo species. • May support SREs in suitable microhabitats such as fallen logs and leaf litter.	165.8 ha (1.1%)

Fauna Habitat Type	Suitability for Conservation Significant Terrestrial Fauna	Area (ha) and Proportion (%) of PDE
Low Shrubland (LS)	• Potential foraging habitat for black cockatoo species. • May support SREs in suitable microhabitats such as fallen logs and leaf litter.	186.8 ha (1.2%)
Pine Plantation (PP)	• May provide suitable foraging and/or roosting (where near a water source) habitat for Black-Cockatoos. • May provide suitable nesting habitat for the Peregrine Falcon in tall trees. • Cleared areas provide no habitat for SREs.	169.4 ha (1.1%)
Other (OTHER)	• Mostly regrowth comprising weeds, with little habitat value. • Highly disturbed and modified with few natives present provides low potential SRE habitat.	23.3 ha (0.1%)
Cleared (CL)	• Occasional paddock trees may provide some foraging habitat for Black-Cockatoos.	11.014.3 ha (70.5%)
		15,618 ha

6.4.2 Migratory Shorebird Habitat

6.4.2.1 Local and Regional Context

The most important sites for migratory shorebirds in Western Australia are located along the north-west coast. Eighty Mile Beach and Roebuck Bay are internationally significant for 16 and 18 species respectively and regularly support some of the highest shorebird numbers recorded in the country (Driessen et al, 2025).

In the south-west of Western Australia, regionally important habitat occurs at Peel-Harvey Estuary, Wilson Inlet, and Albany Harbour, with shorebirds also using coastal lakes and estuaries as seasonal water levels recede (Driessen et al, 2025). The closest of these to the PDE is Peel-Harvey, which is 180 km south of the PDE.

Lancelin is the closest nationally important site for migratory shorebirds as identified by Driessen et al (2025) and is located 30 km west of the PDE. In the area surrounding the PDE, wetlands to the west that are located within the Lesueur sandplain are likely to provide more suitable habitat.

Closer to the PDE, Lake Guraga and Namming Lake also offer suitable habitat for migratory shorebirds.

6.4.2.2 Project Development Envelope

A total of 76 wetlands that have been recognised by DBCA (2025b) occur within the PDE and these fall into the following Semeniuk and Semeniuk (1995) geomorphic wetland categories: three lakes, 43 sumplands, 21 damplands, one floodplain, four palusplains and four paluslopes. A map of the wetlands within the PDE is provided in **Figure 6.4** and includes one additional wetland adjacent to lake Yangy that was not captured by the DBCA mapping.

Field observations (of wetland features and waterbird presence), database searches and the wetland characteristics provided by DBCA (2025b) were used in conjunction with the group- or taxon-specific information to assess the likelihood of each of the 77 wetlands within the PDE to support one or more of the migratory shorebird taxa likely to occur within the PDE.

Migratory shorebirds are known or considered likely to occur at four of the PDE wetlands (two lakes and two sumplands), as summarised in **Table 6.4** and mapped in **Figure 6.6**. Three of these sites are located adjacent to one another in the west of the PDE, with the remaining site, Lake Yangy, in the east. Whilst Lake Yangy was selected as a wetland where migratory shorebirds are likely to occur, due to its smaller size, higher pH[1], and lower habitat suitability in comparison to the other three wetlands, any presence of migratory shorebirds at this site would be expected to be of lower density and shorter durations.

Shorebirds are not reasonably expected at the vast majority of geomorphic wetlands (68 of the 77 were considered 'unlikely' to support these taxa) primarily due to a lack of suitable habitat (surface water, mudflats etc.). The remaining five wetlands ('possible') may occasionally provide suitable habitat for this group of taxa (as seasonal or interannual conditions change) as discussed in **Appendix H**.

Table 6.4 Expected Occurrence of Migratory Shorebirds/Waterbirds at Wetlands Within the PDE

Geomorphic Wetland Type	Likelihood of Supporting Migrant Shorebirds				
	Known	Likely	Possible	Unlikely	Total
Lake	1	1		1	3
Sumpland	1	1	4	38	44
Dampland			1	20	21
Floodplain				1	1
Palusplain				4	4
Paluslope				4	4
Total	**2**	**2**	**5**	**68**	**77**

6.4.3 Blue-billed Duck Habitat

6.4.3.1 Local and Regional Context

In Western Australia, the Blue-billed Duck occurs predominantly in the south-west of the State, where it is associated with permanent and seasonal freshwater wetlands, including lakes and swamps on the Swan Coastal Plain and within the Peel-Harvey region located approximately 180 km south of the PDE (ALA, 2025; BirdLife Australia, 2023). Inland records extend into the south-west agricultural zone, where the species uses suitable wetlands opportunistically depending on seasonal water availability.

Records elsewhere in Western Australia are sparse, with the species largely absent from the arid interior and northern regions due to limited freshwater wetland habitat (BirdLife Australia, 2023).

[1] In situ water quality results were taken on the 23rd of September 2025 for salinity and pH for the four wetlands described, with the three western wetlands recording pH values ranging from 8.38 to 8.74 and Lake Yangy recording a pH of 11.54.

Near the PDE, potentially suitable habitat occurs primarily to the west within the Lesueur Sandplain, with Lake Guraga and Namming Lake representing nearby wetlands that may support use by the species.

6.4.3.2 Project Development Envelope

The Blue-billed Duck is known or considered likely to occur at four of the PDE wetlands (two lakes and two sumplands), as summarised in **Table 6.5** and mapped in **Figure 6.7**. Two of these sites are located in the west of the PDE, and two, in the Lake Yangy chain, are in the east. Blue-billed Ducks are not reasonably expected at the vast majority of geomorphic wetlands (69 of the 77 were considered 'unlikely' to support these taxa) primarily due to a lack of suitable habitat (deep water). The remaining four wetlands ('possible') may occasionally provide suitable habitat for this taxon (as seasonal or interannual conditions change). The geomorphic wetlands found within the PDE are illustrated in **Figure 6.5**.

Table 6.5 Expected Occurrence of Blue-billed Duck at Wetlands Within the PDE

Geomorphic Wetland Type	Likelihood of Supporting Blue-billed Duck				
	Known	Likely	Possible	Unlikely	Total
Lake	2			1	**3**
Sumpland		2	4	38	**44**
Dampland				21	**21**
Floodplain				1	**1**
Palusplain				4	**4**
Paluslope				4	**4**
Total	**2**	**2**	**4**	**69**	**77**

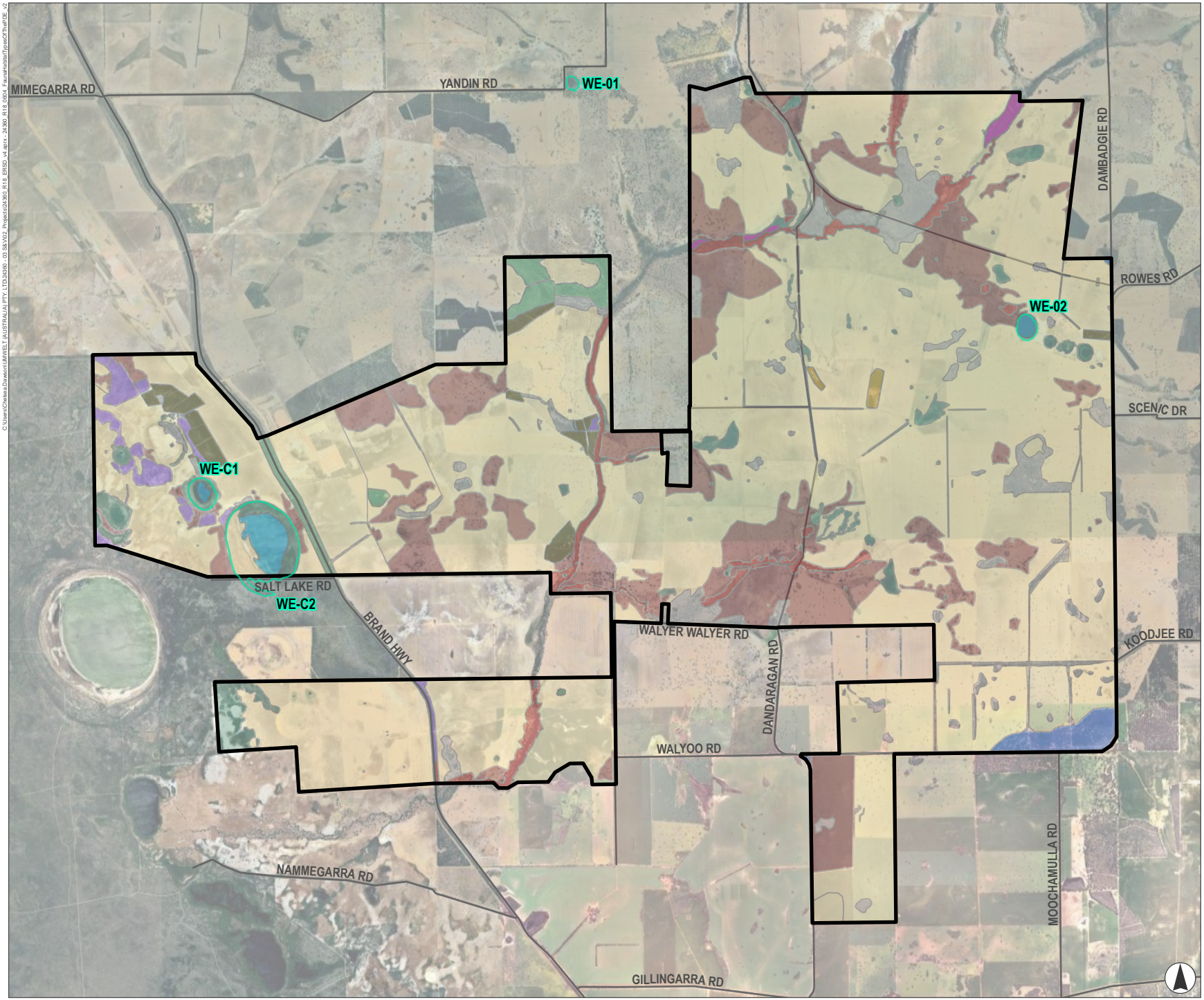

FIGURE 6.4

Fauna Habitat Types of the Project Development Envelope

Legend

- Road
- Project Development Envelope
- Survey Wetlands

Fauna Habitat

- Banksia Woodland
- Flooded Gum Forest
- Low Shrubland
- Paperbark Dampland
- Marri Jarrah Forest
- Disturbed Woodland
- Scattered Trees
- Other
- Pine Plantation
- Cleared
- Water Bodies
- Wetlands

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

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Legend

Fauna Habitat

- Banksia Woodland: Open Proteaceae woodland with shrubby understorey. High species diversity of Banksia, Hakea, Grevillea and other native shrubs, Sandy soils.
- Flooded Gum Forest: Stands of Eucalyptus rudis. Grassy and weedy understory with grazing from cattle. Old, mature forest contains hollows suitable for nesting birds, Associated with drainages and low-lying plains, Small, ephemeral pools creating habitat for native frogs and
- Low Shrubland : Dense Proteaceae shrubland with high species diversity of Banksia, Hakea, Grevillea and other native shrubs. Occurs on sandy soils and laterite jump ups.
- Paperbark Dampland: Dense stands of tall *Melaleuca* associated with drainages and damplands. Understory of grass sedges and non-native *Juncus acutus*. Often adjacent to *Eucalyptus rudis* forest , Fallen timber, Small, ephemeral pools creating h
- Marri Jarrah Forest: Marri (*Corymbia calophylla*) Jarrah (*Eucalyptus marginata*) forest.Mature forest with hollows, Largely intact understorey providing dense cover, Proteaceae species in understorey provides high value foraging habitat for Carnaby's Bl
- Disturbed Woodland: Eucalyptus woodland with high grazing pressure resulting in little to no understorey species. Includes planted avenue trees and wind breaks.Grassy understory containing few native species of shrubs, Fallen logs and coarse woody debris, Lower quality fora
- Scattered Trees: Cleared pasture and crop with scattered paddock trees. Paddock trees mostly *E. rudis* and *C. calophylla* provide low level foraging value to Carnaby's Black-Cockatoo and potential nest hollows, Lacks logs and coarse woody debris.
- Other: Highly disturbed, weedy regrowth and cultivated shrubs.
- Pine plantation: Understorey consisting of grass and pine needles.
- Cleared: Cleared, open paddocks with very few remaining paddock trees. Highly disturbed, Combination of grain and canola crops, Open pasture for sheep and cattle grazing.
- Waterbodies: Large, permanent/semi-permanent water bodies.
- Wetlands, damplands and farm dams. Often integrated with other habitat types such as Waterbodies, Paperbark Dampland and Flooded Gum. May be ephemeral in nature, often degraded, weedy and heavily browsed by cattle. Natural, remnant wetlands contain nativ

FIGURE 6.4

Fauna Habitat Types of the Project Development Envelope

umwelt

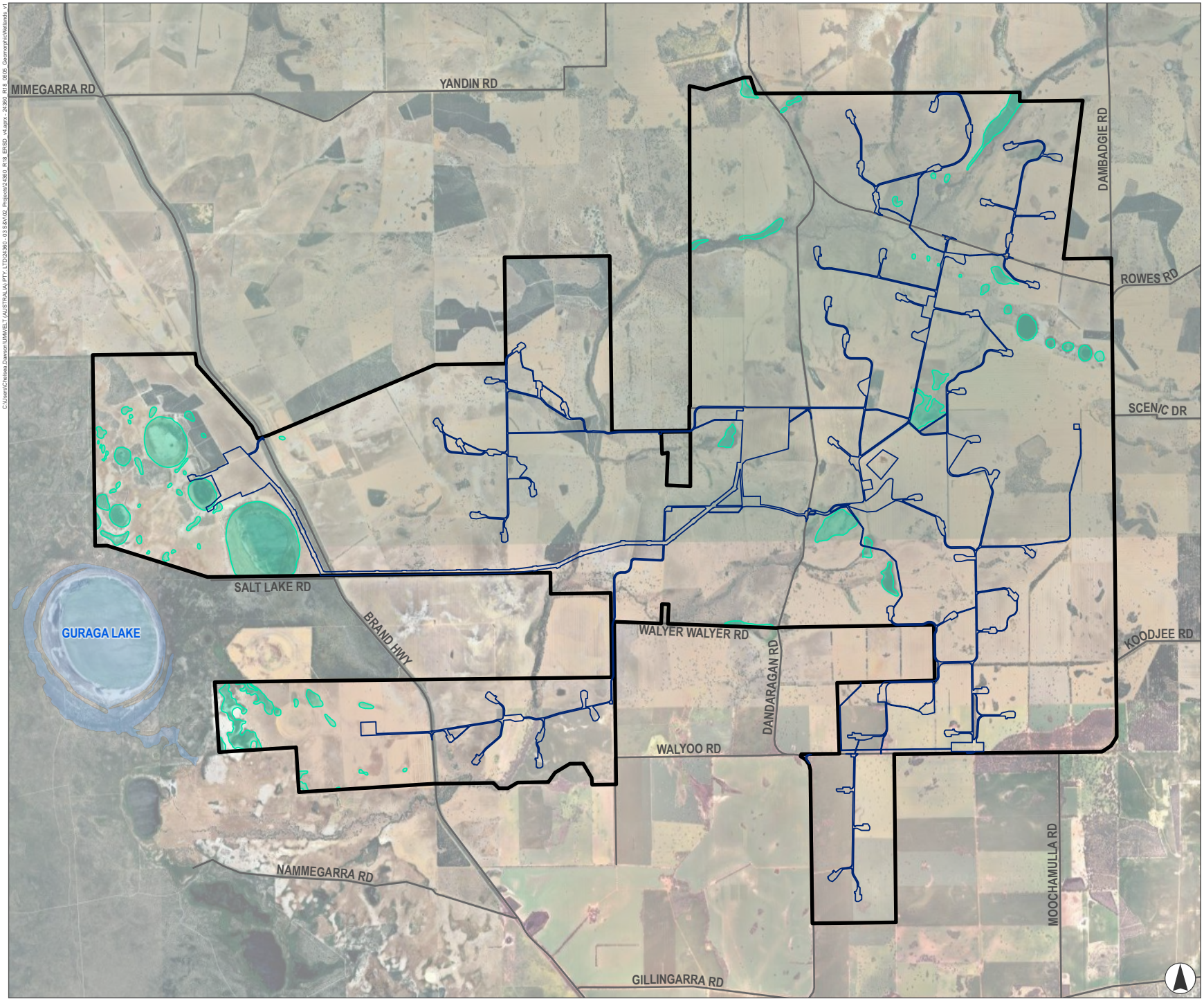


FIGURE 6.5

Geomorphic Wetlands within the Project Development Envelope

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint'
- Directory of Nationally Important Wetlands
- Geomorphic Wetlands

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

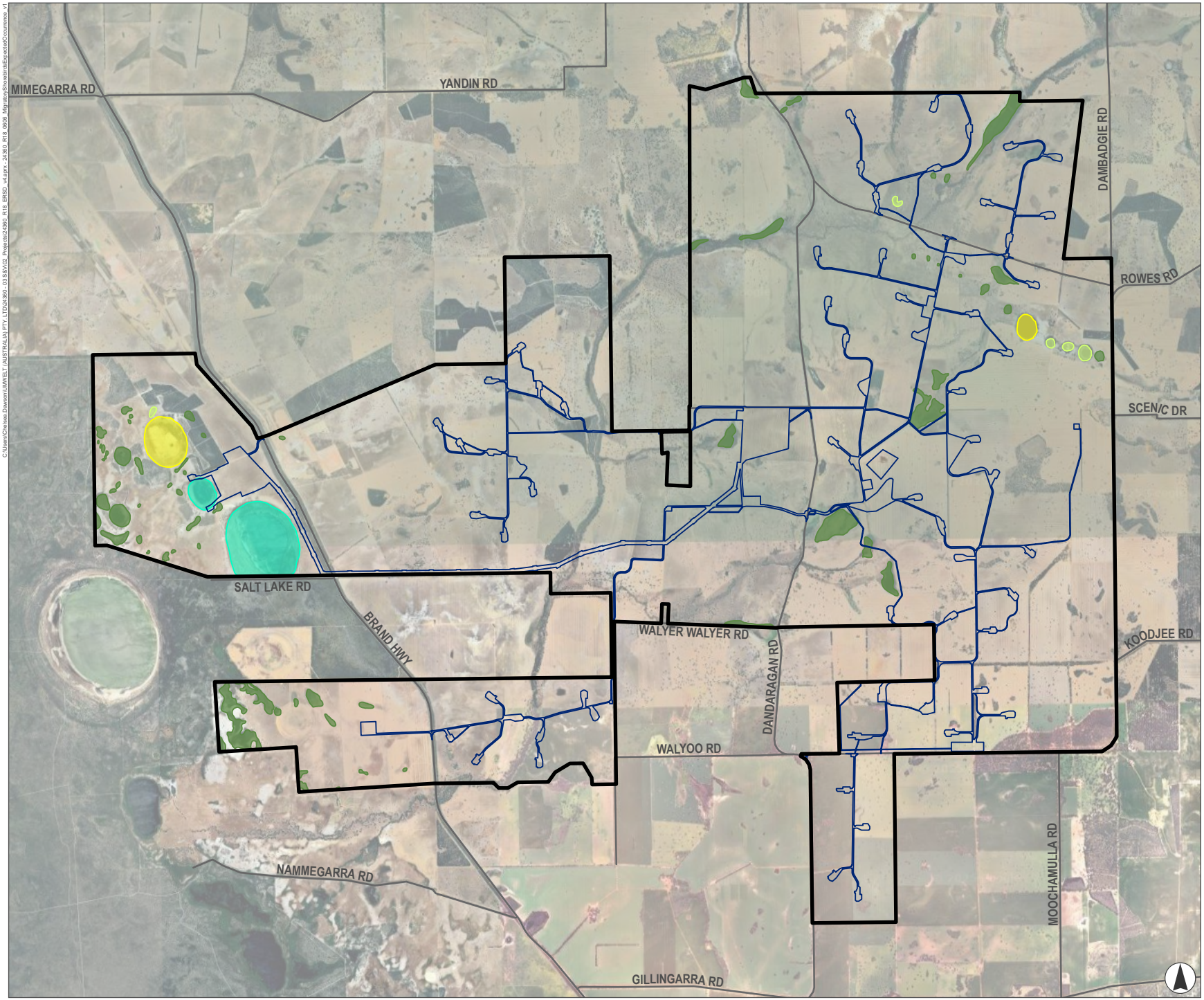


FIGURE 6.6

Expected Occurrence of Migratory Shorebirds at Wetlands within the Project Development Envelope

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Migratory Shorebird Suitability

- Known
- Likely
- Possible
- Unlikely

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

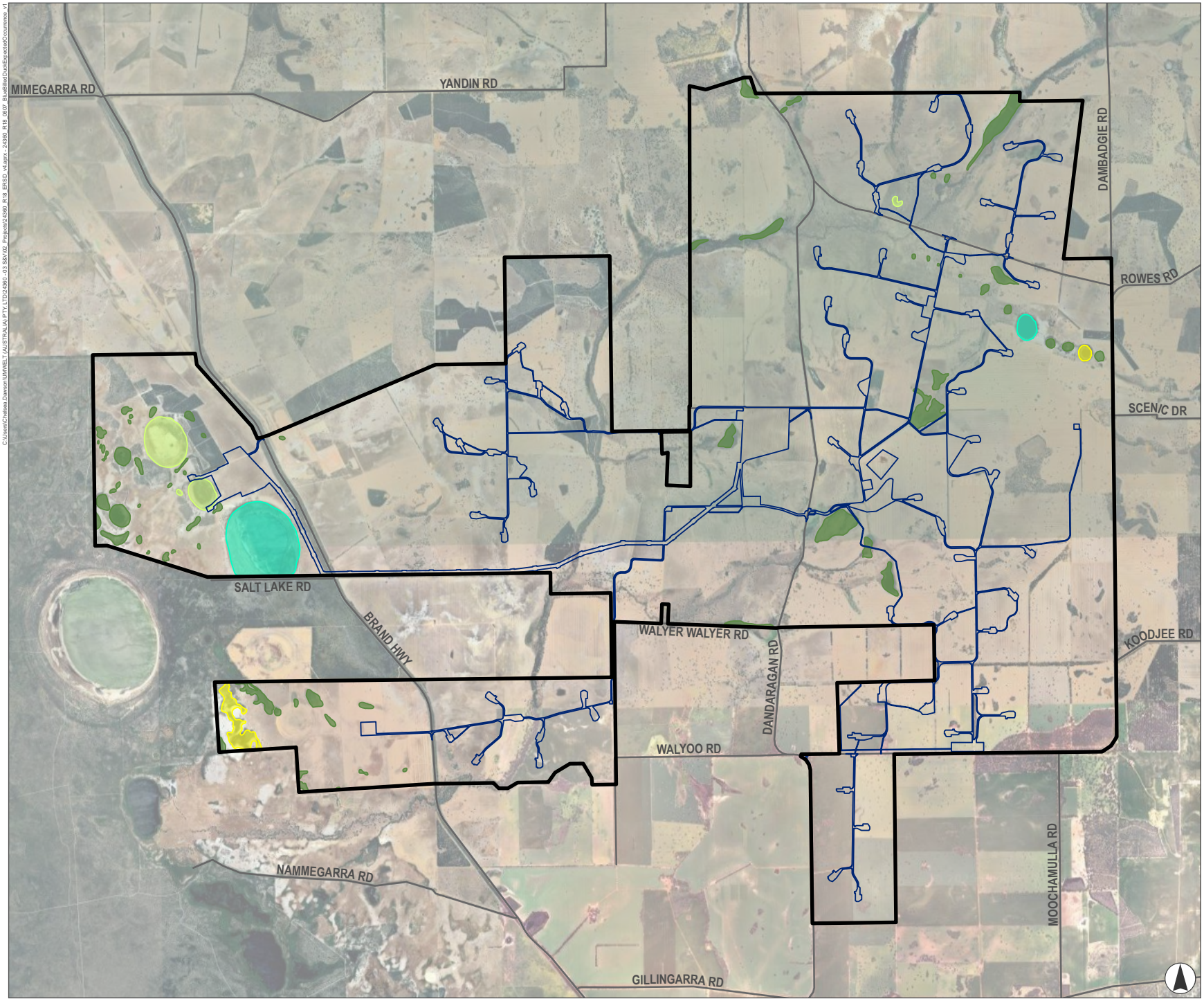


FIGURE 6.7

Expected Occurrence of Blue-billed Duck at Wetlands Within the Project Development Envelope

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint

Blue-billed Duck Suitability

- Known
- Likely
- Possible
- Unlikely

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

6.4.4 Black-cockatoo Habitat

The potential value of habitat types for Black-Cockatoo foraging, roosting and breeding was broadly assessed across the PDE as described in **Section 6.4.1**. Habitats were further refined and assessed for Black-Cockatoo habitat suitability inside the Targeted Fauna Habitat Survey Area, which includes the Indicative Proposal Footprint. The outcomes from this more detailed assessment are provided in **Appendix H** and summarised below.

6.4.4.1 Summary of Black-Cockatoo Habitat at Different Scales

Table 6.6 below provides a summary of Black-Cockatoo foraging, breeding and roosting habitat values in the Indicative Proposal Footprint, the Targeted Fauna Habitat Survey Area, the PDE, and within 12 km of the PDE.

Table 6.6 Black-Cockatoo Habitat Values at Different Scales

Habitat Type	Indicative Proposal Footprint*	Targeted Fauna Survey Area	Project Development Envelope	Within 12 km of the Project Development Envelope
Foraging	Foraging habitat assessment for vegetation within Indicative Proposal Footprint based on targeted assessment (see **Section 6.3.1**). Carnaby's Black-Cockatoo: • 2.68 ha provides moderate value • 0.65 ha provides moderate to high value • Remaining disturbance areas have negligible to low value • No high value habitat within Indicative Proposal Footprint. Forest Red-Tailed Cockatoo: • 3.27 ha provides moderate value • 0.03 provides moderate to high value • Remaining disturbance areas have negligible to low value • No high value habitat within Indicative Proposal Footprint.	Foraging habitat assessment for vegetation within Targeted Fauna Survey Area based on targeted assessment (see **Section 6.3.1**). Carnaby's Black-Cockatoo[2]: • 3.08 ha No value • 20.70 ha Negligible • 19.34 ha Low • 26.64 ha Low to moderate • 10.44 ha Moderate • 6.35 ha Moderate to high • 0 ha High value. Forest Red-Tailed Cockatoo[3]: • 34.40 ha No value • 1.26 ha Negligible • 14.21 ha Low • 20.03 ha Low to moderate • 15.74 ha Moderate • 0.91 ha Moderate to high • 0 ha High.	Foraging habitat assessment for PDE based on broad-scale assessment (see **Appendix H**). Moderate to high or high value: • 114.9 ha Marri Jarrah Forest • 165.8 ha Banksia Woodland • 186.8 ha Low Shrubland Low, Low to moderate, and moderate value: • 457 ha Wetlands • 47 ha Paperbark Dampland • 383 ha Flooded Gum Forest • 124 ha Disturbed Woodland • 2,508 ha Scattered Trees • 169 ha Pine Plantation Remaining PDE assessed as predominantly No or Negligible value There is ~1,169 ha of potentially suitable foraging habitat in the PDE based on Vegetation Associations (DPIRD-005) and Native Vegetation Extent (DPIRD-006) mapping.	There is ~40,010 ha of potentially suitable foraging habitat within 12 km of the PDE based on Vegetation Associations (DPIRD-005) and Native Vegetation Extent (DPIRD-006) mapping. Vegetation associations with potentially suitable foraging habitat include 4, 949, 952, 999, 1009, 1015, 1030, 1031, 1035, 1036, and 1038. Of these areas, approximately 12,592 ha is within conservation estate. Proposed clearing of remnant vegetation and planted trees in the Indicative Proposal Footprint represents approximately 0.05% of potentially suitable foraging habitat within 12 km of the PDE.
Breeding	A total of 112 potential Black-Cockatoo nest-trees (DBH>500 mm) were recorded within the Indicative Proposal Footprint. This includes: • 0 rank 1 trees • 0 rank 2 trees • 5 rank 3 trees • 7 rank 4 trees • 100 rank 5 trees Made up of the following species: • Marri (79.5%), • Flooded Gum (9.8%), • Coastal Blackbutt (8%) • Wandoo (2.7%).	A total of 560 potential Black-Cockatoo nest-trees (DBH>500 mm) were recorded within the Targeted Fauna Survey Area. This includes: • 0 rank 1 trees • 6 rank 2 trees • 19 rank 3 trees • 25 rank 4 trees • 510 rank 5 trees.	Opportunistic sampling identified a total of 610 potential nest-trees in the PDE (including those in the Targeted Fauna Survey Area), as part of a broad-scale assessment rather than a full census of trees. There is likely a significantly larger number of potential nest-trees in the PDE. The highest suitability breeding habitat in the PDE occurs in tracts of mature Flooded Gum habitat and the single 124 ha tract of Marri Jarrah Forest in the south-east of the PDE. There is ~832 ha of potentially suitable breeding habitat in the PDE based on Vegetation Associations (DPIRD-005) and Native Vegetation Extent (DPIRD-006) mapping. Vegetation associations with potentially suitable breeding habitat include 4, 999, 1009, 1035 and 1038.	There is ~5,698 ha of potentially suitable breeding habitat within 12 km of the PDE based on Vegetation Associations (DPIRD-005) and Native Vegetation Extent (DPIRD-006) mapping. Vegetation associations with potentially suitable breeding habitat include 4, 999, 1009, 1035, and 1038. Of these areas, ~348 ha is within conservation estate.

[2] Note this only includes areas of native vegetation and does not include cleared or pasture areas.

[3] Note this only includes areas of native vegetation and does not include cleared or pasture areas.

Habitat Type	Indicative Proposal Footprint*	Targeted Fauna Survey Area	Project Development Envelope	Within 12 km of the Project Development Envelope
Roosting	There are no known roost sites in the Indicative Proposal Footprint.	There are no known roost sites in the Targeted Fauna Survey Area.	There are two confirmed night-roost sites within the PDE: • Roost A: Used by up to 8 birds on 1 and 2 November 2024. • Roost B: Used by up to 110 birds on 6–7 May 2025, and up to 200 birds on 23 June 2025.	There is one confirmed roost site within 12 km of the PDE, approximately 7 km to the south. There is ~5,205 ha of potentially suitable roosting habitat within 12 km of the PDE based on Vegetation Associations (DPIRD-005) and Native Vegetation Extent (DPIRD-006) mapping. Vegetation associations with potentially suitable breeding habitat include 4, 999, 1009, and 1038. Of these areas, approximately 348 ha is within conservation estate.

6.4.4.2 Foraging Habitat

Local and Regional Context

An assessment of government-mapped Native Vegetation Extent (DPIRD-005) intersected with Vegetation Associations (DPIRD-006) (DBCA, 2019) provides a general indication of suitable foraging habitat for Black-Cockatoos across the broader regional area. While vegetation association mapping and native vegetation data suggest potential foraging habitats based on likely presence of plant species with preferred food resources, these areas have not been specifically surveyed for foraging values.

Table 6.7 summarises the vegetation associations that provide potentially suitable foraging habitat for Black-Cockatoos and the remaining native vegetation extent of each vegetation association within 12 km of the PDE.

Table 6.7 Potentially Suitable Foraging Habitat within 12 km of the Project Development Envelope

Vegetation Association	Description (DBCA, 2019)	Potential Foraging Suitability		Area within 12 km of PDE (ha)
		Carnaby's	Forest Red-Tail	
4	Medium woodland; marri & wandoo	High	High	537
949	Low woodland; banksia	High	Low	1,047
952	Shrublands; dryandra heath	High	Low	883
999	Medium woodland; marri	High	High	3,930
1009	Medium woodland; marri & river gum	High	High	363
1015	Mosaic: Mixed scrub-heath / Shrublands; dryandra thicket	High	Low	963
1030	Low woodland; Banksia attenuata & B. menziesii	High	Low	30,245
1031	Mosaic: Shrublands; hakea scrub-heath / Shrublands; dryandra heath	High	Low	866
1035	Mosaic: Medium open woodland; marri / Shrublands; dryandra heath	High	Low	493
1036	Low woodland; Banksia prionotes	High	Low	308
1038	Medium open woodland; eucalypts (e2), with low woodland; Banksia attenuata & B. menziesii	High	Low	375
			Total Area	**40,010**

There is approximately 40,010 ha of government mapped Native Vegetation Extent (DPIRD-005) intersected by Vegetation Associations 4, 949, 952, 999, 1009, 1015, 1030, 1031, 1035, 1036, and 1038 (DPIRD-006) within 12 km of the PDE. Most of the vegetation associations provides higher potential foraging habitat for Carnaby's Black-Cockatoo relative to Forest Red-Tailed Black-Cockatoo.

There is approximately 12,592 ha of potential Black-Cockatoo foraging habitat within Nature Reserves identified within 12 km of the PDE, including Namming (~10,366 ha), Eneminga (~1,401ha), Bundarra (~419ha), Jam Hill (~306 ha), Moochamulla (~82 ha), Quins Hill Nature Reserve (~17 ha), and South Mimegarra (~1 ha) Nature Reserves. Other significant Nature Reserves slightly beyond 12 km from the PDE include Moore River National Park and Fynes Nature Reserve.

Project Development Envelope

Carnaby's Black-Cockatoo forages on eucalypt species and proteaceous shrubs, and seasonally forages in non-native pine plantations (*Pinus radiata* and *Pinus pinaster*), which provide a supplementary food source in areas where native vegetation has undergone extensive clearing.

The Forest Red-tailed Black-Cockatoo largely occupies eucalypt forests, primarily feeding on Marri seeds followed by Jarrah (*E. marginata*) and less commonly Snottygobble (*Persoonia longifolia*), Common Sheoak (*Allocasuarina fraseriana*) and proteaceous shrubs.

As part of the basic and targeted terrestrial fauna assessment (**Appendix E**), Black-Cockatoo foraging habitat values were assessed at a high level using the BCE (Bamford, 2020) methodology for the various fauna habitats mapped within the Fauna Survey Area. Marri Jarrah Forest, Banksia Woodland and Low Shrubland habitat types were the highest ranked. Habitat mapped as Other, Cleared and Water Bodies were the lowest ranked. The areas of different habitats are shown in **Table 6.8**, with further detail provided in **Appendix E.**

Table 6.8 Foraging Habitats in the Fauna Survey Area

Foraging Value Score out of 6 based on Site Condition (BCE, 2020)	Habitat descriptions	Area* (ha)
1	Other	67
1-2	Water Bodies	99
1-2	Cleared	12,007
1-3	Scattered Trees	2,508
2-3	Wetlands	457
2-3	Paperbark Dampland	47
2-3	Flooded Gum Forest	383
2-4	Disturbed Woodland	124
3-4	Pine Plantation	169
5-6	Marri Jarrah Forest	124
5-6	Banksia Woodland	166
5-6	Low Shrubland	201

* Areas based on Fauna Survey Area of 17,213 ha

Following on from the above high level assessment, a refined targeted Black-Cockatoo foraging habitat assessment was undertaken across the Targeted Fauna Habitat Survey Area utilising the BCE (Bamford, 2020) methodology with the resultant mapping presented in **Appendix H**. A small part of the Targeted Fauna Survey Area (3.5 ha, 0.1 %) has not been assessed. The BCE scores are provided for impact assessment purposes and context/density for reference in case there is need for offsets.

Almost 93% of the Targeted Fauna Survey Area was assessed as having Low, Negligible or No foraging value for Black-Cockatoos. Areas of Moderate or better foraging value were isolated and mostly occurred in the south-east of the Targeted Fauna Survey Area. There were also narrow areas of higher-quality foraging along Walyer Walyer Road in the central-south area of the Targeted Fauna Survey Area.

The site condition, site context, density and overall foraging habitat quality scores within the Targeted Fauna Habitat Survey Area for the Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoo and are presented in **Table 6.9** and further details provided in **Appendix H**.

Table 6.9 Site Condition, Site Context, Density and overall Foraging Habitat Quality Scores for Forest Red-tailed Black-Cockatoo and Carnaby's Black-Cockatoo within the Targeted Fauna Survey Area

	Forest Red-tailed Black-Cockatoo		Carnaby's Black-Cockatoo	
Vegetation Score	**Area (ha)**	**%**	**Area (ha)**	**%**
6: High	0	0	0	0
5: Moderate to High	1.44	0	8.93	0.3
4: Moderate	34.96	1.0	27.68	0.8
3: Low to Moderate	202.85	5.9	211.18	6.1
2: Low	821.41	23.9	848.61	24.6
1: Negligible	77.49	2.3	2314.32	67.2
0: Nil	2301.25	66.8	28.67	0.8
Unassessed	3.49	0.1	3.49	0.1
Total	**3442.89**	**100**	**3442.88**	**100**
Context Score	0 (where VS ≤ 2)		0 (where VS ≤ 2)	
	1 (where VS ≥ 3)		1 (where VS ≥ 3)	
Species Density Score	0 (where VS ≤ 2)		0 (where VS ≤ 2)	
	1 (where VS ≥ 3)		1 (where VS ≥ 3)	
Foraging Score	**Area (ha)**	**%**	**Area (ha)**	**%**
10: Pristine	0	0	0	0
9: Very high	0	0	0	0
8: High	0	0	0	0
7: Moderate to High	1.44	0	8.93	0.3
6: Moderate	34.96	1.0	27.68	0.8
5: Moderate	202.85	5.9	211.18	6.1
4: Low to Moderate	0	0	0	0

Foraging Score	Area (ha)	%	Area (ha)	%
3: Low	0	0	0	0
2: Very low	821.41	23.9	848.61	24.6
1: Negligible	77.49	2.3	2314.32	67.2
0: Nil	2301.25	66.8	28.67	0.8
Unassessed	3.49	0.1	3.49	0.1
Total	**3442.89**	**100**	**3442.89**	**100**

6.4.4.3 Roosting Habitat

Local and Regional Context

Within 12 km of the PDE there is one confirmed roost site, approximately 7 km south of the PDE near Regans Ford (see **Figure 6.8**).

An assessment of government-mapped Native Vegetation Extent (DPIRD-005) intersected with Vegetation Associations (DPIRD-006) (DBCA, 2019) provides a general indication of suitable roosting habitat for Black-Cockatoos across the broader area.

Table 6.10 summarises the vegetation associations that potentially provide suitable roosting habitat for Black-Cockatoos and the remaining native vegetation extent of each vegetation association within 12 km of the PDE.

Table 6.10 Potentially Suitable Roosting Habitat within 12 Km of the Project Development Envelope

Vegetation Association	Description (DBCA, 2019)	Area within 12 km of PDE (ha)
4	Medium woodland; marri & wandoo	537
999	Medium woodland; marri	3,930
1009	Medium woodland; marri & river gum	363
1038	Medium open woodland; eucalypts (e2), with low woodland; Banksia attenuata & B. menziesii	375
	Total Area (ha)	**5,205**

This indicates that there is approximately 5,205 ha of remnant vegetation within 12 km of the PDE which is likely to contain vegetation that can support Black-Cockatoo roosting trees. Roosting potential within these vegetation associations is likely to be similar for both species of Black-Cockatoo that are known to occur in the PDE. Of these areas, approximately 348 ha is within conservation estate.

Project Development Envelope

Suitable roosting habitat for Black-Cockatoos includes tall trees in proximity to water sources. Within the PDE, this includes Flooded Gum Forest, Jarrah-Marri Forest and Pine Plantation Fauna habitat types. Incidental roosting observations have been recorded in Pine Plantation and Flooded Gum.

Two known Carnaby's Black-Cockatoo night-roost areas were recorded within the PDE, outside the Targeted Fauna Habitat Survey Area during the Proposal studies (**Table 6.11**, **Figure 6.9**). These observations are summarised below:

- On the evenings of 1 and 2 November 2024, Carnaby's Black-Cockatoo roosting was observed in a section of Flooded Gum Forest habitat with a flowing watercourse (refer Roost A, **Figure 6.9**). Up to eight individuals were recorded at once, and it was assessed that it is likely roosting also occurs opportunistically in other similar habitat throughout the PDE. It was also noted that Pine Plantations may provide potential roosting habitat, particularly in the west of the PDE where Pine Plantation abuts permanent water and other foraging habitat.
- On the nights of 6 and 7 May 2025, up to 110 Carnaby's Black-Cockatoo were observed coming in to roost at the western edge of the PDE adjacent to the wetlands (Roost B, **Figure 6.9**).
- On the night of 23 June 2025, a flock of approximately 150 to 200 Carnaby's Black-Cockatoo were tracked with further details noted in Appendix H.

Table 6.11 Carnaby's Black-Cockatoo Night-roost Areas within the PDE

Roost Site	Observation Date	Number of Birds
A	1 November 2024	Up to 8
	2 November 2024	Up to 8
B	6 and 7 May 2025	Up to 100
	25 May 2025	Up to 200

There are no known night-roost areas for Forest Red-tailed Black-Cockatoo in the PDE.

6.4.4.4 Breeding Habitat

Local and Regional Context

Black-Cockatoo breeding habitat can comprise any eucalypt species (dead or alive) supporting suitable hollows and is most often Wandoo (*Eucalyptus wandoo*), Salmon Gum (*Eucalyptus salmonophila*), and Marri (*Corymbia calophylla*); however, breeding has been recorded in a range of other species.

The following publicly available spatial datasets of Black-Cockatoo breeding sites are available:

- Carnaby's Black-Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions (DBCA-054). This dataset shows the confirmed breeding areas where chicks or eggs of CBC have been observed of the Carnaby's Black Cockatoo (CBC) within the Swan Coastal Plain and the Jarrah Forest IBRA regions (DBCA, (2018a). The sites are buffered by 6 km, and the PDE intersects the buffers for two confirmed breeding areas shown in this dataset as illustrated in **Figure 6.8**. The nearest Carnaby's Black-Cockatoo confirmed breeding areas mapped by DBCA are located approximately 6 km northeast of the PDE in Cataby and 6 km southeast of the PDE.

- Black-Cockatoo breeding sites (buffered) (DBCA-063), provides sites where breeding is inferred based on surveys that have recorded either birds entering/leaving the next or the inside of the next has been viewed with eggs or chicks. These records represent breeding attempts rather than confirmed fledging success, and have been collected intermittently since 2003, mainly during the peak breeding season (September-January). Breeding sites are buffered to 2 km, and there is one confirmed breeding site located approximately 6 km southeast of the PDE. This confirmed breeding site is shown on **Figure 6.8** along with roosting sites.

An assessment of government-mapped Native Vegetation Extent (DPIRD-005) intersected with Vegetation Associations (DPIRD-006) (DBCA, 2019) provides a general indication of suitable breeding habitat for Black-Cockatoos across the broader area.

Table 6.12 summarises the vegetation associations that provide potentially suitable breeding habitat for Black-Cockatoos and the remaining native vegetation extent of each vegetation association within 12 km of the PDE.

Table 6.12 Potentially Suitable Breeding Habitat within 12 km of the Project Development Envelope

Vegetation Association	Description (DBCA, 2019)	Area within 12 km of PDE (ha)
4	Medium woodland; marri & wandoo	537
999	Medium woodland; marri	3,930
1009	Medium woodland; marri & river gum	363
1035	Mosaic: Medium open woodland; marri / Shrublands; dryandra heath	493
1038	Medium open woodland; eucalypts (e2), with low woodland; Banksia attenuata & B. menziesii	375
	Total Area (ha)	**5,698**

This indicates that there is approximately 5,698 ha of remnant vegetation within 12 km of the PDE which is likely to contain vegetation that can support Black-Cockatoo breeding trees. Breeding potential within these vegetation associations is likely to be similar for both species of Black-Cockatoo that are known to occur in the PDE. Of these areas, approximately 348 ha is within conservation estate.

Project Development Envelope

Black-Cockatoo breeding habitat was assessed at a broad-scale as part of the Basic and Targeted vertebrate fauna assessment. Potential breeding habitat was identified to potentially be present within older stands of *Eucalyptus rudis* in Flooded Gum Forest and mature *C. calophylla* in woodland habitats and as isolated paddock trees. The highest suitability breeding habitat in the PDE occurs in tracts of mature Flooded Gum habitat and the single ~115 ha tract of Marri Jarrah Forest in the south-east of the PDE.

A total of 66 potential nest-trees with a DBH above 500 mm were recorded in the Fauna Survey Area during the initial Basic and Targeted survey. This was based on opportunistic sampling rather than a full census and there is likely to be a significantly larger number of potential nest-trees in the PDE.

There is 832 ha of potentially suitable breeding habitat in the PDE based on Vegetation Associations (DPIRD-005) and Native Vegetation Extent (DPIRD-006) mapping. Vegetation associations with potentially suitable breeding habitat include 4, 999, 1009, 1035 and 1038.

A full census survey of potential Black-Cockatoo nest-trees (Rank 1–5) was conducted across 697.9 ha (95.7%) of the Indicative Proposal Footprint utilising the BCE (Bamford, 2020) methodology. A 'partial' survey (all Rank 1 – 3 trees, but only opportunistically surveyed for Rank 4 and 5 trees) was undertaken across 26 ha (3.6) of the Indicative Proposal Footprint, with the remaining 5.1 ha (0.7%) not assessed. The unassessed areas are primarily cleared land devoid of trees, however any trees with a DBH in excess of 500 mm within the Indicative Proposal Footprint will be assessed prior to clearing.

A complete assessment of Rank 1–5 trees was completed over 2,596.6 ha (75.4%) of the Targeted Fauna Habitat Survey Area, with 762.3 ha (22.1%) subject to a 'partial' survey. Eighty-four (84) ha (2.5%) of the Targeted Fauna Survey Area has not been assessed.

In total, 560 potential Black-Cockatoo nest-trees were assessed in the Targeted Fauna Habitat Survey Area and 112 in the Indicative Proposal Footprint, with the results presented in **Table 6.13**. A series of maps showing the locations of all trees assessed is provided in **Appendix H.**

No active nest-trees (Rank 1) were recorded in the Targeted Fauna Habitat Survey Area.

Table 6.13 Number and Rank of Potential Black-Cockatoo Nest Trees in Targeted Fauna Habitat Survey Area

Rank	Number of Potential Black-Cockatoo Nest Trees	Proportion of Total (%)
1	0	0
2	6	1.07
3	19	3.39
4	25	4.46
5	510	91.07
Total	**560**	**100**

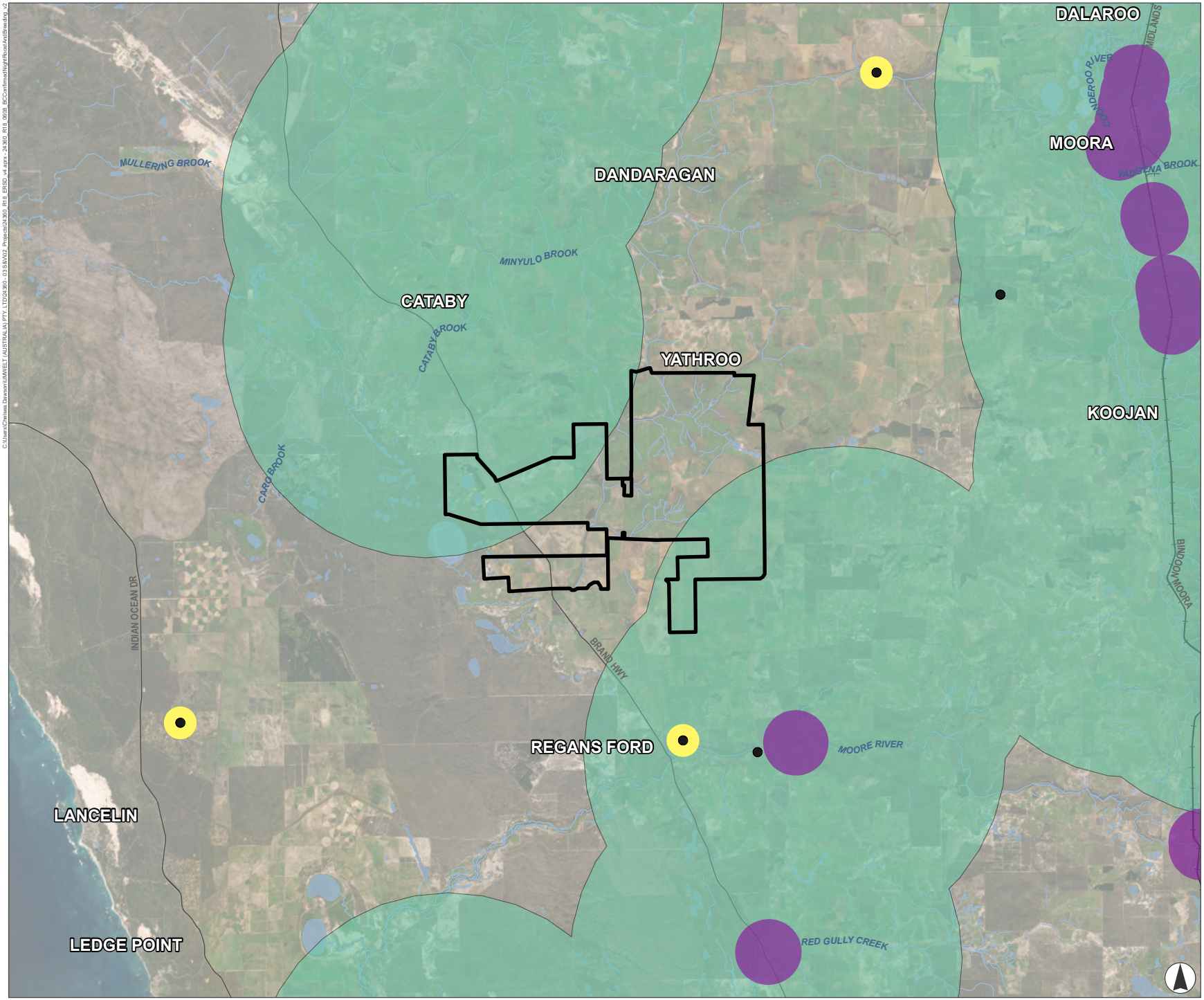


FIGURE 6.8

Black-cockatoo Confirmed Night-roost and Breeding Sites

Legend

- Great Cocky Count
- Road
- Railway
- Watercourse
- Waterbody
- Project Development Envelope
- Roosting Sites
- Breeding Sites
- Carnabys Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions (DBCA-054)

0 5 10

Kilometres

Scale 1:320,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

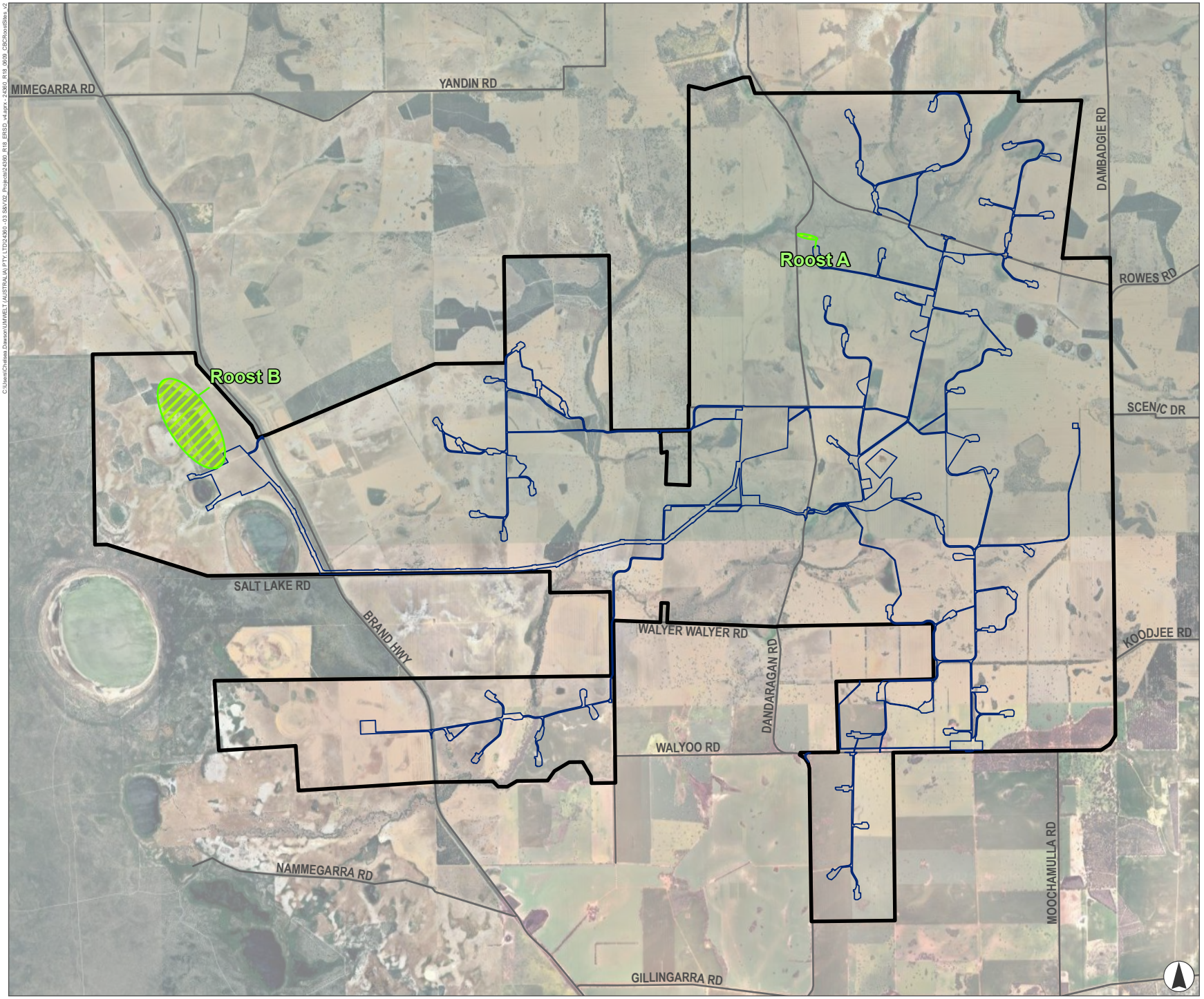


FIGURE 6.9

Known Carnaby's Black Cockatoo Night Roost Locations in the Project Development Envelope

Legend

- Road
- Project Development Envelope
- Indicative Proposal Footprint
- Known Night Roost Locations

0 2 4

Kilometres

Scale 1:100,000 at A4
GDA2020 MGA Zone 50

umwelt

Image Source: ESRI Basemap (2023) | **Data Source:** Landgate (2024) Umwelt (2025)

6.4.5 Terrestrial Fauna Species Recorded During the Surveys

During the field surveys, a total of 146 terrestrial fauna species were recorded, comprising three species of amphibian, four reptiles, 120 birds and 12 mammals, including seven non-listed species of microbats:

- Chocolate Wattled Bat (*Chalinolobus morio*)
- Gould's Wattled Bat (*Chalinolobus gouldii*)
- Inland Broad-nosed Bat (*Scotorepens balstoni*)
- Lesser Long-eared Bat (*Nyctophilus geoffroyi*)
- Southern Forest Bat (*Vespadelus regulus*)
- Western Free-tailed Bat (*Ozimops kitcheneri*)
- White-striped Free-tailed Bat (*Austronomus australis*).

The above numbers include 11 non-listed diurnal raptors recorded during the field survey program, including:

- Australian Hobby (*Falco longipennis*)
- Black-shouldered Kite (*Elanus axillaris*)
- Brown Falcon (*Falco berigora*)
- Brown Goshawk (*Tachyspiza fasciata*)
- Little Eagle (*Hieraaetus morphnoides*)
- Nankeen Kestrel (*Falco cenchroides*)
- Spotted Harrier (*Circus assimilis*)
- Swamp Harrier (*Circus approximans*)
- Wedge-tailed Eagle (*Aquila audax*)
- Whistling Kite (Haliastur sphenurus)
- White-bellied Sea Eagle (*Haliaeetus leucogaster*).

One nocturnal raptor species was recorded during the field survey program – the Boobook Owl (*Ninox boobook*).

Five naturalised exotic species were recorded including Laughing Kookaburra (*Dacelo novaeguineae*), House Mouse (*Mus musculus*), Red Fox (*Vulpes vulpes*), Cattle (*Bos taurus*) and Sheep (*Ovis aries*).

Details on listed terrestrial fauna identified during the fauna surveys are discussed in the below section.

6.4.5.1 Listed Terrestrial Fauna Recorded During the Surveys

Listed terrestrial fauna are those species listed and protected under the EPBC Act or BC Act. Desktop assessments identified a total of 18 listed terrestrial fauna species (including waterbirds) with the potential to occur in the PDE. Of the 18 potential listed species, 10 are 'known' to occur, having been recorded in the PDE, and eight were considered to have a high or moderate likelihood of occurrence (six waterbirds and two other vertebrate fauna); the remainder were considered rarely, unlikely or highly unlikely to occur in the PDE.

Table 6.14 presents the listed terrestrial fauna species (including migratory) known or with high and moderate likelihood of occurrence in the PDE. The locations of where the known species were recorded are illustrated in **Figure 6.10.**

All migratory shorebirds recorded were only detected during the Summer 2025 BBUS, with the exception of the Wood Sandpiper which was recorded opportunistically during the Basic and Targeted Fauna Survey in Spring of 2024. All observations were on the wetlands located on the western boundary of the PDE, over 3.5 km away from the nearest turbines. Furthermore, the migratory shorebirds listed in **Table 6.14** are non-breeding visitors to Australia, and are only likely to occur within the PDE from early spring to late summer with presence heavily influenced by the availability of suitable habitat.

No listed bat species were recorded during the fauna field studies, and none are expected to occur.

Table 6.14 Significant Fauna Recorded or Potentially Occurring within the Project Development Envelope

Species	BC Act Status	EPBC Act Status	Habitat Preference	Likelihood of Occurrence	Suitable Habitat in the PDE
Birds					
Carnaby's Black-Cockatoo (*Zanda latirostris)*	EN	EN	Uncleared or remnant native eucalypt woodlands and remnant patches of native vegetation on land otherwise cleared for agriculture where it forages on eucalypt species and proteaceous shrubs. Forages seasonally in non-native pine plantations (Pinus radiata and Pinus pinaster) which provide a supplementary food source in areas where native vegetation has undergone extensive clearing. See **Section 6.4.4** for more detail.	• Known. • Recorded on 66 occasions during all five BBUS, 14 occasions during the basic and targeted surveys and recorded during targeted habitat survey in June 2025. • Recorded flying at a maximum height of 50 m AGL on three occasions undertaking directional flights comprising one or two individuals. • Flocks of up to 200 recorded.	Suitable foraging, roosting and breeding habitat is present in the PDE (see **Section 6.4.4**).
Forest Red-Tailed Black cockatoo (*Calyptorhynchus banksii naso*)	VU	VU	The PDE falls outside of the currently modelled distributions for both this and the next closest subspecies (Western Red-tailed Black-Cockatoo [*C. banksii escondidus*]); however, the Forest Red-tailed Black-Cockatoo formerly had a distribution extending to Dandaragan (Johnstone & Storr, 1998a). After a review of secondary evidence (foraging material), the records were determined to most likely be	• Known. • Recorded on four occasions during the Winter 2025 BBUS. • Recorded on one occasion during the targeted habitat survey in June 2025. • Flock sizes ranged from two to eight individuals. • Recorded flying at a maximum height of 8 m AGL.	Suitable foraging, roosting and breeding habitat is present in the PDE (see **Section 6.4.4**).

Species	BC Act Status	EPBC Act Status	Habitat Preference	Likelihood of Occurrence	Suitable Habitat in the PDE
			the Forest Red-tailed Black-Cockatoo. See **Section 6.4.2** for more detail.		
Peregrine Falcon (*Falco peregrinus*)	OS	-	Preference for wooded watercourses and ranges with exposed cliff edges.	• Known. • Recorded during every BBUS for the Proposal.	May use all habitats for foraging and dispersal, and may breed in areas with tall trees.
Blue-billed Duck (*Oxyura australis*)	P4	-	Wetland habitats.	• Known. • Recorded on five separate surveys at two wetlands (three BBUS and two targeted shorebird surveys).	Wetland habitats.
Common Greenshank (*Tringa nebularia*)	MI	EN & MI	Wetland habitats.	• Known. • Recorded on one occasion during Summer 2025 BBUS. One individual was recorded.	Wetland habitats.
Black-tailed Godwit (*Limosa limosa*)	MI	EN & MI	Wetland habitats.	• Known. • Recorded on one occasion during Summer 2025 BBUS. One individual was recorded.	Wetland habitats.
Sharp-tailed Sandpiper (*Calidris acuminata*)	MI	VU & MI	Wetland habitats.	• Known. • Recorded on one occasion during Summer 2025 BBUS. Five individuals were recorded.	Wetland habitats.
Red-necked Stint (*Calidris ruficollis*)	MI	MI	Wetland habitats.	• Known. • Recorded on one occasion during Summer 2025 BBUS. Three individuals were recorded.	Wetland habitats.

Species	BC Act Status	EPBC Act Status	Habitat Preference	Likelihood of Occurrence	Suitable Habitat in the PDE
Ruff (*Calidris pugnax*)	MI	MI	Wetland habitats.	• Known. • Recorded on one occasion during Summer 2025 BBUS. Three individuals were recorded.	Wetland habitats.
Wood Sandpiper (*Calidris glareola*)	MI	MI	Wetland habitats.	• Known. • Recorded on two occasions during the basic and targeted fauna survey. Fifteen individuals were recorded.	Wetland habitats.
Curlew Sandpiper (*Calidris ferruginea*)	CR	CR & MI	Wetland habitats.	• High	May occur in wetland habitats.
Common Sandpiper (*Actitis hypoleucos*)	MI	MI	Wetland habitats.	• High	May occur in wetland habitats.
Glossy Ibis (*Plegadis falcinellus*)	MI	MI	Wetland habitats.	• High	May occur in wetland habitats.
Pacific Golden Plover (*Pluvialis fulva*)	MI	MI	Wetland habitats.	• High	May occur in wetland habitats.
Long-toed Stint (*Calidris subminuta*)	MI	MI	Wetland habitats.	• Moderate	May occur in wetland habitats.
Fork-tailed Swift (*Apus pacificus*)	MI	MI	Any habitat.	• Moderate	Low density species which may occur in any habitat in the region but at low frequency.

Species	BC Act Status	EPBC Act Status	Habitat Preference	Likelihood of Occurrence	Suitable Habitat in the PDE
Mammals					
Water Rat, Rakali (*Hydromys chrysogaster*)	P4	-	Wetlands, drainages and large waterbodies.	• Moderate	May occur in wetland, drainage and large waterbodies.
Reptiles					
Blue-striped Burrowing Snake (*Neelaps calonotos*)	P3	-	Coastal heathland habitats and inland Banksia woodlands.	• Moderate	Suitable habitat occurs in sections of Low Shrubland and Banksia woodland on sandy soils.

Note. MI=Migratory, EN=Endangered, P1–P4=Priority 1–4, VU= Vulnerable, OS=Other Specially Protected, CR=Critically Endangered.

FIGURE 6.10

Listed Fauna Recorded within the Fauna Survey Area

6.4.5.2 Migratory Shorebird Populations

The *Australian National Directory of Important Migratory Shorebird Habitat* (Driessen et al, 2025) has recently updated the East Asian-Australasian Flyway (flyway) population estimates for migratory shorebird species that regularly visit Australia. Flyway population estimates for migratory shorebirds with a moderate or greater likelihood of occurrence in the PDE is presented below in **Table 6.15**.

EPBC guidelines (Department of the Environment, 2013a) and the recent Driessen et al (2025) report note that wetland habitat should be considered nationally important if it regularly supports 0.1% of a species' flyway population. The 0.1% population estimate has therefore also been provided in **Table 6.15** to assist in understanding if habitats on site may be considered nationally important for a migratory shorebird.

Table 6.15 Migratory Shorebird Population Estimates

Species Name	Flyway Population Estimate	0.1% of Flyway Population Estimate
Common Greenshank	110,000	110
Black-tailed Godwit	230,000	230
Sharp-tailed Sandpiper	130,000	130
Red-necked Stint	600,000	600
Ruff*	750	0.75
Wood Sandpiper	130,000	130
Curlew Sandpiper	120,000	120
Common Sandpiper	190,000	190
Glossy Ibis**		
Pacific Golden Plover	150,000	150
Long-toed Stint	230,000	230

* Previous estimates for Ruff in Hansen et al. (2016) did not exclusively reflect numbers within the East Asian Australasian Flyway (EAAF) but included portions of the Central Asian Flyway population. A more recent assessment (Ministry of the Environment Japan, 2021) estimated the flyway population at 500 – 1,000 birds, which has been adopted by Wetlands International (2025) as 'best guess'.

** The population of Glossy Ibis within Australia is estimated to be approximately 12% of the species' total population (Marchant & Higgins, 1993). The estimated total population is 1.2 – 3.2 million.

6.5 Potential Impacts of the Proposal on Terrestrial Fauna

This section lists the Proposal activities that might feasibly impact on terrestrial fauna and habitat, including direct, indirect, and cumulative impacts.

6.5.1 Direct Impacts

The feasible direct impacts to terrestrial fauna from Proposal activities are listed in **Table 6.16.** Direct impacts are assessed based on the Indicative Proposal Footprint.

Table 6.16 Potential Direct Impacts to Terrestrial Fauna and Fauna Habitat from the Proposal

Proposal Activity	Potential Direct Impact
Clearing of native vegetation and earthworks	Fauna habitat loss Loss of fauna individuals
Wind turbine operation	Loss of fauna individuals

6.5.1.1 Fauna Habitat Loss

Vegetation clearing during the construction phase presents potential impacts to fauna, such as:

- Direct displacement of fauna, leading to an overall reduction in fauna diversity and/or loss of local populations.
- Fragmentation of populations, potentially leading to reduced gene flow.
- Reduced availability of important habitat and features (e.g. tree hollows or foraging habitat) for species which rely on the availability of nesting, breeding, foraging, and shelter habitat for survival.

6.5.1.2 Turbine Collision

The BBUA assessed the pre-mitigation risk of collision for 43 bird species, including 14 threatened and migratory birds, and seven bat species. Ten species, including two which are conservation significant (Blue-billed Duck, Peregrine Falcon) and all seven microbats, were considered to have a 'High' overall collision risk rating. A 'Moderate' overall collision risk rating was assigned to six conservation significant bird species and all 11 species in the diurnal raptors group. Ten non-listed species recorded flying within RSA height during the BBUS program also received a 'Moderate' overall collision risk rating. The remaining 13 species received a 'Minor' overall collision risk rating.

The risk assessment results for listed bird species are provided in **Table 6.17. Table 6.18** describes the assessed risk and required response actions.

Detailed risk assessment results are provided in **Appendix F** and flight heights are discussed further in the context of residual impacts in **Section 6.7.2**.

Table 6.17 Risk Assessment Results for Listed Bird Species

Common Name	Scientific Name	Likelihood of Collision	Consequence of Collision	Overall Risk Rating
Carnaby's Black-Cockatoo	*Zanda latirostris*	Unlikely	High	**Moderate**
Forest Red-tailed Black Cockatoo	*Calyptorhynchus banksii naso*	Unlikely	Moderate	**Minor**
Blue-billed Duck	*Oxyura australis*	Likely	Moderate	**High**
Peregrine Falcon	*Falco peregrinus*	Likely	Moderate	**High**
Common Greenshank	*Tringa nebularia*	Possible	Moderate	**Moderate**
Sharp-tailed Sandpiper	*Calidris acuminata*	Possible	Moderate	**Moderate**
Black-tailed Godwit	*Limosa limosa*	Possible	Moderate	**Moderate**
Curlew Sandpiper	*Calidris ferruginea*	Possible	Moderate	**Moderate**
Red-necked Stint	*Calidris ruficollis*	Possible	Low	**Minor**

Common Name	Scientific Name	Likelihood of Collision	Consequence of Collision	Overall Risk Rating
Wood Sandpiper	*Tringa glareola*	Possible	Low	**Minor**
Common Sandpiper	*Actitis hypoleucos*	Possible	Low	**Minor**
Long-toed Stint	*Calidris subminuta*	Possible	Low	**Minor**
Pacific Golden Plover	*Pluvialis fulva*	Possible	Low	**Minor**
Ruff	*Calidris pugnax*	Possible	Low	**Minor**
Fork tailed Swift	*Apus pacificus*	Likely	Low	**Moderate**
Glossy Ibis	*Plegadis falcinellus*	Possible	Low	**Minor**

Table 6.18 Risk Descriptors

Risk	Description	Response
Very High	• The species is **likely** to be involved in collisions within the PDE, and a collision would have a **high consequence** for the species.	A Collision Risk Model (CRM) should be considered to be undertaken for the species if sufficient data is available. If data is insufficient, using a surrogate species may be appropriate if a suitable surrogate species is available. The species will require consideration for collision impacts as part of an impact assessment to identify suitable mitigation measures and will need to be addressed in the Project BBAMP.
High	• The species is **likely** to be involved in collisions within the PDE, and a collision would have a **moderate consequence** for the species, **OR** • it is **possible** the species would be involved in collisions within the PDE, and a collision would have a **high consequence** for the species.	The species will require consideration for collision impacts as part of an impact assessment to identify suitable mitigation measures and a CRM or alternative method to quantify collision risk may be required. The species may also need to be addressed in the Project BBAMP.
Moderate	• The species is **likely** to be involved in collisions within the PDE, and a collision would have a **low consequence** for the species OR • It is **possible** the species would be involved in collisions within the PDE, and a collision would have a **moderate consequence** to the species OR • The species is **unlikely** to be involved in collisions within the PDE, but there would be a **high consequence** to the species.	Conservation significant species will require consideration for collision impacts as part of an impact assessment and may require mitigation measures.

Risk	Description	Response
Minor	• The species is **unlikely** to be involved in collisions within the PDE, and a collision would have a **moderate consequence** for the species OR • It is **possible** the species would be involved in collisions within the PDE, but a collision would have a **low consequence** to the species.	Conservation significant species may require some considerations for collision impacts as part of an impact assessment.
Negligible	• The species is **unlikely** to be involved in collisions within the PDE, and any collision would have a **low consequence** to the species.	The species is unlikely to require consideration for collision impacts as part of an impact assessment.

6.5.1.3 Barotrauma

Barotrauma is a phenomenon in which rapid air pressure changes from rotating turbine blades are hypothesised to cause tissue damage to air-containing structures, most notably the lungs of bats (Baerwald et al., 2008). It has also been hypothesised that barotrauma can result in non-lethal injuries, such as hearing impairments and other internal injuries that may result in bats succumbing to their injuries away from turbines (Lawson et al., 2020). Due to the unique respiratory anatomy of birds, they are considered less susceptible to barotrauma than that of mammals, specifically bats (Baerwald et al., 2008) however it is possible.

Research conducted in North America on the relative risk of barotrauma compared with direct collisions has resulted in mixed findings regarding the proportion of deaths that have been attributed to each factor (Ellison, 2012), though it appears the majority of fatalities are due to collisions (Baerwald et al., 2008; Grodsky et al., 2011; Rollins et al., 2012) found that barotrauma to the lungs and possibly other organs accounted for 46% of bats killed at turbines with 92% of the barotrauma in those bats displaying as haemorrhaging in the thoracic and/or abdominal cavities. However, Rollins et al. (2012) found that only 6% (5/81) of bats collected at a wind farm in Illinois had lesions possibly consistent with causation by barotrauma, leading the authors to conclude that “traumatic injury is the major cause of bat mortality at wind farms, and, at best, barotrauma is a minor etiology”. Lawson (2020) used computational fluid-dynamics to model changes in air pressure around moving turbine blades to assess the likelihood of bats occurring within areas of extremely high or lower pressure. The modelled air pressures were also compared to those associated with mortality in rats to assess the likelihood of barotrauma resulting in lethal or sub-lethal injuries to bats. Barotrauma was determined unlikely to be a leading cause of death supporting the alternative hypothesis that collisions are more likely to be the predominant pathway for bat mortalities from operating turbines.

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

6.5.2 Indirect Impacts

The Proposal activities might cause indirect impacts to terrestrial fauna individuals or degradation of habitat. **Table 6.19** identifies the feasible indirect impacts to terrestrial fauna.

Table 6.19 Potential Indirect Impacts to Terrestrial Fauna from the Proposal

Proposal Activity	Threat	Potential Indirect Impact	Assessment		
			Birds	Reptiles	Mammals
Establishment of linear infrastructure	Fragmentation and reduced connectivity between fauna habitats.	• Interruptions to fauna behaviours (migrating, foraging, hunting, breeding, nesting etc.). • Increased exposure to predators at road edges due to loss of cover. • Unauthorised clearing leading to direct impact to habitat for significant fauna.	Low risk due to high mobility.	• At risk. • Exposure to predators at road edges and due to loss of cover.	• At risk. • Fragmentation of habitat.
	Excavations during construction.	Small terrestrial fauna may be trapped in excavations and die, particularly if exposed during the heat of the day or flooded.	Not at risk due to high mobility.	• At risk. • Unlikely to be able to escape excavations.	• At risk. • Expected to be able to escape shallow excavations but could become trapped in deep excavations.
Vehicle movements on roads	Vehicle strike.	Loss of terrestrial fauna individuals.	• Not at risk. • Birds are infrequently impacted by vehicle strike.	• At risk.	• At risk.
General construction and operations	Vibration, noise and light impacts.	• Degradation or reduced suitability of fauna habitat. • Displacement of fauna away from Proposal area into potentially unsuitable habitats.	• Not at risk. • Birds have a large activity range and there is abundant suitable habitat in the vicinity of the Proposal to support their populations.	• At risk. • Light, vibration and noise may impact reptile activities such as foraging and breeding.	• At risk. • Light, vibration and noise may disrupt nocturnal animal behaviours and cause migration away from the Proposal area into potentially unsuitable habitats.
	Barrier effects.	• Degradation or reduced suitability of fauna habitat. • Displacement of fauna away from Proposal area into potentially unsuitable habitats. • Alteration or restriction of regional movement.	• At risk. • Potential for displacement and alteration of movement.	• Low risk. • Habitats for reptiles are largely degraded.	• Low risk. • Habitats for mammals are largely degraded.
Hot works	Changes to fire regime, increased risk of causing a fire that could spread to native vegetation.	• Loss of fauna habitat or individuals in the event of a fire.	At risk.	At risk.	At risk.

6.5.3 Cumulative Impacts

Cumulative impacts to terrestrial fauna could occur from the combination of this Proposal and other proposals in the region. Cumulative impacts are assessed in **Section 11.0**.

6.6 Mitigation to Minimise Impacts on Terrestrial Fauna

This section describes the mitigation measures that have been applied during preliminary design of the Proposal, and the management measures that will be applied during detailed design, construction, and operations, to minimise the Proposal's impact on significant terrestrial fauna. These management measures are included in the Preliminary Construction and Environmental Management Plan (CEMP) (**Appendix D**). The Preliminary CEMP will support approvals and be used as a foundation for the detailed CEMP which will be developed later as the Proposal progresses to the detailed design phase.

The mitigation hierarchy of avoid, minimise, rehabilitate, and offset has been applied in accordance with the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023b). Avoiding and minimising impacts has been applied rigorously to the design process to date on the Project, and will continue during detailed design, construction, and operations, to mitigate the Proposal's impact on significant terrestrial fauna. Numerous Proposal design iterations were undertaken with consideration of ecological values identified and mapped during the field survey program.

6.6.1 Measures to Avoid Impacts on Terrestrial Fauna

The following measures have been implemented to **avoid** potential impacts to significant terrestrial fauna:

- Adoption of a minimum turbine blade tip height of 59 m AGL, which is above the recorded and typical flight height of Black-Cockatoos, which reduces the potential for Black-Cockatoo collision with turbines.
- Avoidance of areas with the highest Black-Cockatoo foraging habitat value based on (Bamford, 2020) site condition scoring, as follows:
    - Avoids all areas assessed as having high-quality foraging habitat (Site condition score of 6).
    - Avoids 466.85 ha (or 99.86%) of the highest quality foraging habitat in the PDE. Of the 467.5 ha of habitat mapped with a foraging condition score of moderate to high or high (Site condition score of 5-6) in the PDE, only 0.65 ha of moderate to high quality foraging habitat (Site condition score of 5) for Carnaby's Black-Cockatoo is proposed to be cleared. The proposed clearing of moderate to high quality Forest Red-tailed Cockatoo foraging habitat is lower at 0.03 ha.
    - As a specific example, relocated the proposed 330 kV transmission line from Walyer Walyer Rd to an area with much lower foraging values, resulting in 1 ha of Black-Cockatoo foraging habitat with a site condition score of 5 being avoided.

- Avoid of all Rank 1 (trees with activity at hollow observed) and Rank 2 (trees with hollows of suitable size with chew marks visible) Black-Cockatoo nest-trees. Three Rank 2 and eight Rank 3 trees were recorded in an earlier iteration of the Indicative Proposal Footprint, and the Proposal design was subsequently readjusted to avoid clearing all of the Rank 2 trees and five of the Rank 3 trees.
- Avoid placement of turbines within 3.5 km of wetlands where migratory shorebirds were recorded in the western side of the PDE
- Avoid permanent placement of ancillary infrastructure in wetland habitat where migratory species have been found to forage during the non-breeding season (Sept – March). Up to 1 ha of degraded wetland foraging habitat may need to be temporarily disturbed for the purposes of connecting to existing Western Power infrastructure. This area is already heavily degraded as a result of agricultural practices and will be rehabilitated to its original conditions following completing of the temporary works.
- Avoid known Black-Cockatoo roosting sites and sets turbines back 4 km from the main observed roosting site (Roost B).

6.6.2 Measures to Minimise Impacts on Terrestrial Fauna

Whilst the Proposal has sought to avoid clearing impacts to all habitat types during the preliminary design phase as far as practicable, the following measures have or will be applied to minimise impacts:

- Through detailed design minimise clearing of Rank 3 (Potentially suitable hollow visible but no chew marks present at entrance; or potentially suitable hollow suspected to be present) Black-Cockatoo breeding trees.
- Minimise clearing of vegetation with moderate to high Black-Cockatoo foraging value (site condition score of 5). The current Indicative Proposal Footprint intersects 0.65 ha of vegetation with moderate to high foraging value. A particular focus of the micro-siting work will be to further reduce this as much as practicable.
- Minimise clearing of riparian habitat. This has been achieved by setting turbines back from riparian vegetation and utilising existing creek crossings where possible.
- Minimise the bisecting of larger patches of vegetation in order to maintain landscape connectivity.

In addition, the following industry standard and best practice measures will be implemented during detailed design, construction, and operations to **minimise** potential impacts to terrestrial fauna:

- A targeted assessment of all unassessed potential breeding trees for Black-Cockatoos will be undertaken within the clearing footprint as part of finalising of the Proposal design.
- Impacts to fauna individuals will be minimised through CEMP procedures that include:
    - Vehicle procedures to minimise the risk of vehicle strike to fauna. This will include enforcing a maximum speed limit based on safety, environmental and operational considerations. Fauna vehicle strikes will be recorded, including relevant details of the incident where available, to adaptively manage vehicle use to minimise fauna strikes.
    - Maintenance of the site in a general tidy and clean condition during construction.

- Fauna welfare procedures, including operational and compliance reporting procedures for injured and/or dead wildlife.
- Training/information requirements for all personnel working on the Proposal, including but not limited to inductions, daily toolbox talks and/or site walk overs which discuss the management measures or risks of a particular location.
- Where threatened or migratory species are encountered during construction, any activities in proximity (<10 m) to their location will cease until they are no longer present. Handling of such fauna is not permitted unless a Section 40 approval has been granted from DBCA.
- Construction and operation personnel training on the potential presence for fauna.
- Procedures for inspection of excavations prior to closing, and relocation of any vertebrate fauna. The inclusion of points of egress in any excavation areas that are left open for more than one night.
- Minimising noise, dust and light impacts through measures such as restriction of construction hours to daylight periods where possible, consideration of plant and equipment types, dust suppression and consideration of the type and use of lighting (e.g., shielded lights on buildings, directing lighting away from habitat).

- The CEMP will include a vegetation clearing procedure to minimise unnecessary clearing of fauna habitat. This will include:
  - Regulatory requirements, management actions or controls to be implemented.
  - Proposal specific land clearing training for personnel to minimise the risk of unplanned, unnecessary, or unauthorised clearing.
  - Measures to protect and recover fauna encountered during vegetation clearing, including the presence of qualified fauna spotters.
  - Preclearance searches of habitat prior to clearing by a qualified fauna spotter, with habitat features/trees clearly identified and searched for fauna. Where significant fauna species are found during pre-clearance surveys, a no-go zone will be established and the area avoided until the individuals have naturally dispersed or have been relocated.
  - Clearing will be undertaken in a slow, progressive manner towards adjacent native vegetation to allow fauna to move into adjacent native vegetation ahead of the clearing activity.
  - Habitat trees within the clearing footprint that can be safely retained will be marked with flagging tape and avoided.
  - Where habitat features such as existing hollow logs cannot be retained in-situ during land clearing, they will be relocated to adjacent areas of suitable habitat if safe and practicable.
- The potential for fire will be minimised via implementation of the CEMP and Project Bushfire Management Plan. Key measures to be implemented include:
  - Hot / hazardous works will not be undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic.
  - Correct storage of flammable or combustible liquids and solids.
  - Fire extinguishers will be in place at high-risk facilities and in site plant and vehicles.
  - The under carriage and radiators of site plant and vehicles shall be free from vegetation.

- Bushfire Management Plan and Bushfire Emergency Response Plan to be developed prior to commencing construction.

- A Bird and Bat Adaptive Management Plan (BBAMP) will be developed and implemented. Implementation of the BBAMP will mitigate the potential impacts of turbine strike on birds and bats via trigger based, adaptive management. Further detail on this plan is provided in the Preliminary BBAMP (**Appendix I**) which will be finalised into a Project BBAMP prior to commissioning of the Proposal. Development and implementation of a Project BBAMP, in consultation with DBCA, forms Condition 22 of the Development Approval granted on 23 October 2025 under the *Planning and Development Act 2005* (WA).
- A carrion removal program will be implemented to minimise the attraction of scavenging fauna should any turbine collision with a bird or bat occur.

6.6.3 Rehabilitation Measures for Terrestrial Fauna

With the exception of 1 ha of degraded wetland, all proposed fauna habitat clearing is required to support permanent infrastructure. This limits the potential for rehabilitation of fauna habitat clearing.

The 1 ha of degraded wetland habitat is required to be temporarily disturbed for the purposes of connecting to existing Western Power infrastructure. This area is already heavily degraded as a result of agricultural practices and will be rehabilitated to its original conditions following completing of the temporary works.

Areas cleared for temporary infrastructure will be confined to previously disturbed areas. These areas will be rehabilitated to their pre-disturbance conditions when no longer required.

6.6.4 Offsets for Residual Impacts on Terrestrial Fauna

Offsets are expected to be required via a Part V EP Act Native Vegetation Clearing Permit as discussed in **Section 8.0**.

6.7 Assessment of Residual Impacts on Terrestrial Fauna

The assessment of impacts focuses on potential residual impacts to significant fauna values, following mitigation of impacts as described in the above section. Significant fauna values in the Proposal area include:

- Terrestrial fauna habitat.
- Terrestrial fauna species identified as threatened or priority fauna (under the EPBC Act or BC Act) – recorded by Proposal surveys or rated as having a moderate or higher likelihood of occurrence in the PDE.

6.7.1 Residual Impacts on Terrestrial Fauna Habitats

The Proposal is not likely to have a significant impact on fauna habitat types.

Residual impacts to terrestrial fauna habitats are based on the Indicative Proposal Footprint. The Proposal has sought to utilise cleared areas as much as possible as it provides the least fauna habitat value. As a result, 87% of the Indicative Proposal Footprint comprises of terrestrial fauna habitat

mapped as Cleared, and at least 98% of the uncleared terrestrial fauna habitat in the PDE will remain outside the Indicative Proposal Footprint. Detailed design will aim to further minimise clearing of terrestrial fauna habitat.

The Proposal may directly impact up to 91.92 ha of terrestrial fauna habitat within the Indicative Proposal Footprint, the majority of which comprises Disturbed Woodland (17.81 ha) and Scattered Trees (61.81 ha). It should be noted however that direct vegetation clearing will not exceed 10.28 ha of remnant native vegetation, 5.45 ha of isolated remnant trees and 7.33 ha of planted vegetation (native and non-native), thereby indicating that the majority of this terrestrial habitat (approximately 75%) is cleared land.

The area of each habitat type that may be impacted may vary depending on the actual infrastructure layout but would not exceed the amounts in **Table 6.20**. The proposed clearing predominantly comprises multiple edges of small remnant habitat patches with relatively low habitat values due to degraded understorey and the presence of feral animals.

Potential indirect impacts on terrestrial fauna habitat types include degradation due to fragmentation, edge effects and fire. Vegetation clearing is predominantly restricted to minor vegetation clearing at the perimeter of remnant patches, and no clearing is proposed where larger remnant patches would be bisected by Proposal infrastructure. All infrastructure that does bisect habitats, such as creekline habitats, has been primarily restricted to existing access tracks where habitat is already degraded and there is little canopy connectivity or understorey present. Edge effects are therefore unlikely to further degrade habitats or increase predation exposure beyond the current state.

As the Proposal is in an area historically disturbed for agriculture and utilises predominantly cleared or degraded areas, the Proposal is not expected to have a significant impact on terrestrial fauna habitat.

Table 6.20 Predicted Impacts on Terrestrial Fauna Habitat Types

Habitat Type	Habitat in PDE*		Habitat in Indicative Proposal Footprint*		Proportion of Total Habitat Type in Indicative Proposal Footprint*
	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Proportion (%)
Banksia Woodland (BW)	165.77	1.06	0.53	0.07	0.32
Cleared (CL)	11,014.34	70.53	637.19	87.39	5.79
Disturbed Woodland (DW)	766.85*	4.91	17.81	2.44	2.32
Flooded Gum Forest (FG)	356.34	2.28	2.43	0.33	0.68
Low Shrubland (LS)	186.79	1.20	3.14	0.43	1.68
Melaleuca Dampland (MEL)	39.85	0.26	0.0	0.00	0.0
Marri Jarrah Forest (MJ)	114.87	0.74	0.10	0.01	0.09
Other	23.30	0.15	0.19	0.03	0.83

Habitat Type	Habitat in PDE*		Habitat in Indicative Proposal Footprint*		Proportion of Total Habitat Type in Indicative Proposal Footprint*
	Area (ha)	Proportion (%)	Area (ha)	Proportion (%)	Proportion (%)
Pine Plantation (PP)	169.37	1.08	1.09	0.15	0.64
Scattered Trees (ST)	2,281.89	14.61	61.81	8.48	2.71
Waterbodies (WB)	93.74	0.60	0.0	0.00	0.0
Wetlands (WET)**	404.54	2.59	4.81	0.66	1.19
Total	**15,617.63**	**100**	**729.11**	**100**	

*Based on broadscale fauna habitat mapping that includes native vegetation and cleared land.

**The 1 ha of wetland habitat that will be temporarily cleared is based on the geomorphic wetlands of the Swan Coastal Plain DBCA (2025b) mapping, in conjunction with in-field assessments (of wetland features and bird presence) and existing data.

6.7.2 Residual Impacts on Listed Terrestrial Fauna

Terrestrial fauna and the habitats upon which they depend may be directly and indirectly impacted by the Proposal.

The subsequent sections present the assessment of impacts for each conservation significant terrestrial fauna species with Moderate or higher likelihood of occurrence in the PDE. A more detailed significant impact assessment for the EPBC Act listed species is provided in **Appendix O**.

6.7.2.1 Black Cockatoos

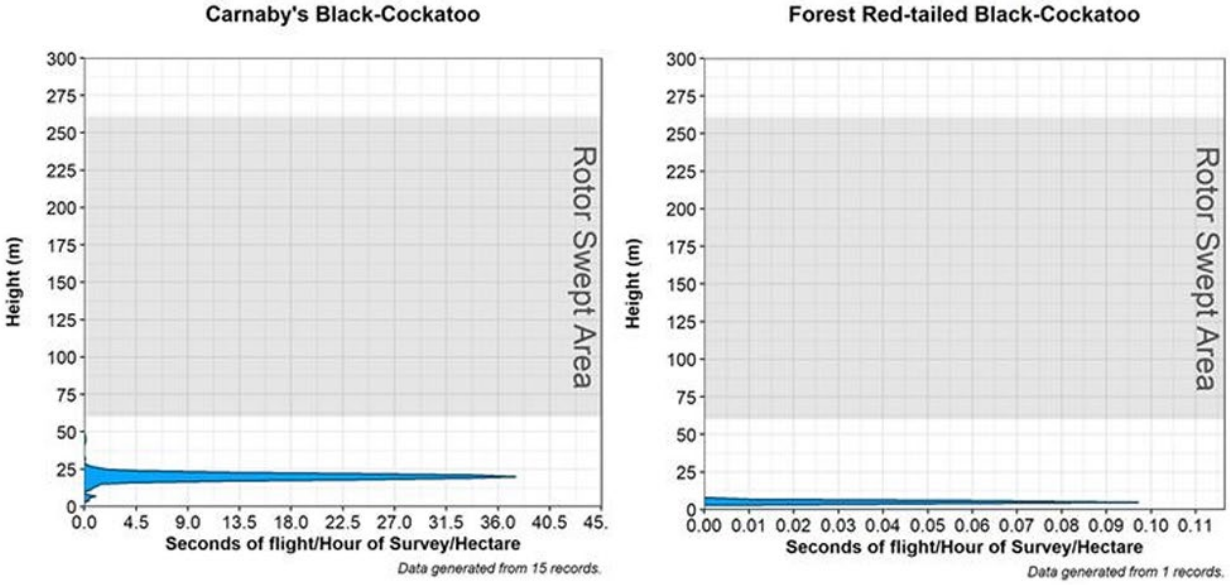
This section assesses potential impacts on Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoo individuals and habitat.

Direct Mortality

Direct impact on individual Black-Cockatoos by turbine collision is considered unlikely based on the risk assessment undertaken in the BBUA (Umwelt, 2025c). Direct mortality as a result of the Proposal will not have a significant impact on Black-Cockatoos through the adoption of a minimum blade tip height of 59 m AGL.

ERMs were generated for Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoo, with the outputs presented in **Figure 6.11**. Neither species were observed flying within RSA during the BBUS program. The Carnaby's Black-Cockatoo was observed on 42 instances, all of which were below RSA. A majority of this flight time occurred below 30 m AGL (99%) which is significantly below the RSA. The ERM (**Figure 6.11a**) for Carnaby's Black-Cockatoo was based on 15 records with a mean convergence of 0.93 meaning the flight behaviour for the species is approaching the significance threshold of 0.95. Based on similar flight behaviours, this generalisation can likely be applied to the Forest Red-tailed Black-Cockatoo as well. The Carnaby's Black-Cockatoo was recorded flying at a maximum height of 50 m AGL and the Forest Red-tailed Black-Cockatoo was recorded flying at a maximum height of 8 m AGL (**Figure 6.11b**).

Neoen is also collecting Black-Cockatoo flight height data for other potential wind farm projects in the Wheatbelt region. To date, flight height data has been recorded for 80 Carnaby's Black-Cockatoo flights with the maximum height observed being 50 m AGL. For the Forest Red-tailed Black-Cockatoo, data has been recorded for 16 flight heights, with the maximum flight height recorded being 40 m AGL.



a) Exposure risk model for Carnaby's Black-cockatoo (*Zanda latirostris*, EN) built from 15 flight records. The mean convergence of new data is 0.93+/-SD0.19. This ERM is approaching the our significance threshold of 0.95-1, however, the high variance in flights indicates more records will need to be collected.

b) Exposure risk model for Forest Red-tailed Black-cockatoo (*Calyptorhynchus banksii naso*, VU) built from a single flight record. This ERM should not be considered a complete, representative sampling of the species' flight behaviour.

Figure 6.11 Exposure Risk Models for (a) Carnaby's Black-Cockatoo and (b) Forest Red-tailed Black-Cockatoo

Black-Cockatoo studies or assessments have been completed for other wind farms in the Dandaragan region with relevant information as related to potential collision risk for these species, summarised below:

- Between August 2024 and March 2025, Bamford Consulting Ecologists (BCE) conducted BBUS across four wind farm sites located between Perth and Eneabba. Similar to the Yathroo PDE, all sites were situated in agricultural landscapes with remnant native vegetation, and contained habitats known to support Carnaby's Black-Cockatoo. The four BBUS yielded 3,772 records over 224 hours of observation. With the exception of one, all flight heights were found to range between 0–50 m AGL, with group sizes varying from 1 to 400 individuals. Several flocks were observed to exhibit "vortexing" behaviour in response to disturbances such as vehicles or raptors. Despite this, only one flight height was recorded above 50 m AGL, and consisted of two birds that briefly rose to an estimated height of 60 m before descending (Bamford, 2025).
- RPS (2010) found during field surveys that Carnaby's Black-Cockatoo tend to frequent low-lying areas of the landscape with flight movements following valleys with woodland vegetation, with 88% of species observed as flying below 40 m (n=100 observations), while Ecoscape (2019) found 80% of flocks flying <20 m AGL (n=25 observations). EPA (2019) also noted that the Carnaby's Black-Cockatoo tends to follow vegetation corridors, actively avoiding cleared and open areas, which is likely applicable to all Black-Cockatoo species found in south-west WA. When crossing areas of expansive open ground (or low vegetation such as heaths) Black-Cockatoos tend to fly close to the ground surface. In circumstances where birds are passing across less-expansive

cleared areas between patches of remnant trees or isolated individual trees (as is present throughout much of the PDE) they usually maintain a 'canopy height' flight path (Umwelt, 2025d). Instances where Black-Cockatoos may otherwise exceed 50 m AGL in flight height are likely restricted to evading large predatory raptors such as eagles or when congregating in large numbers.

- Further, post-commissioning monitoring for the Carnaby's Black-Cockatoo at Badgingarra wind farm in 2019 which has a minimum tip height of 20 m AGL recorded no collisions with turbines (Ecoscape, 2019), and none were reported at the Warradarge Wind Farm Perth during monitoring from 2020 to 2022 (Bright Energy Investments, n.d.). The search method for carcasses as Warradarge Wind Farm is not publicly available and Badgingarra wind farm undertook a total of six surveys in 2019 at eight reference turbine sites and eight randomised turbine sites using a search area of 250 m x 250 m.

Based on the above, and through the adoption of a minimum blade tip-height of 59 m AGL, direct mortality to Black-Cockatoos as a result of turbine and blade strike is unlikely.

Foraging Habitat

Habitat loss as a result of the Proposal is unlikely to result in a significant impact to Black-Cockatoos. The area and quality of habitat proposed to be impacted in the Indicative Proposal Footprint is low through avoidance of impacts through Proposal design. This includes avoiding:

- All high-quality foraging value habitat (Site condition score of 6).
- Clearing of 5.70 ha of Carnaby's Black-Cockatoo moderate to high foraging value habitat (Site condition score of 5) mapped in the Targeted Fauna Habitat Survey Area, with clearing of moderate to high foraging habitat limited to 0.65 ha.
- Clearing of 0.89 ha of Forest Red-tail Black-Cockatoo moderate to high foraging value habitat (Site condition score of 5) mapped in the Targeted Fauna Habitat Survey Area, with clearing of moderate to high foraging habitat limited to 0.03 ha.
- Clearing of 466.85 ha (or 99.86%) of moderate to high and high quality foraging habitat (Site condition score of 5 or 6) mapped in the PDE based on broader scale habitat mapping (see **Section 6.4.4** for areas of foraging habitat assessed in the PDE).
- Clearing Rank 1 and Rank 2 potential Black-Cockatoo nest-trees.
- Known roost sites within the PDE.

The Proposal has sought to minimise the clearing of native vegetation as far as practicable, culminating in clearing limits of 10.28 ha of remnant native vegetation, 5.45 ha of isolated remnant trees in cleared agricultural land and 7.33 ha of planted vegetation (native and non-native). The foraging values of this vegetation to both species of Black-Cockatoos are presented in **Table 6.21** and **Table 6.22**, along with the foraging value of vegetation in the Targeted Fauna Habitat Survey Area and the area of this vegetation avoided. This demonstrates that the Proposal has been designed to avoid and minimise direct impacts to Black-Cockatoo habitat of moderate and higher value.

Table 6.21 Carnaby's Black-Cockatoo Foraging Habitat Values within Indicative Proposal Footprint and Avoided

Foraging Value Score out of 6 based on Site Condition (BCE, 2020)	Foraging Value Score out of 10 (BCE, 2020)*	Targeted Fauna Survey Area (ha)	Indicative Proposal Footprint (ha)	Area Avoided (ha)
0: No foraging value	0	3.08	1.42	1.66
1: Negligible to low foraging value	1	20.70	6.30	14.40
2: Low foraging value	2	19.34	4.32	15.02
3: Low to moderate foraging value	5*	26.64	6.63	20.01
4: Moderate foraging value	6*	10.44	2.68	7.77
5: Moderate to high foraging value	7*	6.35	0.65	5.70
6: High foraging value	8*	0.00	0.00	0.00
Not assessed		**1.16**	**1.05**	**0.11**
Total		**87.72**	**23.05**	**64.67**

*Context score=1, Species density score=1

Table 6.22 Forest Red-tailed Black-Cockatoo Foraging Habitat Values of Vegetation within Indicative Proposal Footprint and Avoided

Foraging Value Score out of 6 based on Site Condition (BCE, 2020)	Foraging Value Score out of 10 (BCE, 2020)*	Targeted Fauna Survey Area (ha)	Indicative Proposal Footprint (ha)	Area Avoided (ha)
0: No foraging value	0	34.40	12.65	21.75
1: Negligible to low foraging value	1	1.26	0.21	1.05
2: Low foraging value	2	14.21	2.76	11.45
3: Low to moderate foraging value	5*	20.03	3.08	16.94
4: Moderate foraging value	6*	15.74	3.27	12.47
5: Moderate to high foraging value	7*	0.91	0.03	0.89
6: High foraging value	8*	0.00	0.00	0.00
Not assessed		**1.16**	**1.05**	**0.11**
Total		**87.72**	**23.05**	**23.05**

*Context score=1, Species density score=1

The proposed clearing of Black-Cockatoo foraging habitat of any value by the Proposal represents approximately 0.05% of the potentially suitable foraging habitat in remnant vegetation within 12 km of the PDE (refer **Table 6.6**).

A potential Black-Cockatoo nest assessment recorded 560 potential nest-trees (DBH > 500 mm) within the Targeted Fauna Habitat Survey Area, 112 of which lie in the Indicative Proposal Footprint. No active nests (Rank 1) were recorded within the Targeted Fauna Habitat Survey Area, and although three Rank 2 and eight Rank 3 trees were recorded in the Indicative Proposal Footprint at the time of survey, Proposal design was readjusted to avoid clearing all of the Rank 2 trees and five of the Rank 3 trees.

Two roosting sites have been identified during the field survey program both of which lie outside the Indicative Proposal Footprint.

Based on the above, residual impacts to Black-Cockatoo habitat is unlikely to result in a significant impact to either Carnaby's Black-Cockatoo or Forest Red-Tailed Black Cockatoo.

6.7.2.2 Blue-billed Duck, *Oxyura australis*

This section assesses potential impacts on the recorded occurrences and habitat values of the Blue-billed Duck, *Oxyura australis* (BC Act Priority 4), which was recorded during five separate surveys at two separate wetlands.

The Blue-billed Duck is partially migratory and generally disperses from breeding areas in April or May, returning in July or August. It is considered likely that the species regularly occurs in, or moves through, the PDE.

Flight height data from published literature or field surveys of the Blue-billed Duck is limited; however, the species is known to make longer distance movements between preferred breeding and foraging habitat and may occasionally occur at RSA during such movements. Reid et al. (2023) suggests that approximately 50% of the species' flight time occurs at altitudes between 30 m and 350 m AGL.

The Blue-billed Duck has been recorded at two wetlands as illustrated in **Figure 6.7**, however no flight data has been captured to date. The species has a 'High' risk of turbine collision based on the flight height at RSA, however this comprises a 'Moderate' consequence rating given that it is dispersive and is not likely to be restricted to habitats in the PDE.

The Proposal will not be clearing any wetland habitat where Blue-billed Duck have been mapped as Known or Likely to occur.

Conclusion

The Proposal will not result in any loss of wetland habitat where Blue-billed Duck have been recorded or is likely to occur. No flight height data has been collected for the species, and risk of collision will be managed through implementation of the Project BBAMP.

6.7.2.3 Peregrine Falcon, *Falco peregrinus*

This section assesses potential impacts on the recorded occurrences and habitat values of the Peregrine Falcon, *Falco peregrinus* (BC Act Other Specially Protected Fauna), which was recorded during each BBUS event. The species is likely to regularly occur in, or move through, the PDE.

The Peregrine Falcon is a diurnal (or crepuscular) bird of prey that hunts on the wing, predominantly for birds (including pigeons, parrots and passerines) but may also take mammals (e.g. possums, rabbits), reptiles, fish or carrion. Nesting occurs mainly on cliff ledges, granite outcrops and quarry or mine-pit faces but may also use the old nests of other species (e.g. ravens, eagles) in tall trees or ledges on tall buildings. The main current threat to the species in Australia is habitat loss, particularly woodland trees for nesting.

All habitats within the PDE represent potential foraging and dispersal habitat. However, the Peregrine Falcon maintains large home ranges of approximately 20 - 30 km^2 (2,000 - 3,000 ha) (Australian Museum, 2019), and individuals are unlikely to be solely reliant on any habitats in the Indicative Proposal Footprint or broader PDE for foraging, dispersal or breeding.

Habitat units in the Indicative Proposal Footprint and broader PDE do not have specific values that are important to support Peregrine Falcon. Therefore, there is not expected to be a direct impact on Peregrine Falcon habitat values from the Proposal.

A high proportion of Peregrine Falcon's flight activity is likely to be at RSA height, and consequently a 'High' risk of turbine collision was assigned to this species (Umwelt, 2025c), however this rating also comprises a 'Moderate' consequence rating given its widespread distribution across a variety of habitats. The preliminary BBAMP outlines a monitoring program to identify bird mortality due to collision associated with the Proposal and inform adaptive management processes to minimise impacts to bird species.

Conclusion

The Proposal will not have any direct impacts on habitat values that are important to support Peregrine Falcon. There is potential for direct impact on individuals due to turbine collision, however the species is unlikely to be concentrated in large numbers in the PDE. Proposal activities are not expected to have any residual significant impact to this species, including at a local level.

6.7.2.4 Curlew Sandpiper, *Calidris ferruginea*

This section assesses potential impacts on the Curlew Sandpiper, *Calidris ferruginea* (EPBC Act Critically Endangered and Migratory; BC Act Critically Endangered). This species is discussed separately here due to its Critically Endangered status under the WA BC Act. Other migratory shorebirds are discussed in **Section 6.7.2.5**.

While the Curlew Sandpiper was not recorded during Proposal studies its potential for occurrence in the vicinity of the PDE was indicated in all database searches undertaken. It is expected that the Curlew Sandpiper may use wetland habitats in the area during the non-breeding season and was assessed as having a 'High' likelihood of occurrence in the PDE.

The Curlew Sandpiper is a non-breeding migrant to Australia. In Australia, the species mainly occurs on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They have also been recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters and forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. Curlew Sandpipers generally roost on bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh (Higgins & Davies, 1996).

The key threat to the Curlew Sandpiper in Australia as identified in the SPRAT profile for the species is habitat alteration (DCCEEW, 2015).

The most suitable and preferred migratory shorebird habitat within the PDE is limited to three wetlands west of Brand Highway totalling 264 ha. The much smaller Lake Yangy (14.5 ha) to the east has the potential to support migratory shorebirds, however is likely not as suitable or preferred as the wetlands to the west of Brand Highway. The locations of these wetlands are presented in **Figure 6.6.**

Direct habitat loss of these four wetlands will be limited to 1 ha of degraded vegetation on the edge of one of the wetlands to the west, that will be rehabilitated at the end of construction. Although this area is within the area mapped as wetlands based on DBCA geomorphic wetlands spatial data, it is fringing vegetation adjacent to the wetland and is unlikely to contain foraging habitat. The clearing of this degraded habitat is required to connect to existing transmission line and is already subject to agricultural activities.

Conclusion

The Proposal is not likely to have a significant residual impact on the Curlew Sandpiper. There will be no permanent clearing of the most suitable habitat for this species within the PDE. Furthermore, should the species be recorded within the PDE during future surveys, it would most likely be recorded in the wetlands west of the Brand Highway that have been setback 3.5 km from the nearest turbine.

6.7.2.5 Migratory Shorebirds

This section provides a summary of potential residual impacts to migratory shorebirds recorded, or with a moderate or greater likelihood of occurrence in the PDE.

Six migratory shorebirds have been recorded within the PDE as part of the field survey program to date, with a further six having a moderate or high likelihood of occurring in the PDE including the Curlew Sandpiper (discussed in **Section 6.7.2.4**). All 12 of these species are non-breeding migrant visitors to Australia during the austral summer, with the majority migrating from Europe and Russia. Their preferred habitats are typically coastal environments with some utilising near-shore wetlands and other water bodies.

All records of migratory shorebirds have been in the wetlands West of Brand Highway and these wetlands are considered to provide the most suitable habitat for migratory shorebirds in the PDE. Five of the species were recorded during the Summer 2025 BBUS, and the number of individuals did not exceed five for any of these species. A total of 15 Wood Sandpiper individuals were recorded on two separate occasions during the Basic and Targeted Fauna Survey in Spring 2024. These low numbers and limited occurrence observations indicate opportunistic, intermittent and low-density use of the most suitable seasonal wetland habitats in the PDE.

EPBC Act Policy Statement 3.21: *Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (DoEE, 2017) identifies loss of habitat, degradation of habitat, increased disturbance and direct mortality as the primary significant impacts on migratory birds. A brief assessment against these is provided in **Table 6.23**, with a more detailed assessment against the Significant Impact Guidelines 1.1 (Department of the Environment, 2013) provided in **Appendix O.**

Table 6.23 Assessment of Potential Impacts on Migratory Shorebirds

Potential Impact	Impact Assessment
Habitat Loss	Habitat loss as a result of the Proposal is not likely to have a significant impact on migratory shorebirds. The most suitable and preferred migratory shorebird habitat within the PDE is limited to three wetlands west of Brand Highway totalling 264 ha. The much smaller Lake Yangy (14.5 ha) to the east has the potential to support migratory shorebirds, however is likely not as suitable or preferred as the wetlands to the west of Brand Highway. Direct habitat loss will be limited to the temporary clearing of 1 ha of degraded vegetation on the edge of one of the wetlands that is unlikely to contain foraging habitat. This cleared area will be rehabilitated at the end of construction.
Habitat Degradation	Habitat degradation as a result of the Proposal is unlikely to have a significant impact on migratory shorebirds. The wetlands West of Brand Highway where migratory shorebirds have been recorded are currently subjected to agricultural pressures, and the vegetation surrounding the wetlands has been mapped as being in Degraded and Completely Degraded condition. The main ancillary infrastructure to be constructed West of Brand Highway are the BESS, substation and Western Power terminal. Construction of these facilities will be undertaken in accordance with the Project CEMP (**Appendix D**) which sets out management measures to be implemented to protect the key environmental values of the area such as surface water, vegetation and fauna habitat. Through site design and implementation of the CEMP, wetland hydrology and ecological function is expected to remain unaffected as a result of construction and operation activities.
Increased Disturbance	The Proposal is not likely to result in a level of disturbance that will significantly impact migratory shorebirds. The migratory shorebirds recorded in the PDE to date are mobile non-breeding species that use a wide network of coastal environments and inland wetlands across Australia during the austral summer. Turbines have been setback more than 3.5 km from wetlands where migratory shorebirds have been recorded. Other ancillary infrastructure such as the BESS, substation and Western Power terminal has been set back over 175 m from the closest edge of these wetlands which is more than the minimum 165 m minimum buffer recommended by (DoEE, 2017). Whilst there is the potential for temporary disturbance to migratory shorebirds during construction of the BESS, substation and Western Power terminal, this will be limited to approximately 24 – 30 months and to the edges of the wetlands closest to the construction footprint. Adjacent wetlands, and the edges of wetlands set further back from the construction footprint can still be utilised by migratory shorebirds if required.
Direct Mortality	Direct mortality as a result of the Proposal is unlikely to have a significant impact on migratory shorebirds. Collision with turbines and turbine blades poses the key direct mortality risk to shorebirds. Turbines have been setback over 3.5 km from the wetlands west of Brand Highway where migratory shorebirds have been recorded to date. Within the PDE, no migratory shorebirds have been recorded in any of the wetlands/water bodies east of Brand Highway.

Conclusion

Impacts associated with habitat loss, habitat degradation and increased disturbance are not likely to have a significant impact on migratory shorebirds.

Current understanding of migratory shorebird use of the PDE indicates that significant impacts as a result of turbine strike are unlikely. As a precautionary and conservative approach, targeted migratory shorebird surveys are being undertaken between September 2025 and March 2026 to gather further information on flight heights, population density and usage of the various wetlands within the PDE. Outcomes from this monitoring will be used to inform the Proposal detailed design and the management and mitigation measures in the Project BBAMP.

6.7.2.6 Other Listed Fauna

There are three listed terrestrial fauna species in addition to those discussed in the preceding sections which were not recorded during Proposal studies, but have a moderate likelihood of occurring in the PDE. Assessment of potential impacts to these species is summarised in **Table 6.24**.

Note that the Western Rosella (inland), *Platycercus icterotis xanthogenys* (BC Act Priority 4) was returned in the DBCA database searches undertaken for the Basic and Targeted Fauna Assessment report, and was noted as having a Moderate likelihood of occurrence. However, this species was later assessed as being misidentified and the records were most likely the South-West Western Rosella (*Platycercus icterotis icterotis*) which is a non-listed species. The range of the Western Rosella (inland) extends from Toodyay (the most western location) eastward past Kambalda and is locally extinct in Dandaragan (DEC, 2009).

Table 6.24 Potential Impacts to Other Listed Fauna with Moderate Likelihood of Occurrence

Species	Suitable Habitat Types in Indicative Proposal Footprint	Assessment of Impacts from the Proposal
Fork-tailed Swift (*Apus* pacificus) (EPBC Act and BC Act Migratory)	No terrestrial or wetland habitat required. Species uses aerial foraging space only and does not roost or breed in Australia.	The Fork-tailed Swift is highly aerial and may occasionally utilise the airspace above the Indicative Proposal Footprint for foraging or dispersing, particularly during favourable conditions. Approximately 50% of the species' flight time occurs at between 30 to 350 m AGL, however it uses a range of habitats over a large distribution and is not restricted or concentrated in the PDE (**Appendix I** – Appendix A). The Proposal is therefore unlikely to have a significant impact on this species.
Water Rat, Rakali (*Hydromys chrysogaster*) (BC Act Priority 4)	May occur in wetland habitats.	Impacts to wetland habitats are limited to 1 ha of degraded vegetation on the edge of the sumpland at the western extent of the Indicative Proposal Footprint, which will be rehabilitated at the end of construction. The clearing of this degraded habitat is required to connect to existing transmission and is already subject to agricultural activities. Potential indirect impacts to the wetland will be managed through procedures outlined in the CEMP. The Water Rat is unlikely to be impacted by the Proposal.
Blue-striped Burrowing Snake (*Neelaps calonotos*) (BC Act Priority 3)	Suitable habitat occurs in sections of Low Shrubland and Banksia Woodland on sandy soils.	Impacts to Low Shrubland and Banksia Woodland habitats are limited to a total of 3.67 ha in the Indicative Proposal Footprint, which represents 0.02% of these habitat types in the entire PDE. Clearing avoids vegetation in Very Good or better condition. How and Shine (1999) suggest that this and similar snakes require large areas of continuous habitat for long-term persistence. Clearing for the Proposal is predominantly restricted to vegetation at the perimeter of remnant patches, and no clearing is proposed where larger remnant patches would be bisected by infrastructure. The CEMP includes procedures requiring slow and directional vegetation clearing to allow fauna individuals to disperse into adjacent areas. This species is therefore unlikely to be impacted by the Proposal.

6.7.3 Residual Impacts on Other Terrestrial Fauna

The residual impacts to other terrestrial fauna are not likely to be significant given that the Proposal avoids the majority of fauna habitats, particularly areas of higher value. Impacts will be actively managed through the CEMP and the BBAMP. A summary of potential residual impacts of the Proposal on non-listed raptors and bats recorded in the PDE, along with general indirect impacts on terrestrial fauna, is provided below.

Raptors

There were 12 non-listed raptors (11 diurnal and one nocturnal) recorded during the Proposal studies. All of the diurnal raptors recorded have published reports of turbine strikes from Australian wind farms (Umwelt, 2025c). An overall turbine collision risk rating of 'Moderate' was assigned to all diurnal raptors based on a 'Likely' likelihood rating as they were either observed flying within RSA or considered likely to fly often at RSA based on their known flight behaviours. The overall risk rating also comprised a 'Low' consequence rating due to all species being common, widely distributed and with stable populations.

The preliminary BBAMP outlines a monitoring program to identify bird mortality due to collision associated with the Proposal and inform adaptive management processes to minimise impacts to birds.

Bats

There were seven non-listed microbat species recorded within the PDE. While no published data has been identified on microbat turbine strikes in Western Australia, recorded turbine strikes have been published elsewhere within Australia for most of the species recorded during the Proposal studies. In particular the White-striped Free-tailed Bat is considered prone to turbine collision mortality (Australasian Bat Society, 2024).

A 'High' risk of turbine collision was assigned for the microbat species recorded due to the potential for flight height at RSA at least occasionally. Three of the species recorded; White-striped Free-tailed Bat, Gould's Wattled Bat, and Western Free-tailed Bat are known to regularly hunt above the tree canopy and may commute long distances between roosting and foraging sites at RSA. A 'Moderate' consequence rating was assigned to all microbat species recorded given that suitable habitat is largely restricted to remnant vegetation and anthropogenic structures (Umwelt, 2025c). The Proposal has mostly avoided vegetation remnants, particularly those in Good condition or better that would likely provide the most suitable habitat for microbats.

The preliminary BBAMP outlines a monitoring program to identify bat mortality due to collision associated with the Proposal and inform adaptive management processes to minimise impacts to microbat species.

General Indirect Impacts

Potential indirect impacts on terrestrial fauna from the Proposal may include interruptions to behaviours from habitat fragmentation, displacement from construction or operation, increased predation exposure or degradation of habitat due to edge effects, vehicle strike and fire.

Mitigation measures outlined in the CEMP will reduce the risk of vehicle strike and fire, and these are unlikely to present a significant threat to terrestrial fauna in the PDE.

Given the linear nature of the Proposal, generally narrow width of access tracks and the nature of vegetation clearing proposed, faunal movement and continued use of habitat throughout the Indicative Proposal Footprint is unlikely to be materially impacted.

The PDE comprises a complex mosaic of remnant native vegetation patches, plantations, planted windbreaks and agricultural lands, and has been subject to considerable disturbance and development with many parts still subject to these pressures. Connectivity of the remnant vegetation (for most terrestrial vertebrate fauna) is present, although tenuous in most places. The western parts of the PDE directly abut other existing remnants, namely Eneminga and Namming Nature Reserves. There is very limited connectivity to the north, south and east of the PDE, which largely comprises agricultural lands. It is expected that there may be barriers to the movement of some smaller fauna, such as reptiles, to and from the PDE but that other, more mobile taxa (such as birds, bats and larger non-volant mammals) are unlikely to be significantly inhibited.

Vegetation clearing is predominantly restricted to minor vegetation clearing at the perimeter of remnant patches. All infrastructure that does bisect habitats, such as creekline habitats, has been primarily restricted to existing access tracks where vegetation is already degraded and there is little canopy connectivity or understorey present. Edge effects are therefore unlikely to further degrade habitats or increase predation exposure beyond the current state.

6.7.4 Significance of Residual Impacts on Terrestrial Fauna

The Proposal is unlikely to have a significant impact on the biological diversity and ecological integrity of terrestrial fauna in the PDE and surrounds. **Table 6.25** provides an assessment of the significance of residual impact with reference to the "consideration of significance" matters listed in the Statement of environmental principles, factors, objectives and aims of EIA (EPA, 2021b).

Table 6.25 Significance of Residual Impact on Listed Fauna

Significant Matters	Significance of the residual impact of the Proposal in the regional context
Object and principles of the Act	Specialist surveys and assessments have been undertaken to inform appropriate mitigations and reduce scientific uncertainty. The studies have been undertaken by suitably qualified consultants and include reconnaissance and targeted terrestrial fauna and fauna habitat surveys of the PDE in accordance with relevant EPA guidelines. Results of the terrestrial fauna and habitat surveys have informed avoidance of impacts. Avoiding impacts to the point of the lowest possible impact is a precautionary approach which limits reliance on minimise, rehabilitate, and offset impacts. Specifically, the precautionary principle has been applied through avoidance of: • High foraging value habitats for Black-Cockatoos (site condition sore of 6). • Rank 1 (trees with activity at hollow observed) and Rank 2 (with hollows of suitable size with chew marks visible) Black-Cockatoo nest-trees. • Placement of turbines within 3.5 km of wetlands where migratory shorebirds were recorded in the western side of the PDE

Significant Matters	Significance of the residual impact of the Proposal in the regional context
	• Permanent clearing of wetland habitats where migratory species have been found to forage during the non-breeding season (Sept – March). • Known Black-Cockatoo roosting sites.
Values, sensitivity, and quality of the environment that is likely to be impacted	The primary fauna habitats in the PDE comprise of scattered trees in cleared land and disturbed woodlands. The disturbed woodlands fauna habitat primarily comprises of Eucalyptus woodland with little to no understorey species (due to high grazing pressure), however also includes planted avenue trees and wind breaks. Up to 61.81 ha of fauna habitat types broadly mapped as scattered trees in cleared areas and 17.81 ha of disturbed woodlands will be directly impacted in the Indicative Proposal Footprint. However, these habitat types have been mapped at a broad level and contain a large amount of cleared aeras (approximately 75%), and as such the area of remnant native vegetation within these mapped fauna habitats is significantly less. Proposed clearing of remnant vegetation and planted trees in the Indicative Proposal Footprint represents approximately 0.05% of potentially suitable Black-Cockatoo foraging habitat within 12 km of the PDE, and there will be no permanent clearing of wetland habitat within the PDE likely to support migratory shorebirds.
All stages and components of the proposal	The impact assessment considers all components of the Proposal that might directly and indirectly impact terrestrial fauna.
Extent (intensity, duration, magnitude, and footprint) of likely impacts	The maximum extent of vegetation clearing will comprise 10.28 ha of native remnant vegetation, 5.45 of isolated native trees and shrubs, and 7.33 ha of planted vegetation (native and non-native) in the Indicative Proposal Footprint. This results in 1.68% of current native remnant vegetation in the PDE being cleared and 2.77% of the current planted vegetation present being cleared. No vegetation of high-quality Black-Cockatoo foraging value will cleared, and clearing of moderate to high foraging value vegetation will not exceed 0.65 ha. No known or likely suitable migratory shorebird habitat will be permanently cleared. Habitat removal will be undertaken progressively over a 36 month period, and will be done so in accordance with the Proposal's land disturbance clearing procedure to avoid unnecessary or over clearing.
Resilience of the environment to cope with the impacts, including pressures such as climate change	The majority of the Indicative Proposal Footprint has already been cleared for agricultural purposes. Climate change is predicted to lead to increased drought and extreme weather events in the region, which would increase pressure on native vegetation. The Proposal seeks to generate renewable energy, thereby seeking to address climate change pressures.
Application of the mitigation hierarchy	The Indicative Proposal Footprint has avoided: • High foraging value vegetation for Black-Cockatoos (site condition sore of 6). • Rank 1 (trees with activity at hollow observed) and Rank 2 (with hollows of suitable size with chew marks visible) Black-Cockatoo nest-trees.

Significant Matters	Significance of the residual impact of the Proposal in the regional context
	• Placement of turbines within 3.5 km of wetlands where migratory shorebirds were recorded in the western side of the PDE • Permanent clearing of wetland habitats where migratory species have been found to forage during the non-breeding season (Sept – March). • Known Black-Cockatoo roosting sites. The Proposal has adopted a minimum turbine blade tip height of 59 m AGL that is above the typical flight height for Black-Cockatoos. The Proposal has sought to minimise: • Clearing of Rank 3 (Potentially suitable hollow visible but no chew marks present at entrance; or potentially suitable hollow suspected to be present) Black-Cockatoo breeding trees. • Clearing of vegetation with moderate to high Black-Cockatoo foraging value (site condition score of 5). • Clearing of riparian habitat. • Bisecting of larger patches of vegetation in order to maintain landscape connectivity. Detailed design will further reduce proposed clearing where possible, with a focus on reducing impacts to higher quality habitat and Good condition vegetation. An offset is likely to be required via a Part V EP Act NVCP.
Consequence of the likely impacts	The impact assessment considers both direct and indirect impacts. Indirect impacts are not expected to extend beyond the PDE.
Likely environmental outcomes, and whether they are consistent with the EPA environmental factor objectives	Proposed environmental outcomes are presented in **Section 6.8**
Cumulative effects	Cumulative effects are assessed in **Section 11.0**
Holistic impacts	Holistic impacts are assessed in **Section 10.0**
Level of confidence in the predicted residual impacts and success of the proposed mitigation	Impact assessments were based on assessing the maximum area of fauna habitat that will be cleared for installation of all Proposal infrastructure. Actual disturbance is likely to be lower, therefore the predicted residual impacts over-estimate the likely impact to terrestrial fauna. The proposed mitigation measures are intended to reduce the impact to terrestrial fauna as low as practicable. Even if the mitigation measures are imperfectly applied, the residual impacts to significant fauna are predicted to be low.
Public interest about the likely effect on the environment	The Proposal is in the wider public interest, as it will: • be consistent with the WA Government's vision for a secure, reliable, affordable and clean energy future for the state • assist in meeting Australia's renewable energy targets as well as future electricity demands without the production of additional greenhouse gases • facilitate direct employment for up to 450 personnel during construction and up to 15 personnel during operation.

6.8 Proposed Environmental Outcomes for Terrestrial Fauna

Implementation of the Proposal will achieve the environmental outcomes listed **Table 6.26** to protect significant terrestrial fauna environmental values.

Table 6.26 Proposed Environmental Outcomes for Terrestrial Fauna

Proposed environmental outcomes	Consistent with EPA objective	How environmental outcomes can be measured and assured	Manageable under Other Statutory Mechanism
Fauna habitat removal will be limited to the clearing limits specified in the Proposal Content Document, which will not result in significant impacts to terrestrial fauna.	Yes	Proposal Content Document defines extent of clearing limits and Development Envelopes. Internal land disturbance procedures and record keeping. Regular environmental compliance reporting.	Yes, under Part V NVCP
No Clearing of Rank 1 and Rank 2 Black-Cockatoo nesting trees	Yes	The Proposal commits to not clearing Rank 1 and Rank 2 Black-Cockatoo nesting trees. Pre-clearance fauna surveys. Internal land disturbance procedures and record keeping. Regular environmental compliance reporting.	Yes, under Part V NVCP and via implementation of the CEMP.
No significant impacts to birds and bats as a result of wind farm operations	Yes	The approved BBAMP will define the monitoring, management and investigative triggers to be implemented.	Yes, through implementation of the BBAMP which is required as part of Condition 22 of the Development Approval granted under the *Planning and Development Act 2005*.

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

7.0 Other Environmental Factors or Matters

The Other Environmental Factor deemed relevant to the Proposal is Social Surroundings.

The EPA Objective for Social Surroundings is: 'To protect social surroundings from significant harm.'

For social surroundings to be considered in an environmental impact assessment under the EP Act, there must be a clear direct link between a proposal's impact on the physical or biological environment, and the subsequent effect on social surroundings. Furthermore, for the EPA to consider social surroundings as a key factor, there must be a significant effect on social surroundings.

Social surroundings include aesthetic, cultural, economic and other social surroundings. Aboriginal cultural heritage is part of social surroundings.

A summary of the receiving environments, potential impacts, proposed mitigation, residual impacts and the environmental outcomes relating to Social Surroundings are presented in **Table 7.1**.

Table 7.1 Assessment of Social Surroundings

EPA Objective	**To protect social surroundings from significant harm**				
Policy and Guidance	**Environmental Factor Guideline - Social Surroundings (Environmental Protection Authority (EPA, 2023a)**				
Factor	**Receiving Environment**	**Potential Impacts**	**Mitigation**	**Residual Impacts**	**Environmental Outcomes**
Aboriginal Cultural Heritage and Historical Heritage	A desktop Aboriginal and historical heritage due diligence assessment of the PDE was undertaken by Umwelt (2025) and a copy is provided in Appendix J. A search of the DPLH Aboriginal Cultural Heritage Inquiry System found two Registered Aboriginal cultural heritage sites within the PDE: Iluka Cataby 11 (ACH-00020233) and Iluka Cataby 12 (ACH-00020234) (**Appendix J**). These areas have been avoided by the Proposal. Due to the size of the PDE, diversity of landscape features often associated with Aboriginal Cultural Heritage (ACH), presence of Aboriginal Registered Sites, lack of previous heritage assessments and historical and ethnographic context of the area, there is a high potential for ACH to be present in certain sections of the PDE. These areas are those that show signs of minimal disturbance, with minimal impact to subsurface soils. These are more likely to occur where there is undisturbed bedrock and rock formations, along undisturbed watercourses and where there is remnant vegetation. Neoen has commenced engagement with Yued Aboriginal Council (YAC) and Local Elders and Yued Community Members, with initial engagement in May 2024. A search of the Heritage Council's InHerit database revealed one place of historical heritage significance that intersect the PDE (Appendix J). This location has been avoided by the Proposal.	Ground disturbance activities associated with the Proposal have the potential to impact on ACH, namely within areas of higher ACH potential.	The proponent has undertaken engagement with YAC and Local Elders and Yued Community Members and commits to completing surveys and implementing appropriate Aboriginal cultural heritage controls in consultation with these stakeholders. The Indicative Proposal Footprint has avoided all known Aboriginal and historical sites. The Indicative Proposal Footprint has minimised overlap with areas mapped as having a high ACH potential. Should Aboriginal or historical values be identified during surveys, they will be avoided where possible. Although unlikely, in the event they are unable to be avoided, the appropriate approvals for their removal will be obtained. The Proponent has undertaken engagement with the YAC, with a YHPA signed on 28 May 2025. The Proponent has submitted an Activity Notice to YAC so that the appropriate knowledge holders and consultants can be nominated for future heritage surveys.	Residual impacts are considered to be low noting all known sites will be avoided and proposed disturbance in high potential ACH areas will be surveyed in advance to inform mitigation of impacts. Should new ACH be identified, the Proposal will first aim to avoid the ACH. In the very unlikely circumstance where newly identified ACH cannot be avoided, the required approvals will be sought in consultation with Traditional Owners.	No disturbance of known Aboriginal and historical heritage values.
Landscape and Visual Amenity	A Landscape and Visual Impact Assessment (LVIA) was undertaken by LatStudios Pty Ltd to provide an assessment of the anticipated landscape and visual effects of the Proposal. The assessment was based on the maximum tip height of 261 m AGL and maximum hub height of 170 m AGL. A copy of the LVIA is provided as **Appendix K**. The LVIA has been completed with reference to Visual Landscape Planning in WA: A Manual for Evaluation, Assessment, Siting and Design (WAPC, 2007), Position Statement: Renewable energy facilities (WAPC, 2020) and Indian Ocean Drive Planning Guideline (WAPC, 2014). The PDE lies within a rural area that supports a mosaic of cleared and vegetated areas and rural dwellings on typically large holdings. Eight Landscape Character Types (LCTs) have been identified within the wider Proposal Area: • LCT A: Rural and Forested Uplands • LCT B: Rural Coastal Plain • LCT C: Forested Coastal Plain	The Proposal has the potential to impact on the following receptors: • Residents living in and visitors to the rural town of Dandaragan, • Residents living in the Ocean Farms rural living estate in the locality of Nilgen. • Residents living on rural properties within and surrounding the Site. • Farmers and other people working in the rural landscape around the Site. • Recreational users accessing nearby attractions. • Motorists (including tourists) The Proposal also has the potential to impact on the LCTs identified within the wider PDE.	Turbines have been setback a minimum 287 m from adjacent property boundaries (1.1 times the maximum tip height). Several turbines have been removed and relocated to reduce visual impact to sensitive receptors while considering potential landscape and visual impacts. Existing vegetation has been retained where possible to act as visual barriers.	The LVIA determined there to be no significant impacts to identified receivers except for passing motorists on the Brand Highway, where very close views toward wind turbines are possible (**Appendix K**).	No significant impacts on the landscape character types of the PDE and surrounds. No significant visual impacts with the exception of passing motorists on Brand where close views toward turbines are possible, albeit screened in places by existing roadside vegetation.

EPA Objective	To protect social surroundings from significant harm				
	• LCT D: Dune Systems • LCT E: Marine Areas and Islands • LCT F: Coastal Settlements • LCT G: Rural Settlements • LCT H: Rural Living Estates • LCT I: Major Watercourses Potential visual receptors in the broader area have been identified, including residents, visitors, farmers, recreational users of the landscape, and motorists.				
Noise	The PDE and surrounding areas are relatively sparsely populated with existing noise-sensitive premises (e.g. dwellings), and the primary use of the area is agricultural operations. A detailed acoustic assessment, including a period of background noise monitoring, was undertaken by Umwelt to support Proposal design and approvals. This work was undertaken in reference to the Western Australian Planning Commission *Position Statement: Renewable energy facilities* (WAPC, 2020), Western Australia *Environmental Protection (Noise) Regulations 1997* and the Western Australia Department of Water and Environmental Regulation *Draft Guideline - Assessment of environmental noise emissions* (DWER, 2022). This assessment also considered the South Australian Environment Protection Authority *Wind farms environmental noise guidelines* (Environmental Protection Authority (EPA), 2021). The noise environment in the PDE comprises a range of noise sources, including natural sources typical of a rural environment (e.g. wind disturbed vegetation, fauna, rain, etc.) and anthropogenic sources such as road traffic, localised industrial and mining noise and agricultural activity (**Appendix L**). Background noise monitoring was undertaken over a seven-week period at seven locations to inform the detailed acoustic assessment.	Operation of the Proposal will result in noise emissions, which have the potential to adversely affect the health and quality of life of receptors exposed to prolonged increased noise levels.	Turbines have been setback a minimum of 1.5 km from existing non-involved sensitive receivers. Noise modelling was completed for multiple turbine layout iterations to demonstrate that noise levels from the Proposal shall comply, at all times, with the limits identified in the *Environmental Protection Authority Environmental Protection (Noise) Regulations 1997* (as amended).	Noise modelling results demonstrate that the Proposal can be developed to comply, at all times, with the limits identified in the *Environmental Protection Authority Environmental Protection (Noise) Regulations 1997* (as amended).	No exceedance of the noise limits specified by the *Environmental Protection Authority Environmental Protection (Noise) Regulations 1997* (as amended).
EMI and Shadow Flicker	An EMI assessment (**Appendix L**) and shadow flicker assessment (**Appendix M**) were undertaken by DNV to support the Proposal design and approvals. These were undertaken with reference to the Draft National Windfarm Development Guidelines (EPHC, 2010).	Operation of the Proposal will result in shadow flicker, which has the potential to adversely affect the health and quality of life of nearby sensitive receivers. There is the potential for EMI impacts to services in the area, such as Bureau of Meteorology (BoM) radars, Western Power point to multi-point links, and point-to-area services such as mobile phone signals, radio broadcasting, and terrestrial television broadcasting, particularly in areas with poor or marginal signal coverage.	Turbines have been setback a minimum of 1.5 km from existing non-involved sensitive receivers. Shadow flicker modelling has been undertaken to inform turbine layout, with turbines located so that the Proposal will not result in exceedance of 30 hours per year at existing non-involved sensitive receivers. Turbine locations have been amended through the design process to mitigate EMI impacts.	Shadow flicker modelling results demonstrate that the Proposal can be developed so that shadow flicker duration is less than 30 hrs per year at all existing non-involved sensitive receivers. Potential EMI impacts related to the Proposal are minor, although consultation is ongoing with BoM to determine the most appropriate measures for managing impacts on their radar.	No exceedance of the shadow flicker limits specified by the Draft National Wind Farm Development Guidelines at existing non-involved sensitive receivers.

All other EPA factors (i.e., Benthic Communities and Habitats, Coastal Processes, Marine Environmental Quality, Marine Fauna, Landforms, Subterranean Fauna, Terrestrial Environmental Quality, Inland Waters, Air Quality, Greenhouse Gas Emissions, and Human Health) are not considered to be relevant to the Proposal as outlined in **Section 4.2**.

8.0 Residual Impacts Summary and Requirement for Offsets

Under the WA Environmental Offsets Policy (Government of Western Australia, 2011) environmental offsets are used to counterbalance significant residual impacts from a Proposal. Residual impacts are unavoidable impacts that remain after avoidance, minimisation and rehabilitation. Offsets are actions undertaken outside the disturbance envelope and can be direct (i.e. rehabilitation) or indirect (i.e. research).

The residual impacts resulting from the Proposal and potential for offset requirements have been assessed according to the:

- WA Environmental Offsets Guidelines (Government of Western Australia, 2014). The guidelines provide a framework for consistent application of environmental offsets to protect and conserve environmental and biodiversity values.
- Residual Impact Significance Model outlined in the guidelines.
- WA Offsets Template provided in the guidelines was used to assess the significance of impacts and requirement for offsets.
- Environmental offsets metric: Quantifying environmental offsets in Western Australia (Government of Western Australia, 2021) and associated WA Environmental Offsets Calculator.

In accordance with the WA Environmental Offsets Guidelines (Government of Western Australia, 2014), environmental offsets will only be applied where the residual impacts of the Proposal are determined to be significant, after avoidance, minimisation and rehabilitation were pursued.

Implementation of the Proposal is likely to result in the following residual impacts following application of the mitigation hierarchy:

- Clearing of up to 15.73 ha (1.68%) of remnant native vegetation and 7.33 ha (2.77%) of planted vegetation (native and non0native) in the PDE.
- Clearing of up to 0.11 ha of Degraded Banksia Woodlands of the Swan Coastal Plain PEC.
- Clearing of up to 2.23 ha of vegetation in Good condition.
- Removal of Black-Cockatoo foraging habitat per the limits identified in **Table 6.21** and **Table 6.22**.
- Clearing of native vegetation within the current VSA extents:
    - Bassendean 125: 0.00002% (0.62 ha)
    - Bassendean 1030: 0.0025% (2.42 ha)
    - Bassendean 1031: 0.0057% (5.11 ha)
    - Dandaragan 999: 0.059% (7.75 ha).
- Potential for fauna mortalities through turbine strikes, vehicle strikes and fauna entrapment.

Impact assessments were based on assessing the maximum area of clearing for installation of all Proposal infrastructure. Actual disturbance is likely to be lower, therefore the predicted residual impacts are likely an over-estimate.

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, 2021b). Considering this framework, residual impacts are unlikely to be significant as:

- No vegetation in Very Good condition or better will be cleared.
- No known Priority flora will be cleared.
- Clearing of TEC will be limited to 0.11 ha in Degraded condition.
- Clearing is primarily restricted to the edges of small, fragmented and degraded native vegetation and fauna habitat, with larger remnant habitat patches avoided as far as possible.
- Migratory shorebird habitat modifications will be limited to the temporary clearing of up to 1 ha of degraded vegetation on the edge of one of the wetlands, that will be rehabilitated at the end of construction.
- No Rank 1 or 2 Black-Cockatoo potential nest-trees will be disturbed by the Proposal, and disturbance of Rank 3 trees will be minimised.
- High quality foraging value vegetation for Black-Cockatoos (site condition 6 or greater) has been avoided.
- A large proportion of habitat is being retained in the PDE, with over 98% of remnant native vegetation being retained outside the Indicative Proposal Footprint.
- There are larger blocks of remnant vegetation outside the PDE likely to provide much greater foraging values for Black-Cockatoos.
- Minimum turbine tip height is above the typical flight height of Black-Cockatoos.
- With the exception of the blue-billed duck, migratory shorebirds have only been recorded in the wetlands located in the western area of the PDE which are setback 3.5 km from turbines.
- Impacts will be actively managed through a CEMP (**Appendix D**) and BBAMP (**Appendix I**).

An environmental offset may be required under a Part V EP Act Native Vegetation Clearing Permit process and will be prepared in accordance with the WA Environmental Offset Policy 2011 and Environment Offset Guidelines 2014.

9.0 Matters of National Environmental Significance Assessment

A separate assessment of impacts to MNES (refer to **Appendix O**) has been developed to support referral of the Proposal under the EPBC Act. The assessment was undertaken for the PDE against the MNES *Significant Impact Guidelines 1.1* (Department of the Environment, 2013) and involved an assessment of:

- EPBC Act listed Threatened flora, vegetation and fauna species
- EPBC Act listed Migratory fauna species.

Desktop and field assessments identified 10 MNES as being known to occur or expected to occur in the PDE. One threatened ecological community, seven MNES Threatened fauna species and three MNES Migratory fauna species were recorded within the PDE:

- Carnaby's Black-Cockatoo (*Zanda latirostris*) – Endangered
- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*) – Vulnerable
- Banksia Woodlands of the Swan Coastal Plain ecological community – Endangered
- Grevillea *curviloba* - Endangered
- Black-tailed Godwit (*Limosa limosa*) – Endangered and Migratory
- Common Greenshank (*Tringa nebularia*) – Endangered and Migratory
- Sharp-tailed Sandpiper (*Calidris acuminata*) – Vulnerable and Migratory
- Wood Sandpiper (*Tringa glareola*) – Migratory
- Red-necked Stint (Calidris ruficollis) – Migratory
- Ruff (Calidris pugnax) – Migratory.

An additional six EPBC listed threatened or migratory fauna species were not recorded in the PDE however were assessed as having a moderate or higher likelihood of occurrence:

- Curlew Sandpiper (*Calidris ferruginea*) – Critically Endangered and Migratory
- Common Sandpiper (Actitis hypoleucos) – Migratory
- Glossy Ibis (*Plegadis falcinellus*) – Migratory
- Pacific Golden Plover (*Pluvialis fulva*) – Migratory
- Long-toed Stint (*Calidris subminuta*) – Migratory
- Fork-tailed Swift (*Apus pacificus*) – Migratory.

The MNES assessment identified sources of potential impacts on MNES, most notably the clearing of native vegetation comprising species' habitat and potential for turbine collision.

With consideration of the mitigation measures detailed in **Section 5.0** and **Section 6.0** of this document, significant impact assessments were conducted for the residual impacts to relevant MNES in accordance with the MNES *Significant Impact Guidelines 1.1* (Department of the Environment, 2013).

The assessment identified that while the Proposal may have residual impacts to these MNES, the impacts are unlikely to be considered significant for the following reasons:

- No high-quality Black-Cockatoo foraging habitat (site condition score of 6) will be cleared.
- No Rank 1 and Rank 2 Black-Cockatoo potential nest trees will be cleared.
- No known Black-Cockatoo roost sites will be impacted.
- The minimum blade tip height is above the typical flight heights for Black-Cockatoos.
- Migratory shorebirds have only been recorded to date in the wetlands located in the western area of the PDE which are setback 3.5 km from the nearest turbine to the east.
- There will be no permanent clearing of suitable migratory shorebird habitat.
- TEC clearing will not exceed 0.11 ha and will be restricted to Degraded condition TEC.

While the residual impacts are not considered to be significant, they will be offset under the State approvals process for native vegetation clearing as presented in **Section 8.0** of this document.

10.0 Holistic Impact Assessment

The previous sections evaluated the potential impacts on environmental values separately. However, it is acknowledged that environmental factors are inherently interconnected. This section explores the relationships and interactions between these factors and examines how the activities proposed might affect multiple environmental aspects simultaneously. The environmental factors discussed in this section are:

- Flora and vegetation
- Terrestrial fauna
- Social surroundings.

The Proposal activities of land clearing, infrastructure establishment and wind turbine operation have the potential to impact on flora and vegetation, fauna and social surroundings. The proposed clearing of remnant native vegetation and planted vegetation in the Indicative Proposal Footprint is primarily located in small patches at the edges of degraded native vegetation that do not contain threatened flora. Vegetation clearing may result in loss of fauna individuals and will result in loss of fauna habitat. This includes some habitat for conservation significant species, noting that the clearing has been minimised as far as possible and limited to small patches of degraded vegetation. Loss of vegetation extent and condition directly impacts availability of foraging and shelter resources for terrestrial fauna, potentially displacing individuals.

Noise and the limited light emissions from construction, although temporary, may disturb fauna affecting their behaviour and breeding patterns. There is potential for loss of fauna individuals due to strike from vehicles or turbine blades, and potential for disruption of fauna behaviour due to noise of construction and turbine operation.

Possible introduction and/or spread of weeds due to Proposal activities has potential to indirectly impact vegetation condition, which reduces the quality of fauna habitat, and may impact on adjacent pastoral activities.

Wind turbines may also result in some visual amenity and noise impacts to the local community.

Possible impacts of the Proposal will be mitigated through avoiding vegetation of higher ecological significance for flora and fauna, confining vegetation clearing/development to areas in degraded condition as far as practicable and implementing management actions to minimise impacts such as weed introduction, noise, light, dust and traffic. In this way the Proposal aims to be consistent with the mitigation hierarchy by avoiding the Banksia Woodlands PEC in Good condition or better, native vegetation in Very Good condition or better, known occurrences of threatened and Priority flora, and Rank 1 and 2 Black-Cockatoo breeding trees; and minimising impacts to the surrounding environment as far as possible. Potential impacts are also proposed to be managed through a CEMP and BBAMP.

The holistic effects have been evaluated, and no new significant impacts have been identified from the combined environmental effects. The proposed environmental outcomes effectively address these combined impacts and have been included in the most relevant environmental factor section. The holistic impact of the Proposal is not expected to be any larger or different than the impacts predicted for each environmental factor, and there will be a net environmental benefit in terms of renewable energy production and reduction in greenhouse gas emissions.

Table 10.1 on the following page summarises the Proposal activities and how each activity might impact on a range of key environmental factors. This facilitated identification of any combined effects across multiple environmental factors.

Table 10.1 Holistic Consideration of Impacts to Environmental Factors

Proposal activities	Potential impacts to environmental factors			Combined Environmental Effects Across Environmental Factors
	Flora and Vegetation	Terrestrial Fauna	Social Surroundings	
Land clearing and establishment of Proposal infrastructure	Direct loss of native flora and vegetation. Potential introduction of Weeds of National Significance or Declared Pests. Possible indirect degradation of native vegetation condition.	Direct habitat loss and potential loss of terrestrial fauna individuals. Possible indirect degradation of terrestrial fauna habitat.	Potential loss of amenity (noise and visual). Potential for introduction or spread of weeds to affect agricultural activities.	Land clearing will result in loss of vegetation and terrestrial fauna habitat. Introduction of weeds could adversely impact adjacent flora and vegetation (condition), terrestrial fauna habitat quality and social surroundings (pastoral land use).
Proposal operations: turbine operation, vehicle movement, dust emission, fire	Possible indirect degradation of native vegetation condition. Potential introduction of Weeds of National Significance or Declared Pests.	Potential loss of terrestrial fauna individuals. Possible indirect degradation of terrestrial fauna habitat.	Potential loss of amenity (noise, visual and shadow flicker). Potential for introduction of weeds to affect pastoral activities.	Operational activities may result in direct loss or disturbance of fauna individuals. Operations may impact social surroundings through potential weed introduction to pastoral lands, reduction of visual amenity, increase in noise levels and shadow flicker.

11.0 Cumulative Impact Assessment

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

This section presents the potential cumulative impacts associated with known past, present and reasonably foreseeable projects in the general vicinity of the Proposal that may impact on the same environmental values; namely flora and vegetation, terrestrial fauna and social surrounds.

The Proposal is in a region in which the land has been historically extensively cleared and is now primarily utilised for agricultural activities, but also some mining operations. The area has more recently been identified as a suitable location for renewable energy generation projects. Within approximately 50 km of the Proposal, there are eight wind energy projects at various stages of development; two operational (Yandin and Emu Downs), one under construction (Waddi), and five in early planning or development (Parron, Marri, Dinner Hill, Wandoo, and Grevillea). There are also four active or established mining operations (Cataby Mineral Sands Mine, Cooljarloo Mineral Sands Project (including Cooljarloo West and Osprey Expansion), and **North** Kiaka Mine and Boonanarring Mineral Sands Mine).

A desktop review was undertaken to identify potential projects to be considered in the context of potential cumulative impacts. Details of the potential proposals identified are provided in **Table 11.1**.

Table 11.1 Other Projects with Potential Cumulative Impacts

Project	Distance from Proposal	Project Description	Status of Project	Timing for Construction	Potential Cumulative Flora and Vegetation Impacts	Potential Cumulative Terrestrial Fauna Impacts	Potential Cumulative Social Surroundings Impacts
Wind farms							
Waddi Wind Farm **By Waddi Wind Farm Pty Ltd**	27 km North	Waddi Wind and Solar Farm and associated infrastructure including overhead 132 kV transmission line (18 turbines, 8 km transmission line)	In development	2025 – 2030	Clearing of 5.5 ha of native vegetation is proposed within a 1227 ha Indicative Works Area. Clearing of 5.5 ha of native vegetation (mainly Banksia Low Open Woodland and Proteaceous Heath) within a largely cleared agricultural landscape will result in a minor incremental loss of Good-Excellent condition vegetation. Approximately 0.3 ha of Banksia Woodlands TEC forms part of a larger patch, and most Priority flora records (94%) are retained, therefore, cumulative regional impacts are considered low.	Potential Cumulative Terrestrial Fauna Impacts. Clearing of 5.5 ha will result in the permanent loss of 5.2 ha of high-quality foraging habitat and a small number of potential nesting (3 marri) and roosting trees (35 total) for Carnaby's black cockatoo. Although the clearing is considered significant under EPBC referral thresholds, 94% of foraging habitat, 98% of nesting trees, and 96% of roosting trees will be retained within and adjacent to the project. Given the large extent of nearby remnant vegetation (9913 ha) in DBCA-managed reserves and the fragmented, agricultural landscape, cumulative regional impacts to terrestrial fauna are expected to be low to moderate and localised.	Noise impacts are expected to remain localised within 1.5 km of wind turbines, with emissions during construction being temporary and managed under Shire of Dandaragan Conditions 12-18. Given the turbine setbacks and proposed noise controls, no cumulative noise impacts are anticipated. Cumulative landscape and visual impacts may occur in combination with Cataby and Badgingarra Wind Farms, though these would be highly localised to short road sections where concurrent views of projects are possible. Overall, cumulative social surroundings impacts are expected to be low, with the project contributing positively to regional employment and renewable energy generation within an already modified agricultural landscape.
Yandin Wind Farm **By Yandin Wind Farm Pty Ltd**	6 km North	Consists of 51 wind turbines (operational capacity 214 MW)	Operational	Complete	Within the indicative disturbance footprint, approximately 4 ha of native vegetation has been cleared. Targeted flora surveys were undertaken before works commenced, and vegetation buffers around conservation-significant species have been retained to avoid direct disturbance.	The project occurs within a similar landscape and habitat context, where comparable fauna species are expected to be present. Clearing of habitat trees showing evidence of use by Carnaby's Black-Cockatoo were not permitted. A slight increase in bird collision risk may occur due to the additional turbines; however, impacts are expected to be consistent with those observed for similar species in nearby wind farm developments.	Noise modelling indicates that operational impacts are confined to within 1.5 km of turbines, with no cumulative noise interaction anticipated with the Yandin Wind Farm. The Landscape and Visual Impact Assessment (LVIA) found that potential combined visual effects with Yandin are limited to short sections along Brand Highway, where both projects may be partially visible. Overall, cumulative visual and noise impacts are assessed as negligible to marginal.
Parron Wind Farm **By** **Zephyr Energy Pty Ltd**	41 km North-West	The Development Envelope is approximately 8,527 ha with a total Disturbance Footprint of 491 ha. Construction of up to 79 turbines, capable of generating up to 489.8 MW, and associated infrastructure.	In development	2025 – Q1 2026	The Proposal will not result in significant impacts to flora or vegetation. All potential indirect effects will be mitigated through environmental management measures. No native vegetation, TECs, PECs, or threatened flora will be affected, with clearing limited to scattered non-native vegetation on pastoral land. The design avoids intact native vegetation, resulting in only minor loss (0.04 ha) and trimming (0.19 ha) of primary native foraging habitat. Condition 15 of the	The Proposal is unlikely to result in significant impacts to terrestrial fauna. All potential indirect effects will be mitigated through environmental management measures. No intact native vegetation or habitat trees with hollows will be affected. The risk of bird or bat strike, behavioural changes, disturbance, or barotrauma is considered low. Condition 15 of the Development Approval requires implementation of the Environmental Assessment and Management Plan, including an Avifauna Monitoring	The Proposal is not expected to result in significant impacts to social surroundings. All potential impacts will be mitigated through avoidance and environmental management measures. There will be no impact to cultural heritage, aviation, or EMI. Visual impacts are low, and no unacceptable noise impacts are predicted for nearby dwellings, with stakeholder agreements in place for affected landowners. Minor impacts from shadow flicker and blade glint will be managed, ensuring the

Project	Distance from Proposal	Project Description	Status of Project	Timing for Construction	Potential Cumulative Flora and Vegetation Impacts	Potential Cumulative Terrestrial Fauna Impacts	Potential Cumulative Social Surroundings Impacts
					Development Approval ensures implementation of management plans to protect adjacent vegetation and meet EPA objectives.	Program, to manage fauna impacts and ensure EPA objectives are met.	EPA's objectives for social surroundings are met.
Dinner Hill Wind Farm By OX2 Holdings Pty Ltd	40 km North	A 1.2 GW wind farm, located within the Hill River and Badgingarra localities, 26 kilometres north of Dandaragan and 25 kilometres east of Jurien Bay.	Early Development	2029	PDE and extent of native vegetation clearing not yet defined. The site is largely cleared agricultural land with small patches of remnant vegetation.	The extent of fauna habitat removal has not been specified. Given the predominately cleared and agricultural nature of the site, the loss of fauna habitat is expected to be minimal.	The Dinner Hill Wind Farm is located within an open agricultural landscape, similar to other renewable projects in the region. Cumulative social impacts are not expected to be significant. OX2 has committed to engaging with the local community, Dandaragan Shire Council and Traditional Custodians from late 2025 to ensure community views are considered and local social and economic benefits are delivered.
Marri Wind Farm By Alinta Energy	Immediately South and adjacent to the Proposal	82 wind turbines, each up to 275 m tall, with a total capacity of 550 MW. A 6,600 MWh battery energy storage system (BESS) and associated infrastructure may also be included.	Early Development	Commence in 2027 with full operation until 2030	Cumulative impacts on flora and vegetation are expected to be minimal, as the proposal largely utilises previously cleared agricultural land. A maximum of 84 ha of native vegetation will be cleared within the 12,473 ha Development Envelope, including 0.17 ha of Priority 3 TEC vegetation, mostly in excellent (0.153 ha) or very good (0.015 ha) condition. With effective weed management and progressive rehabilitation, the project is unlikely to affect regional vegetation resilience or connectivity (EPA, 2024a).	Impacts to terrestrial fauna, including avifauna, are anticipated to be minimal to negligible at a regional scale. The majority of the 963.6 ha disturbance footprint comprises cleared agricultural land, with clearing of native vegetation not to exceed 84 ha. While minor habitat loss and behavioural disturbance may occur during construction, these will be mitigated through the CEMP and ongoing monitoring. Once operational, the project will occupy 462.96 ha, with disturbed areas rehabilitated to pre-existing land use.	The proposal will alter the visual character of the landscape through turbine installation; however, this is consistent with the regional trend toward renewable energy development. Cumulative visual and noise impacts are considered low, limited primarily to areas where other wind farms are visible within 50 km. Continued community engagement and landholder agreements will ensure minimal disruption to local amenity and industry. No significant negative impacts on local businesses or agriculture are expected.
Emu Downs Wind Farm By APA Group	42 km North-West	Consists of 48 wind turbines (each with 1.65 MW generating capacity), and associated infrastructure. The hub height of the turbines is 68.5 m, with each blade measuring 41 m.	Operational	Completed	PDE and extent of native vegetation clearing not defined. Landscape of the area is primarily cleared for agriculture with some larger patches of remnant vegetation.	Extent of fauna habitat removal not defined. There may be an increased turbine collision risk.	Due to the distance between both proposals (45 km), no cumulative social surrounds impacts are anticipated.
Wandoo Wind Farm By Green Wind Renewables	24 km South	Located near Wannamal, approximately 30 km North of Bindoon and 50 km South of Moora. The proposal includes up to 75 turbines (450+MW).	Early Development	Unknown	PDE and extent of native vegetation clearing not yet defined for the Wandoo Wind Farm. The site is largely cleared agricultural land with small patches of remnant vegetation.	The extent of fauna habitat removal has not been specified. However, due to the predominately cleared land, habitat loss is expected to be minimal. The turbine maximum tip height 170 m may increase cumulative bird and bat collision risk, particularly for migratory or conservation-significant species moving through the Dandaragan region.	Wandoo Wind Farm is located near Wannamal, approximately 30 km North of Bindoon and 50 km South of Moora, and therefore cumulative noise or shadow flicker impacts are not anticipated. Both projects occur within open agricultural landscapes, where visual impacts will remain low to moderate and localised. No significant

Project	Distance from Proposal	Project Description	Status of Project	Timing for Construction	Potential Cumulative Flora and Vegetation Impacts	Potential Cumulative Terrestrial Fauna Impacts	Potential Cumulative Social Surroundings Impacts
						The turbine height is limited by aviation and visual impact constraints.	cumulative impacts on social surroundings are expected.
Grevillea Wind Farm By Green Wind Renewables	12 km East	Located near Koojan, approximately 20 km South of Moora and 15 km North-West of New Norcia. The proposal includes up to 110 turbines.	Early Development	Unknown	PDE and extent of native vegetation clearing not yet defined for the Wind Farm. The site is largely cleared agricultural land with small patches of remnant vegetation.	The extent of fauna habitat removal has not been specified. However, due to the predominately cleared land, habitat loss is expected to be minimal. The maximum tip height 170 m may increase cumulative bird and bat collision risk, particularly for migratory or conservation-significant species moving through the Dandaragan region. The turbine height is limited by aviation and visual impact constraints.	Noise or shadow flicker impacts are not anticipated. Both projects occur within open agricultural landscapes, where visual impacts will remain low to moderate and localised. No significant cumulative impacts on social surroundings are expected.
West Hills Wind Farm By BlairFox	14 km West	Located on the grounds of the Sumich West Hills carrot farm, located in Western Australia, about 17 km NNE from Lancelin, which is 120 km north of downtown Perth. The project includes 10 turbines and has a 5 MW capacity.	Operational	2013	No info	Rotor diameter of 40 m.	No info
Karakin Wind Farm By BlairFox	15 South-West	Karakin Wind Farm is located in Western Australia, specifically about 12 km east from Lancelin, which is approximately 120 km north of downtown Perth. The project includes 10 turbines and has a 5 MW capacity.	Operational	2013	No info	Rotor diameter of 40 m.	No info
Mining							
North Kiaka Mine at Moora By Simcoa Operations Pty Ltd	36 km North-East	Establishment of a new quartzite mine (North Kiaka Mine) approximately 17 km north of Moora, transitioning mining from the existing Moora Mine, with quartzite crushed and screened at Moora and transported to the Kemerton Silicon Smelter for processing.	Operational	North Kiaka Mine to be substantially commenced within five (5) years of Statement 1254 (by September 2030). Life of mine and smelter up to 2045.	The approved project includes clearing of up to 17.12 ha of native vegetation at the North Kiaka Mine and up to 26 ha at the Moora Mine, including disturbance of up to 17.65 ha of the Coomberdale chert hills Threatened Ecological Community (TEC). Disturbance to known populations of Threatened and Priority flora species is approved, with significant residual impacts requiring environmental offsets.	The proposal includes disturbance of up to 16.51 ha of foraging habitat for Carnaby's black cockatoo *(Zanda latirostris)*. Residual impacts to Carnaby's black cockatoo foraging habitat are considered significant and are subject to offset requirements.	The project occurs within an established mining and agricultural landscape. Social impacts are generally localised. However, visual amenity impacts associated with the Moora Mine abandonment bund, and dust emissions have been identified and are subject to specific mitigation requirements under Ministerial Statement 1254.

Project	Distance from Proposal	Project Description	Status of Project	Timing for Construction	Potential Cumulative Flora and Vegetation Impacts	Potential Cumulative Terrestrial Fauna Impacts	Potential Cumulative Social Surroundings Impacts
Cooljarloo Mineral Sands Project (including Cooljarloo West and Osprey Expansion) **By** **Tronox Management Pty Ltd**	20 km North-West	Large-scale mineral sands mining and processing operation comprising dredge and dry mining methods, operating since the late 1980s. The project has progressively expanded through multiple amendments and currently includes the Cooljarloo and Cooljarloo West deposits, with a proposed satellite pit (Osprey Expansion) referred to the EPA.	Operational Approved under multiple Ministerial Statements Current approval: Ministerial Statement 1158 (22 January 2021) Osprey Expansion: Referred to the EPA and currently under assessment (Reference 2502).	Ongoing operations since 1988, with progressive mining, rehabilitation, and approved future expansions. The Osprey Expansion would extend mine life by approximately 12 months if approved.	The Cooljarloo Mineral Sands Project represents a substantial, long-term source of cumulative vegetation loss within the region. Under Ministerial Statement 1158, the approved disturbance footprint comprises approximately 6,905 ha of native vegetation. Vegetation clearing includes large areas of Banksia Woodlands of the Swan Coastal Plain PEC/TEC and habitat for threatened flora species, resulting in significant residual impacts managed through rehabilitation and environmental offsets. The proposed Osprey Expansion would add up to approximately 59.14 ha of additional vegetation clearing, including 33.37 ha of Banksia woodlands PEC, further contributing to cumulative regional impacts, and is currently subject to EPA assessment.	The extensive historical and approved clearing footprint has resulted in cumulative loss and fragmentation of fauna habitat, including Carnaby's black-cockatoo foraging habitat at a regional scale. Residual impacts to conservation-significant fauna habitat have been identified under MS 1158 and are managed through offsets, staged rehabilitation, and fauna management measures. Additional fauna habitat loss associated with the proposed Osprey Expansion is under EPA assessment.	The project operates within a long-established mining and rural landscape and has ongoing social surroundings impacts including noise, dust, traffic, and visual disturbance. These impacts are managed through licence conditions, monitoring, community consultation, and compliance reporting.
Cataby Mineral Sands Project **By** **Iluka Resources Limited**	Main mine is located 7 km North, however an area of the mine expansion lies within the Yathroo PDE, but outside the Indicative Proposal Footprint.	The Cataby Mineral Sands Project is an Iluka Resources Limited operation approved in 2005 and amended through Ministerial Statements. The project commenced production in 2019 and supplies heavy mineral concentrate to Iluka's mineral processing operations. Mining occurs via a series of open pits using dry mining methods within an approved Development Envelope.	Operational Approved under Ministerial Statement 1017 (issued 1 October 2015), as amended on 14 May 2021.	Operational since 2019, with progressive mining and rehabilitation continuing within the approved Development Envelope.	The Cataby Mineral Sands Project operates within an approved Development Envelope of 3,288.7 ha. The indicative disturbance footprint within this envelope is up to 2,988 ha, with total approved native vegetation clearing of up to 162.1 ha. The 2021 amendment approved an additional 9 ha of clearing, comprising completely degraded vegetation, including 6.7 ha of low-value Carnaby's black-cockatoo foraging habitat.	Approved impacts include disturbance to low-value Carnaby's black-cockatoo foraging habitat within the Development Envelope. Additional impacts approved under the 2021 amendment are mitigated through the existing Carnaby's Cockatoo Management Plan, including a requirement to implement an additional 10 ha of rehabilitation.	Noise and amenity impacts associated with the project are managed through the approved Noise Management Plan required under Ministerial Statement 1017. The EPA determined that potential impacts to sensitive receptors can be adequately mitigated and that the amended proposal is substantially the same character as the approved project.
Atlas Project **By** **Image Resources NL**	40 km North-West	The Atlas Project is an approved greenfields mineral sands mining project located approximately 18 km east of Cervantes in the	Approved - Not Yet Operational Ministerial Statement 1220 issued	Project life up to five (5) years from substantial commencement, comprising a 12-month construction	The Atlas Project includes a mine development envelope of no more than 457 ha. Approved clearing of native vegetation is limited to no more than 272.2 ha within the mine	The proposal includes disturbance of no more than 257.3 ha of foraging habitat for Carnaby's black cockatoo *(Zanda latirostris)*. This impact is identified as a significant residual impact and is required to be	The Atlas Project is located within a predominantly rural landscape east of Cervantes. Potential social surroundings impacts include noise, dust, traffic and visual impacts

Project	Distance from Proposal	Project Description	Status of Project	Timing for Construction	Potential Cumulative Flora and Vegetation Impacts	Potential Cumulative Terrestrial Fauna Impacts	Potential Cumulative Social Surroundings Impacts
		Shire of Dandaragan. The project includes progressive development of open-cut mine pits, on-site processing facilities, groundwater abstraction and dewatering infrastructure, temporary waste stockpiles, solar drying ponds, and associated infrastructure, including access roads and services. Mining is proposed to be undertaken using dry mining methods.	22 May 2024 (EPA Assessment No. 2311).	phase, approximately three (3) years of operations, and a 12-month decommissioning phase.	development envelope and 16.2 ha within the external infrastructure development envelope. The proposal includes disturbance of up to 206.4 ha of Banksia Woodlands PEC and approximately 3,000 priority flora species. Significant residual impacts to Banksia Woodlands have been identified and are required to be counterbalanced through environmental offsets.	counterbalanced through environmental offsets. Fauna management measures, including pre-clearing surveys, fauna handlers, staged clearing and rehabilitation, are required under the Statement.	associated with mining and dewatering activities. The EPA determined that social surroundings impacts are localised and manageable through implementation of approved management plans and licence conditions.
Bidaminna Project By Image Resources NL	20 km South	The Bidaminna Project is a proposed mineral sands mine located approximately 15 km southwest of Regan's Ford. The proposal involves dredge mining with progressive backfilling and rehabilitation, including development of a dredge pond, wet concentrator plant, solar drying ponds, temporary tailings and waste dumps, groundwater abstraction bores and associated infrastructure.	Under EPA assessment - referred under s.38 of the Environmental Protection Act 1986 Public Environmental Review (PER) required (6-week public review).	Indicative timing subject to completion of the EPA assessment and Ministerial decision. Construction is proposed to commence following approvals, with an indicative mine life of approximately 10 to 12 years.	The proposal includes an indicative disturbance footprint of up to 950 ha within a 1,950 ha Mine Development Envelope, and 50 ha within a 75 ha External Infrastructure Envelope. Native vegetation clearing limits have not been defined. The Mine Development Envelope includes Banksia Woodlands of the Swan Coastal Plain TEC and PEC, priority flora species, and remnant native vegetation. The EPA has identified Flora and Vegetation as a preliminary key environmental factor, with the extent and significance of impacts to be assessed through the Public Environmental Review.	Indicative clearing of native vegetation may result in habitat loss and fragmentation for terrestrial fauna, including potential impacts to Carnaby's Black Cockatoo foraging habitat and other conservation-significant species. Terrestrial fauna has been identified as a preliminary key environmental factor. The scale, significance, and cumulative nature of fauna impacts will be determined through detailed fauna surveys and impact assessment as part of the PER process.	Potential impacts to social surroundings include construction and operational noise, dust emissions, traffic movements, and potential impacts to Aboriginal heritage values. The EPA has identified Social Surroundings and Human Health as preliminary key environmental factors. Any cumulative social impacts will be assessed through the PER, with management measures to be implemented through regulatory approvals if required.
Boonanarring Mineral Sands Mine By Image Resources NL	40 km South-East	The Boonanarring Mineral Sands Mine is an operational open-cut dry mineral sands mine located approximately 24 km north-west of the Gingin township. The project includes mining and processing of mineral sands through primary and secondary	Operational	Approved mine life of approximately 8 years, with implementation commenced within the statutory timeframe and ongoing operations subject to compliance reporting under	The project is approved to clear no more than 50 ha of native vegetation within a 600 ha disturbance footprint, contained within a 1,205 ha development envelope. Vegetation clearing is predominantly within previously cleared agricultural land, with conditions in place to prevent impacts to Bartlett's Well and Boonanarring Nature Reserves.	Potential impacts to fauna are associated with habitat disturbance within the approved disturbance footprint. Carnaby's black cockatoo was identified as potentially occurring within the area. However, no breeding activity was recorded, and impacts are managed through avoidance, buffer requirements, and groundwater and vegetation monitoring conditions under Ministerial Statement 981.	The mine operates within a predominantly rural and agricultural landscape. Potential impacts include noise, dust, traffic movements, and visual impacts associated with mining and processing activities. These impacts are regulated through the Environmental Protection (Noise) Regulations 1997, Works Approval and Licensing under Part V of the EP Act,

Project	Distance from Proposal	Project Description	Status of Project	Timing for Construction	Potential Cumulative Flora and Vegetation Impacts	Potential Cumulative Terrestrial Fauna Impacts	Potential Cumulative Social Surroundings Impacts
		concentration plants, dry mineral separation, and associated infrastructure.		Ministerial Statement 981.			and compliance reporting required under Ministerial Statement 981.
Caravel Copper Project **By** **Caravel Minerals Limited**	15 km East of the borefield development envelope 70 km East of the mise site development envelope	Large-scale open pit copper mine and concentrator in the WA Wheatbelt, including mine pits, waste rock landforms, tailings storage facility, ore processing plant, supporting infrastructure, a remote borefield at Gillingarra and a pipeline corridor connecting water supply to the mine site.	Under EPA assessment (Part IV) Assessment level: Public Environmental Review (PER).	The proposal states an indicative construction period of 2 years and an operational life of 25 years.	The amended proposal includes a mine site development envelope (MSDE) of approximately 7,978 ha, a borefield development envelope of approximately 2,916 ha, and a pipeline development envelope of approximately 577 ha. Native vegetation clearing limits have not been defined, but it is noted that 85% of the mine study area is previously cleared. However it is further acknowledged that the referral notes that native vegetation disturbance is likely to be considered significant, including some potential Eucalypt Woodlands of the Western Australian Wheatbelt and the Banksia Woodlands of the Swan Coastal Plain PEC.	Fauna habitat clearing limits have not been defined. The referral notes that 42 vertebrate fauna of conservation significance may potentially occur in the study area, but only the Carnaby's Cockatoo is considered likely to use habitat within the MSDE. It also notes that the mine study area provides habitat critical for the survival of Carnaby's Cockatoo.	Social surroundings have been identified by the EPA as a preliminary key environmental factor, with potential impacts including noise, dust, traffic, vibration and impacts to Aboriginal heritage values associated with construction and operation. These impacts, including cumulative effects, will be assessed through the Public Environmental Review process.

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

This is primarily due to the design flexibility of renewable energy projects, which typically prioritise cleared agricultural land and avoid areas of high environmental value. Established mining operations such as Cataby and Cooljarloo are already operating within defined footprints and subject to strict rehabilitation and offset programs that minimise incremental impacts. For wind farms such as Waddi, Yandin, Parron, and Marri, vegetation clearing is generally small in scale (typically <100 ha of mostly degraded vegetation), and fauna impacts, such as potential bird collisions or Black-Cockatoo habitat loss, are managed through targeted design, monitoring, and offset measures.

Cumulative impacts on social surroundings are expected to be low overall, except for potential cumulative visual effects. The Aboriginal and historical heritage sites which have been identified within the PDE have been avoided, and areas of higher heritage potential will be surveyed with the Yued Aboriginal Corporation, resulting in the Proposal having negligible cumulative heritage impacts. Cumulative noise, shadow flicker and EMI effects are also expected to be low, with modelling showing compliance at all non-involved sensitive receptors and only minor, manageable EMI risks.

Due to the large number of existing and proposed renewable energy projects in the broader region there is the potential for significant cumulative visual impacts should all these projects proceed. This is considered particularly relevant to the availability of close views from the Brand Highway toward wind turbines and transmission infrastructure, which may further affect the perception of the rural character of the region that has already been modified by wind developments. However, the local planning schemes are supportive of renewable energy developments provided impacts on sensitive landscapes and visual values are considered and managed.

While the broader landscape may appear more developed if all regional projects proceed, several proposals remain early in planning and may change in scale or not progress. Projects that do proceed will be required to mitigate amenity impacts and offset residual effects in line with current policy requirements.

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Appendix A

Decommissioning Plan and Rehabilitation Management Plan

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Appendix B

Community and Stakeholder Engagement Plan

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Appendix C

Detailed and Targeted Flora and Vegetation Assessment

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Appendix D

Construction Environmental Management Plan

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Appendix E

Basic and Targeted Fauna Assessment

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Appendix F

Bird and Bat Utilisation Surveys Summary Report

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Appendix G

Flood Modelling Report

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Appendix H

Targeted Fauna Habitat Assessment

Appendix I

Preliminary Bird and Bat Adaptive Management Plan

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Appendix J

Heritage Due Diligence Assessment

Appendix K

Landscape and Visual Impact Assessment

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Appendix L

Noise Impact Assessment

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Appendix M

Electromagnetic Interference Assessment

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Appendix N

Shadow Flicker and Blade Glint Assessment

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Appendix O

Assessment of Impacts to Matters of National Environmental Significance

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Appendix P

H1 Hydrogeological Assessment

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