



Twin Hills Wind Farm

Environmental Review Document

Junly 2026

Document control

Revision	Description	Date	Originator	Reviewer	Approver
V1 Draft	Draft	20/12/25	Alex Krzus	Jay Knight	NA
V2 Draft	Draft	22/4/26	Mikhaela Gray	Jay Knight	NA
V3 Draft	Draft	6/7/2026	Mikhaela Gray (Senior Development Officer)	Jay Knight (Regional Manager VIC, SA & WA)	Jay Knight (Regional Manager VIC, SA & WA)
V4 Final	Final	14/7/2026	Mikhaela Gray (Senior Development Officer)	Jay Knight (Regional Manager VIC, SA & WA)	Jay Knight (Regional Manager VIC, SA & WA)

Contents

Summary	6
Terms and acronyms	14
1 Proposal.....	18
1.1 Project description	18
1.1.1 Proposed infrastructure	22
1.1.2 Operation and maintenance	26
1.1.3 Water supply	26
1.1.4 Transport route to site.....	26
1.1.5 Workforce.....	27
1.1.6 Decommissioning and rehabilitation	27
1.2 Approved proposal/s (for Significant Amendments ONLY)	27
1.3 Proposal alternatives	28
1.3.1 Need for renewable energy projects.....	28
1.3.2 Alternatives considered	28
1.3.3 Design evolution to avoid and minimise impacts.....	29
1.4 Local and regional context.....	30
1.4.1 Biophysical environment.....	30
1.4.2 Land tenure and use	33
2 Stakeholder engagement	34
2.1 Key stakeholders	34
2.2 Stakeholder engagement process.....	35
2.3 Stakeholder consultation outcomes.....	35
2.4 Other approvals and regulations	53
3 Environmental factor – Flora and vegetation	54
3.1 EPA environmental factor and objective	54
3.2 Relevant policy and guidance.....	54
3.3 Receiving environment	55
3.3.1 Surveys and studies	55
3.3.2 Existing environment	60
3.4 Proposed mitigation.....	66
3.5 Potential environmental impacts.....	68

3.5.1	Identified environmental impacts	68
3.5.2	Predicted environmental impacts	68
3.6	Assessment of significance of residual impacts	72
3.6.1	Proposal.....	72
3.6.2	Combined effects (for Significant Amendments only)	75
3.6.3	Cumulative impacts	76
3.7	Environmental outcomes	77
4	Environmental factor – Terrestrial fauna.....	78
4.1	EPA environmental factor and objective	78
4.2	Relevant policy and guidance.....	78
4.3	Receiving environment	79
4.3.1	Surveys and studies	79
4.3.2	Existing environment	83
4.4	Proposed mitigation.....	93
4.5	Potential environmental impacts.....	95
4.5.1	Identified environmental impacts	95
4.5.2	Predicted environmental impacts	95
4.6	Assessment of significance of residual impacts	99
4.6.1	Proposal.....	99
4.6.2	Combined effects.....	109
4.6.3	Cumulative impacts	109
4.7	Environmental outcomes	111
5	Environmental Factor – Social surrounds	114
5.1	EPA environmental factor and objective	114
5.2	Relevant policy and guidance.....	114
5.3	Receiving environment	115
5.3.1	Surveys and studies	115
5.3.2	Existing environment	116
5.4	Proposed mitigation.....	117
5.5	Potential environmental impacts.....	119
5.5.1	Identified environmental impacts	119
5.5.2	Predicted environmental impacts	120
5.6	Assessment of significance of residual impacts	123
5.6.1	Proposal.....	123

5.6.2	Combined effects	125
5.6.3	Cumulative impacts	125
5.7	Environmental outcomes	126
6	Offsets.....	129
6.1	Summary of significant residual impacts	129
6.2	Details of proposed offsets	129
7	Matters of National Environmental Significance	130
7.1	EPBC referral and decision	130
7.2	Significant impact assessments for MNES	130
7.3	EPBC offsets	132
	References	133

List of Tables

Table 1-1: General proposal content description	18
Table 1-2: Proposal content elements	18
Table 1-3: Land systems within the Project Area.....	30
Table 2-1: Key stakeholders and their respective interests	34
Table 2-2: Stakeholder consultation outcomes.....	36
Table 3-1: Relevant policy and guidance for flora surveys	54
Table 3-2: Summary of Flora and Vegetation surveys	55
Table 3-3: Limitations and constraints of the flora and vegetation assessment	56
Table 3-4: BC Act-listed flora species with a Confirmed or Likely likelihood of occurrence within the Project Area	59
Table 3-5: Extent of pre-European vegetation system associations for the Proposed Development Footprint remaining across three scales.....	61
Table 3-6: Vegetation types within the Project Area	63
Table 3-7: Vegetation condition within the Project Area	65
Table 3-8: Significant flora species and associated vegetation types in relation to the Proposed Development Footprint.....	66
Table 3-9: Maximum clearing extents – vegetation type	69
Table 3-10: Maximum clearing extents – vegetation condition.....	71
Table 3-11: Flora and Vegetation – significance matters	73
Table 3-12: Activities with potential cumulative impacts to Flora and Vegetation	76
Table 3-13: Flora and Vegetation – environmental outcomes	77
Table 4-1: Relevant policy and guidance	78
Table 4-2: Summary of Terrestrial Fauna surveys	79
Table 4-3: BC Act-listed species of mammals, birds, and reptiles whose likelihood of occurrence within the Project Area was deemed as “Likely” or greater	81
Table 4-4: Survey limitations and constraints	81
Table 4-5: Summary of significant fauna recorded during the desktop assessment. Species in bold are known to occur in the Survey Area.	84
Table 4-6: Fauna habitat extents	86
Table 4-7: Carnaby’s Black-Cockatoo foraging scores by habitat type.	88
Table 4-8: Counts of potential and suitable breeding trees recorded.....	89

Table 4-9: Maximum clearing extents – vegetation within Project Area + conservation reserves within 10km of the Project Area	96
Table 4-10: Conservation reserves within 10km of the Project Area.....	96
Table 4-11: Maximum clearing extents – Carnaby's Black-Cockatoo habitat with score of 10	97
Table 4-12: Maximum clearing extents – Carnaby's Black-Cockatoo breeding trees	97
Table 4-13: Maximum clearing extents – Peregrine Falcon habitat	98
Table 4-14: Maximum clearing extents – Western Spiny-tailed Skink habitat.....	98
Table 4-15: Terrestrial Fauna – significance matters	99
Table 4-16: Activities with potential cumulative impacts to Terrestrial Fauna	109
Table 4-17: Terrestrial Fauna – Environmental outcomes.....	112
Table 5-1: Relevant policy and guidance for Social Surroundings	114
Table 5-2 Studies and Surveys relevant to Social Surroundings.....	115
Table 5-3: Highest predicted wind turbine noise levels at non-host receivers (30 dB L _{Aeq} or above) 120	
Table 5-4: Visual impact ratings at assessed viewpoints	121
Table 5-5: Social Surroundings – significance matters.....	123
Table 5-6: Activities with potential cumulative impacts to Social Surroundings	125
Table 5-7: Social Surroundings – environmental outcomes	126

Appendices

Appendix A – Figures
Appendix B – Legislative Context
Appendix C – Environmental factors or matters
Appendix D – Bird and Bat Management Plan
Appendix E – Basic and Targeted Fauna Survey Report
Appendix F – Detailed and Targeted Flora Survey Report
Appendix G – Stakeholder Engagement Plan
Appendix H – Bird and Bat Utilisation Survey Report
Appendix I – Orchid Memorandum
Appendix J – Carnaby's Cockatoo <i>Calyptrorhynchus latirostris</i> in the Eneabba Region
Appendix K – Vegetation Impact Memorandum
Appendix L – Aboriginal Desktop Heritage Assessment
Appendix M – Detailed Acoustic Assessment and Background Noise Monitoring report
Appendix N – Visual Impact Assessment
Appendix O – Shadow Flicker Assessment
Appendix P – EMI Assessment
Appendix Q1 – Hydrology Technical Report
Appendix Q2 – Water Management Report
Appendix R – Carnaby's Black Cockatoo Cumulative Impact Assessment
Appendix S – Traffic Impact Statement and Survey
Appendix T – Aviation Impact Statement
Appendix U – Holistic Impact Assessment

Summary

Twin Hills Wind Farm Pty Ltd (the Proponent) is seeking approval to develop, construct and operate the Twin Hills Wind Farm project (the Project or the Proposal) approximately 30 km north-east of the township of Eneabba, 25 km south-east of the township of Three Springs, and 260 km north of Perth, WA.

The Project will involve the construction, operating and decommissioning of up to 93 wind turbines (up to 750 MW of installed capacity), a Battery Energy Storage System (BESS) (up to 500 MW), and associated infrastructure, which will be developed across freehold properties and road reserves.

The Project is described in further detail in Section 1. The terms Project Area, Proposed Development Envelope and Proposed Development Footprint as they relate to Project impacts and mitigation measures are defined in the 'Terms and acronyms' section.

Based on the assessments carried out for the Project, the relevant key environmental factors are:

- Flora and Vegetation
- Terrestrial Fauna
- Social Surroundings.

Residual impacts to individual environmental factors are not considered to be significant, including from a cumulative impact perspective when assessed with other approved or advanced proposals. A summary of potential impacts, key proposed mitigation strategies and proposed environmental outcomes for each of the relevant environmental factors is provided in **Table S-1**.

The key environmental factors for the Project are Flora and Vegetation and Terrestrial Fauna, with Social Surroundings assessed as an other environmental factor; these are assessed in Sections 4 to 6. A full consideration of all key environmental factors is included in **Appendix C**.

A summary of the Project is provided in Section 1 (**Table 1-1** and **Table 1-2**) as per the current EPA Environmental Referral Document guidelines documents. This information is also presented in the Proposal Content Document.

This Environmental Review Document (ERD) has been prepared in line with EPA guidance 'How to prepare an environmental review document Instructions' (EPA, December 2025) to support the referral of the Twin Hills Wind Farm project (the Project) to the EPA under Part IV of the *Environmental Protection Act 1986* (EP Act). Other documents referred to within those instructions and used to prepare this ERD include:

- Instructions and template - How to identify the content of a proposal (EPA, March 2024)
- Template – Environmental Review Document, version 2.0 (EPA, December 2025)
- Template – Proposal Content Document (EPA, October 2021)

- Environmental Impact Assessment Practice Guide Assessment of Proposals in Western Australia under Part IV of the *Environmental Protection Act 1986*
- Environmental Factor Guideline:
 - Terrestrial Fauna (December 2016)
 - Flora and Vegetation (December 2016)
 - Social Surroundings (November 2023).

Table S-1: Summary of potential impacts, proposed mitigation and expected environmental outcomes

Key Environmental Factor 1 – Terrestrial Fauna	
Potential significant environmental impacts	Impacts have been assessed based on the conservative (“worst case”) design with 100 m wind turbine blades. If the blades are ultimately shorter, the vegetation clearing requirements will be less due to smaller transport vehicle turning paths. Direct impacts: • Loss, fragmentation, or modification of habitat from clearing vegetation. • Loss of or injury to individuals from: ○ Clearing vegetation. ○ Collisions with wind turbines or other Project infrastructure. ○ Collisions with vehicles. ○ Fires that result from operating equipment or hot works. Indirect impacts: • Introduction of weeds, pathogens, or pest fauna from: ○ Vehicle movements during construction and operation. ○ Rubbish and refuse generated from site personnel. • Dust from vehicle movements and construction activities covering habitat. • Altered fauna behaviour due to the presence of operating wind turbines and increased human presence.
Mitigation hierarchy	Avoid: • Avoid clearing any more than the estimated maximum area of native vegetation (17.14 ha) calculated based on the Proposed Development Footprint (Table 3-9). • Avoid clearing any native vegetation outside of the Proposed Development Envelope (Appendix A; Figure A 5). • Implement a minimum turbine blade tip height of 60 m above ground level. • Ensure no wind turbines are installed within 2 km of the Carnaby’s Black Cockatoo (CBC) roost identified during the baseline bird and bat utilisation surveys (BBUSs) north of the Project Area. • Avoid clearing of any CBC breeding trees designated as “suitable” and not clear more than two “potential” CBC breeding trees.

- Ensure no wind turbine towers are installed within 500 m of Wedge-tailed Eagle nests identified during baseline BBUSs.
- Design the wind turbine layout using fauna habitat type mapping to locate turbines on cleared (paddock/crop/infrastructure) habitat wherever practicable, avoiding Diverse Shrubland and Heath, Low Eucalypt Woodland, and Shrubland on Lateritic Ridge/Outcrop habitat types to the extent achievable within the Proposed Development Envelope.

Minimise:

- Site and design non-wind turbine infrastructure to minimise clearing requirements.
- Implement lighting options that minimise potential impacts to bird and bat species where practicable. These may include:
 - Implementing directive lighting that minimises high intensity light spill beyond fenced areas (e.g., substations and maintenance yards, etc).
 - Installing light hoods.
 - Using lighting technologies and wavelengths that minimise attraction of nocturnal fauna, in accordance with manufacturer recommendations and best practice guidance applicable at the time of construction.
- Implement site vehicle and machinery hygiene procedures to minimise the spread of weeds and plant pathogens.
- Implement appropriate speed limits on unsealed access tracks to control dust generation and mitigate risk of collision with fauna.
- Develop and implement fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) as well as a Bushfire Management Plan (BMP).
- Undertake monitoring (including carcass searches) in accordance with the Monitoring Program described within the *Bird and Bat Management Plan* (BBMP) (**Appendix D**).
- Undertake carrion removal in accordance with the Bird and Bat Monitoring Program within the BBMP (**Appendix D**).
- Re-evaluate the risk rating of at-risk bird and bat species following the annual review of qualitative risk assessment based on the results from the operational BBUS compared to those from the baseline BBUS data collected during the Bird and Bat Monitoring Program.
- Develop and implement awareness, induction, and training packages to effectively implement the BBMP (**Appendix D**).
- Actively manage any potential and actual impacts to birds, bats, and associated habitats during the construction phase of the Project through implementing a Construction Environment Management Plan (CEMP).
- Develop and implement awareness, induction, and training packages to effectively implement the CEMP.
- General site hygiene procedures for the Project would ensure rubbish and refuse are managed appropriately to avoid attracting pest fauna, reducing any respective residual impacts to Peregrine Falcons to below significant levels.

Rehabilitate:

- Restore land used for temporary infrastructure during the construction phase to its pre-construction-state during the operations phase, as far as practicable.

Residual impacts, including assessment of significance	- Maximum proposed clearing of CBC foraging habitat with a score of 10 is 14.97 ha. This represents 0.75% of that present within the Project Area. - Maximum proposed clearing of Western Spiny-tailed Skink habitat of 5.10 ha. - Maximum proposed clearing of native vegetation is 17.14 ha. This represents 0.64% of that present within the Project Area, and 0.15% of that present within the Project Area + conservation reserves within 10 km of the Project. - Most clearing would be conducted to allow for wind turbine blade transport to the Project Area from public roads through roadside vegetation and for sections of overhead powerlines, and the clearing would be distributed over the Project Area rather than concentrated heavily in any one location. - A significant proportion of the proposed clearing areas, including CBC foraging habitat, would be rehabilitated post-construction. Overall, the Project is considered as unlikely to have a significant residual impact on Terrestrial Fauna in the region.
Proposed offsets (if relevant)	No environmental offsets are proposed in response to the finding that the Project is unlikely to have a significant residual environmental impact under the Part IV assessment. Native vegetation clearing will require an application for a Native Vegetation Clearance Permit (NVCP) under Part V Division 2 of the EP Act, and offsets for that clearing will be considered in accordance with the WA Environmental Offsets Policy and Guidelines.
Expected environmental outcomes	Maintain long-term, viable populations of: - Listed threatened bird and bat species; - Listed migratory bird and bat species; and - Non-listed bird and bat species. Implement BBMP and monitor mortality or injury to bird and bat species caused by turbine collision or barotrauma as a result of the Project. Clearing no more than 17.14 ha of native vegetation (Table 3-9).
Key Environmental Factor 2 – Flora and Vegetation	
Potential significant environmental impacts	Direct impacts: - Loss of BC Act-listed flora species and other vegetation from: - Clearing. - Fires that result from operating equipment or hot works. Indirect impacts: - Reduction in vegetation condition due to: - Introduction of weeds, pathogens, or pest fauna. - Dust generated from vehicle movement and construction activities. - Edge effects from clearing.
Mitigation hierarchy	Avoid: Avoid clearing any more than the estimated maximum area of native vegetation (17.14 ha) calculated based on the Proposed Development Footprint (Table 3-9).

	• Avoid clearing any native vegetation outside of the Proposed Development Envelope (Appendix A; Figure A 5). • Where practicable, micro-site infrastructure within the Proposed Development Envelope to avoid vegetation analogous to State-listed TECs or PECs and known records of Commonwealth- or State-listed flora identified during surveys. • Where the Proposed Development Footprint is materially revised during detailed design, undertake supplementary targeted flora surveys over any new disturbance areas (consistent with EPA 2016c) and apply the mitigation hierarchy to any newly identified significant flora. Minimise: • Site and design non-wind turbine infrastructure to minimise clearing requirements. • Implement site vehicle and machinery hygiene procedures to minimise the spread of weeds and plant pathogens. • Implement appropriate speed limits on unsealed access tracks to control dust generation. • Develop and implement fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) as well as a BMP. • Manage any potential and actual impacts to <i>Biodiversity Conservation Act 2016</i> (BC Act) listed flora species and other vegetation during the construction phase of the Project through implementing a CEMP. • Develop and implement awareness, induction, and training packages to effectively implement the CEMP Rehabilitate: • Restore land used for temporary infrastructure during the construction phase to its pre-construction-state during the operations phase, as far as reasonably practicable.
Residual impacts, including assessment of significance	• Maximum proposed clearing of vegetation is 17.14 ha. This represents 0.64% of that present within the Project Area, and 0.15% of that present within the Project Area + conservation reserves within 10 km of the Project. • Most clearing would be conducted on the edges of vegetated areas rather than throughout them, and the clearing would be distributed over the Project Area rather than concentrated heavily in any one location. • At the regional scale, the Proposed Development Footprint results in a low proportional reduction in the remaining pre-European extent of each assessed vegetation system association — a maximum of 5.5% further decrease for Tathra (391), 0.07% for Tathra (49), and 0.39% for Tathra (379) at the subregion scale (Stantec, April 2026). • The proposed loss of vegetation and flora is not expected to cause a loss of biological diversity or to reduce ecological integrity at the local or regional scale and can be regulated through a NVCP granted under Part V of the Environmental Protection Act 1986 (EP Act). The Project can therefore be implemented in a manner that is consistent with the EPA objective for Flora and Vegetation.
Proposed offsets (if relevant)	No environmental offsets are proposed in response to a finding of significant residual environmental impacts under the Part IV assessment. Native vegetation clearing will require one or more NVCPs under Part V Division 2 of the EP Act, and offsets for that clearing will be developed as a condition of the relevant NVCP in accordance with the WA Environmental Offsets Policy and Guidelines.

Expected environmental outcomes	Clearing no more than 17.14 ha of native vegetation (Table 3-9). This outcome can be assured through an NVCP under Part V Division 2 of the EP Act.
Key Environmental Factor 3– Social Surroundings	
Potential significant environmental impacts	Direct impacts: • Disturbance to Aboriginal Cultural Heritage (ACH) values due to ground disturbance during construction. • Noise emissions from operating wind turbines and associated infrastructure (BESS, substation) affecting residents in proximity to the Project. • Visual amenity impacts resulting from the introduction of large-scale wind turbine structures into an open agricultural landscape. • Shadow flicker effects at nearby dwellings due to the rotation of wind turbine blades. • Electromagnetic interference (EMI) to communication services, meteorological radar, and broadcasting services from wind turbine structures. Indirect impacts: • Changes to landscape character at local and sub-regional scales from the presence of wind turbine structures. • Increased construction traffic on local roads affecting road users and local residents during the construction period.
Mitigation hierarchy	Avoid: • Prior to completing activities that involve ground disturbance an Activity Notice letter will be submitted to Yamatji Southern Regional Corporation (YSRC) and discussions held on surveys requirements. • Set wind turbines back a minimum of 330 m from neighbouring property boundaries to reduce noise and visual amenity impacts at non-host receivers. • Seek to avoid known EMI constraints, including affected point-to-multipoint link paths, in the final wind turbine layout. Minimise: • Apply noise control modes if required to ensure predicted noise levels at non-host receivers are within the 35 dB L_{Aeq} design objective at all wind speeds. • Undertake a noise compliance assessment at the detailed design stage, once final wind turbine model and layout are confirmed, to verify compliance with the WA Noise Regulations at all non-host receivers. • Retain existing roadside and other significant bands of vegetation where practicable to provide natural screening of wind turbine structures from key viewpoints. • Apply blade coatings with low reflectivity treatment to all wind turbines, consistent with standard practice for modern large wind turbines, to prevent blade glint. • Ensure the final wind turbine layout complies with the 30-hour per year / 30-minute per day theoretical limit for all non-host receptors. • If the decommissioned non-host dwelling is recommissioned in the future (with any required planning permission obtained), implement an Operational

Residual impacts, including assessment of significance	Management Plan including turbine curtailment to ensure actual shadow flicker at that receptor does not exceed 10 hours per year. • Seek to enter into a heritage agreement with the Yamatji Southern Regional Corporation (YSRC) and consult with YSRC in relation to ground-disturbing activities as agreed under that agreement. • Implement appropriate incidental ACH discovery procedures to manage any heritage values encountered unexpectedly during construction. • Continue engagement with the Bureau of Meteorology to determine whether the current 93-turbine layout materially impacts the Watheroo radar and, if required, implement appropriate mitigation measures (such as installation of supplementary automatic weather stations or wind profiling devices). • Continue engagement with BAI Communications to confirm whether any dwellings fall within interference zones for the Morawa broadcast transmitter based on the current turbine layout and implement rectification measures if required. • Engage with the owner of the identified dwelling potentially affected by geostationary satellite internet interference to confirm the impact and establish mitigation options. • Confirm with Western Power that the two rerouted point-to-multipoint links are clear of turbine exclusion zones in the final layout. If interference to any service is experienced following commissioning, implement appropriate rectification measures (including adjusting turbine layout, rerouting links, or increasing signal strength) in consultation with the affected operator. Rehabilitate: • Revegetate disturbed areas on completion of construction activities, including roadside areas where vegetation has been removed, to assist in reducing long-term visual impact and landscape character change. Aboriginal Cultural Heritage: No Registered, Lodged or Historic ACH sites are present within the Project Area, however, there remains a 'high risk' of the Project impacting Aboriginal heritage. A heritage field survey within the final development footprint will be completed prior to construction where required following consultation with YSRC. Residual impacts on ACH after implementing avoidance measures and heritage agreement obligations are not considered significant. Noise: Predicted wind turbine noise levels at all non-host receivers comply with the 35 dB L_{Aeq} design objective with up to two turbines applying noise control modes at limited wind speeds (using a candidate wind turbine). Predicted BESS and substation noise levels comply with the most stringent 35 dB L_{A10} night period limit under the WA Noise Regulations at all non-host receivers. Residual noise impacts are not considered significant. Visual amenity: Assessed visual impact from five photomontage viewpoints ranges from Low/Moderate to Moderate. No viewpoints are assessed as High or Very High visual impact. The surrounding agricultural landscape, already extensively modified, is assessed as having low to low-moderate scenic quality and can accommodate wind
--	---

	turbine structures. The predominant landscape character of the region will remain dominant. Visual impacts are not considered significant. Shadow flicker: All non-host receptors are predicted to receive no shadow flicker except one, which is a decommissioned and currently uninhabited dwelling. That dwelling is modelled to receive 55 hours per year under the theoretical maximum scenario. Should this dwelling be recommissioned in the future (with any required planning permission obtained), an operational curtailment will be implemented to ensure actual shadow flicker does not exceed 10 hours per year. Four host receptors receive shadow flicker above the 30-hour limit; consent agreements are in place with all relevant host landowners. Shadow flicker residual impacts are not considered significant. EMI: Point-to-point links, CB radio, trigonometrical stations, satellite internet and geostationary broadcast impacts are expected to be minor or nil. Two Western Power point-to-multipoint links are being rerouted clear of turbine locations. Further engagement is required with the Bureau of Meteorology (Watheroo radar) and BAI Communications (Morawa broadcast transmitter) based on the current turbine layout. Residual EMI impacts are expected to be resolvable through design adjustment and/or mitigation measures and are not considered significant.
Proposed offsets (if relevant)	No offsets are proposed for Social Surroundings. No residual impacts to Social Surroundings values are considered significant.
Expected environmental outcomes	• Avoid disturbance of any ACH discovered within the final development footprint during pre-construction heritage survey. • Ensure wind turbine noise levels comply with the WA Noise Regulations at all non-host receivers, with compliance to be confirmed through a noise compliance assessment at the detailed design stage and verified at commissioning. • Avoid visual impact levels of Moderate/High or greater, as defined in the Visual Impact Assessment (Appendix N), at neighbouring dwellings. • Comply with shadow flicker limits for non-host receptors through operational curtailment if required. • Resolve all identified EMI impacts through design adjustment, re-routing of affected links, or installation of replacement/supplementary services prior to or at commissioning. These outcomes can be assured through conditions of the Development Approval (noise compliance, visual impact, shadow flicker, EMI resolution) and through the proposed heritage agreement with YSRC and relevant approvals under the <i>Aboriginal Heritage Act 1972 (WA)</i> if required.

Terms and acronyms

Term	Meaning
BC Act	<i>Biodiversity Conservation Act 2016</i>
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
Project	Twin Hills Wind Farm
Project Area	Refers to the area of the freehold land parcels for which consent to host infrastructure for the Project has been provided by the respective registered proprietor(s) AND any Proposed Development Envelope within road reserves. The Project encompasses seven freehold lots and adjacent road reserves to support transport infrastructure (Appendix A; Figure A 2). The total Project Area is 9,912.25 ha.
Proponent	Twin Hills Wind Farm Pty Ltd
Proposed Development Envelope	Refers to the area of land within which the Proposed Development Footprint would be situated. The Proposed Development Envelope provides flexibility for the final location of infrastructure installed for the Project, but the maximum area of native vegetation clearing for the Proposed Development Footprint would not increase regardless of where the Proposed Development Footprint is situated within the Proposed Development Envelope. The total Proposed Development Envelope is 6,326.33 ha (Appendix A Figure A 5).
Proposed Development Footprint	Refers to the maximum area of land that may need to be cleared to install all proposed infrastructure for the Project. It is based on the largest conceptual project layout and has been used to calculate the maximum area of native vegetation clearing (17.14 ha). The Proposed Development Footprint has been generated by applying suitable buffers that account for construction, operation, and maintenance activities around all proposed infrastructure for the Project. The total Proposed Development Footprint is 543.6 ha.

Term	Meaning
Survey Area	Refers to an area of land over which desktop studies and ecology field surveys were conducted for the Project (as discussed throughout the <i>Basic and Targeted Fauna Survey Report</i> , Appendix E ; <i>Detailed and Targeted Flora Survey Report</i> , Appendix F ; and <i>Bird and Bat Utilisation Survey Report</i> , Appendix H). The total Survey Area is 9,993 ha and covers the Project Area except for property Volume 1705 Folio 383 (volume/folio). Additional survey effort outside of the Survey Area was conducted over the Proposed Development Envelope on property Volume 1705 Folio 383 (as discussed in Appendix F of the <i>Basic and Targeted Fauna Survey Report</i> , Appendix E ; Appendix P of the <i>Detailed and Targeted Flora Survey Report</i> , Appendix F ; and section 5 of the <i>Orchid Memorandum</i> , Appendix I and described in those reports as 'Additional Land Parcel'). The Survey Area as it relates to specific environmental factors is explained in the relevant subsections (e.g., Section 3.3.1 for flora and vegetation). See Appendix A Figure A 30: Survey Area.

WA Noise Regulations	Environmental Protection (Noise) Regulations 1997
----------------------	---

Acronym	Meaning
ACH	Aboriginal Cultural Heritage
BBD	Blue-billed Duck
BBMP	Bird and Bat Management Plan
BBUS	Bird and bat utilisation survey
BESS	Battery energy storage system
BMP	Bushfire Management Plan
CBC	Carnaby's Black-Cockatoo
CEMP	Construction Environment Management Plan

Acronym	Meaning
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CRM	Collision Risk Modelling
DA	Development Application
DAP	Development Assessment Panel
dB	Decibel
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEED	Department of Energy and Economic Diversification
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EMI	Electromagnetic interference
EPA	Environmental Protection Authority
ESA	Environmentally Sensitive Area
FTS	Fork-tailed Swift
GDE	Groundwater Dependent Ecosystem

Acronym	Meaning
ha	Hectare
km	Kilometre
kV	Kilovolt
MNES	Matters of National Environmental Significance
MRWA	Main Roads Western Australia
MW	Megawatt
MWh	Megawatt hour
NVCP	Native Vegetation Clearing Permit
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
SWIS	South West Interconnected System
TEC	Threatened Ecological Community
UV	Ultraviolet
WA	Western Australia
WSTS	Western Spiny-tailed Skink
YSRC	Yamatji Southern Regional Corporation

1 Proposal

1.1 Project description

The Twin Hills Wind Farm (the Project) is a renewable energy project located within the Shire of Three Springs, approximately 30 km north-east of Eneabba and 260 km north of Perth. The Project involves the construction and operation of up to 93 wind turbine generators (WTGs), a Battery Energy Storage System (BESS), and associated infrastructure.

The Project will connect to the South-West Interconnected System (SWIS) via an existing 330 kV transmission line. Network capacity is supported by Western Power's *Clean Energy Link North* upgrade, scheduled for completion in 2027.

The following tables (**Table 1-1: and Table 1-2**) define the Project in accordance with the EPA's *Instructions and Template: How to identify the content of a proposal*.

Table 1-1: General proposal content description

Proposal Title	Twin Hills Wind Farm
Proponent Name	Twin Hills Wind Farm Pty Ltd
Short Description	Development and operation of a renewable energy facility comprising up to 93 wind turbine generators (total capacity of up to 750 MW), a battery energy storage system (up to 500 MW / 4,000 MWh), and associated supporting infrastructure such as access tracks, roads, substations, electrical reticulation and transmission infrastructure. The project will be connected to the SWIS. The Project is located on predominantly cleared agricultural land approximately 30 km north-east of Eneabba, WA. Please see Appendix A Figure A 1 for the Regional Location of the project.

Table 1-2: Proposal content elements

Proposal element	Location / description	Maximum extent, capacity or range
Physical elements		
Renewable energy infrastructure including:	Within the Proposed Development Envelope (see Appendix A – Figure A 5)	- Development Envelope: 6,326.33 ha - Proposed Development Footprint: 543.6 ha - Native Vegetation Clearing: Up to 17.14 ha
Wind turbine generators (WTGs)		BES
On-site substation		Up to 10 ha

Proposal element	Location / description	Maximum extent, capacity or range
Battery Energy Storage System		Up to 24 ha
Terminal station		Up to 10 ha
Distribution infrastructure (nominally 33 kV)		- Approximately 18 km overhead ~33 kV powerlines - Approximately 80 km underground cabling (trenched distance)
Transmission (330 kV)		Approximately 15 km
Transport and site access and internal access roads, operations and maintenance facility, permanent meteorological masts, fencing and gates, and water tanks	Amounts and locations to be determined during the detailed design stage and in accordance with permit conditions and secondary consents.	
Temporary infrastructure for construction will also be required and will include, laydown and stockpile areas, construction compounds, gravel borrow pits, water abstraction bored, concrete batching plant and storage facilities.	Amounts and locations to be determined during the detailed design stage and in accordance with permit conditions and secondary consents.	
Construction elements		
Construction period	Within the Proposed Development Envelope	Approximately 2 – 3 years.
Water supply		Groundwater abstraction: Up to 95 ML/annum.
Concrete batching plants		Concrete for the foundations will be mixed at concrete batching plants which are proposed to be part of the laydown areas within the Proposed Development Envelope. Concrete batching material may be sourced from off-site locations.

Proposal element	Location / description	Maximum extent, capacity or range
Transport of turbines and associated infrastructure along existing road network	AMC Henderson to Project Area	No clearing required outside of Proposed Development Envelope.
Operational elements		
- Wind energy production and battery energy storage - Transmission connection and substation - Operations and Maintenance buildings	See <i>Infrastructure Layout</i> in Appendix A (Figure A 3)	- Up to 93 wind turbines with a combined generation capacity of up to approximately 750 MW - BESS capacity up to 500 MW / 4,000 MWh
Proposal elements with greenhouse gas emissions		
Construction elements		
Scope 1	Clearing of vegetation	~ 1,889.61 tCO ₂ e
	On-site power generation	~ 4,682.00 tCO ₂ e
Scope 2	Vehicle movements on-site	~4,696.40 tCO ₂ e
	Not applicable	
Scope 3	- Manufacture and supply of equipment and materials – approx. 20,850.00 t CO₂e - Off-site employee vehicle movements – approx. 2,595 t CO₂e - Turbine lifecycle emissions are covered under operational elements	
Operation elements		
Scope 1	Not applicable	
Scope 2	Not applicable	
Scope 3	22,159 tCO ₂ e per annum	

Proposal element	Location / description	Maximum extent, capacity or range
------------------	------------------------	-----------------------------------

It is estimated that the Project would result in emissions of up to ~554,000 t CO₂e over its lifecycle. Most (~80 – 90%) of the emissions from the Project are likely to be associated with the materials extraction for materials processing and manufacturing of wind turbine components and other equipment. The remaining emissions are likely to be associated with diesel used for generating onsite power and operating vehicles, vegetation clearing, and any electricity purchased from the grid with a fossil fuel component. Total greenhouse gas emissions for the Project would be significantly lower than those for coal-fired or gas-fired power plants of a similar generation capacity, and the Project would reduce overall emissions from power generating assets in WA significantly.

Rehabilitation

Land used for temporary infrastructure during the construction phase will be restored to its pre-construction-state during the operations phase, as far as reasonably practicable, and in accordance with land use agreements with landowners.

Upon decommissioning, disturbed land will be rehabilitated in accordance with a decommissioning management plan, relevant approval conditions and landowner agreements.

Commissioning

There are no environmental impacts specific to commissioning.

Decommissioning

Near to the end of the operational life of the Project, the Proponent may decommission the Project and rehabilitate the land in accordance with a decommissioning management plan and relevant approval conditions. Alternatively, the Proponent may instead re-power the Project by installing new equipment (subject to future planning approvals, environmental approvals, and land agreements, as required).

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)
- Removal of concrete foundations, unless otherwise agreed with landowners.

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

Other elements which affect extent of effects on the environment

Proposal time	Maximum project life	25-30 years (subject to future approvals for repowering)
	Construction phase	Estimated to be 2 – 3 years.
	Operations phase	Estimated to be 25 – 30 years.
	Decommissioning phase	Estimated to be up to 2 years.

1.1.1 Proposed infrastructure

The Project involves the construction of up to 93 wind turbines, a BESS, and associated infrastructure, and will be developed across freehold properties and road reserves. The WTGs will be installed on towers up to 200 m in height, with blades up to 100 m long, and a maximum tip-height of 300 m.

The Project will connect into the South-West Interconnected System (SWIS) via the existing 330 kV transmission line that runs adjacent to the site to the east.

The specifications of the WTGs and BESS, as well as the exact location of the infrastructure, will be determined through a detailed procurement process and as such, parameters which provide for a conservative assessment have been considered. The final layout will utilise existing cleared areas as far as practicable.

Key infrastructure proposed for the Project include:

- Wind turbine generators (WTGs)
- Wind turbine foundations
- Hardstands
- Electrical substations
- Overhead and underground cabling (including crossing of road reserves)
- BESS
- Operations and maintenance facility
- Permanent meteorological masts
- Communications towers
- Utilities
- Accessways.

Access to and from the Project Area is proposed on Eneabba-Three Springs Road, Kangaroo Road, First North Road and Beekeepers Road (Appendix A; Figure A 9). An access point from Skippers Road near the intersection with First North Road will also be used for emergency vehicle ingress and egress.

Wind turbines

The Project will include up to 93 WTGs, capable of generating up to 750 MW. The WTG would comprise:

- Maximum blade length of up to 100 m.
- Tower height of between 120 m and 200 m.
- Maximum overall turbine height (tip height) of 300 m.

- Minimum blade ground clearance of 60 m.

The wind turbine ultimately chosen for the project would comply with relevant international standards, such as IEC 61400-1 Wind energy generation systems – Part 1: Design requirements and IEC 61400-24 Lightning protection standard. The WTGs will be uniformly coloured light grey or white with a semi-matte finish to reduce their contrast with background sky and minimise reflection.

Each WTG will have a transformer located internally in the nacelle (i.e., in the large box behind the rotor hub) or externally on the ground near the turbine tower. Power and communications cables will be installed primarily underground between the turbines and connect to the proposed substation.

Turbine foundations

The wind turbine foundations would be either a gravity foundation or rock anchor foundation. The final designs of individual foundations for each wind turbine would be determined by detailed geological and geotechnical investigations. It is possible that more than one type of wind turbine foundation will be needed across the wind farm.

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 Proposed Development Envelope. Concrete batching material may be sourced off-site.

Hardstands

Hardstands are needed next to each wind turbine for the assembly, erection, maintenance, repowering and decommissioning of a wind turbine. Each hardstand area would be about 0.65 ha, which includes the foundation, laydown areas and crane pads. Truck turning circles would be included as an extension to turbine hardstands at the end of access tracks. In this situation, an individual hardstand area would be approximately 0.95 ha. Hardstands would be surfaced with material to the required load-bearing specifications for the selected crane. This would consist of crushed rock. After construction, the hardstand would be retained and used for periodic maintenance of the wind turbines throughout the life of the Project. Rehabilitation would occur around the margins of the hardstand if, for example, revegetation is required for managing weeds and pest animals. The exact hardstand arrangement would be designed for the specific requirements of the wind turbine, the crane and local topography.

Electrical plant and overhead powerlines

The Project includes an onsite substation for the wind farm, an onsite substation for the BESS, a terminal station and two operations and maintenance (O&M) facilities – one for the wind farm and one

for the terminal station and BESS. The proposed area for the electrical plant and O&M facilities will also include vehicle parking spaces, septic ablutions and wash down areas.

Power and communication cables will be installed underground between the turbines and will connect back to the substation, terminal station and the O&M facilities.

Up to 19 km of overhead 33 kV line will connect to the onsite wind farm substation, and 15 km of 330 kV transmission line would connect the wind farm onsite substation to the existing Western Power double circuit transmission line located in the south-west of the Proposed Development Envelope at a new terminal station. A short length of high voltage transmission line would also connect the BESS to the terminal station. The overhead 33 kV powerlines for the wind farm will be supported on pole tower structures up to 26 m tall. The 330 kV transmission line would be supported by lattice towers or poles up to 60 m tall and spaced at 250 m to 500 m intervals. Reduced spans between towers may be required near crossings of waterways 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 to accommodate the 330 kV transmission line.

Underground cabling

Power and communication cables will be installed underground (with at least 800 mm cover) 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 80 km however this 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.

BESS

The BESS will be adjacent to the proposed terminal station. 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 500 MW / 4,000 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) via a high voltage transmission line.

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

Operations and maintenance facility

An operations and maintenance facility would be constructed adjacent to the on-site terminal station and battery energy storage system providing an office, a storage area, and maintenance facilities.

The facility would occupy an area of approximately 90 m by 200 m.

Meteorological masts

Permanent meteorological masts are important tools in monitoring the power performance of operating wind turbines and ensure they are operating efficiently and safely whilst maximising energy production. Each met mast would be a lattice tower, with a height equal to the wind turbine hub height (proposed height of 150 m). Equipment installed on the met mast would include anemometers and wind vanes at various heights to record wind speed and direction, temperature and atmospheric pressure, and have prominent aviation markers to ensure visibility for any low flying aircraft, such as those used for crop spraying or firefighting. A single-lane access track, roughly four metres wide, may be constructed to provide access to each met mast.

Accessways

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 where possible from on-site borrow locations, to be determined in subsequent stages of the Project.
- Regular passing places and turning areas will be provided to assist in vehicle circulation around the site. The access tracks will only link to the identified site access and road crossing points (see Figure A 9), 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 preliminary 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 over-size over-mass loads in the event of a wind turbine blade or other large component replacement during operation.

Exclusions

The scope of the Project referred under Section 38 of the *Environmental Protection Act 1986* (EP Act) excludes investigative works such as geotechnical and hydrogeological investigations which would

support the later detailed design of the Project. These investigations and surveys will be subject to relevant provisions under Part V of the EP Act for clearing of native vegetation and other relevant legislation.

1.1.2 Operation and maintenance

Operation, maintenance and monitoring of the project are likely to include the following activities:

- Environmental monitoring in accordance with the conditions of all statutory approvals and environmental management plans
- Maintenance and repair of wind turbines and other Project infrastructure
- Maintenance of internal access tracks
- Maintenance of electrical reticulation system, buildings and plant; including control systems and BESS.

1.1.3 Water supply

Water required during the construction period is proposed to be abstracted from existing bores within the Proposed Development Envelope. The current proposed water usage for this period is approximately 95.0 ML/annum, assuming a two-year construction timeframe. Of this, approximately 5.6 ML/annum is to be suitable for concrete batching, while the remaining 89.4 ML/annum is for general on-site construction requirements including dust suppression and wash down as well as potable usages.

The initial testing of groundwater quality of the onsite bores and springs suggests that the Parmelia Aquifer is likely to be suitable for the general construction water. It may require some treatment on-site to allow for concrete batching. This will be determined through more detailed water quality testing. The use of the Parmelia Aquifer for potable use will require treatment. Given the likely low volumes, potable water may be trucked in from mains water sources.

The water servicing strategy of the Project is further discussed in section 9 of the *Water Management Report* (**Appendix Q2**).

1.1.4 Transport route to site

A Preliminary Route Assessment was completed in April 2026 (**Appendix S**) to identify a feasible route to allow the transport of Project infrastructure from Port to Site. The Australian Marine Complex in Henderson was identified as the preferred option with the preferred route illustrated in **Appendix A** (Figure A 8).

Up to 16 vehicular site access points will be utilised on the external road network to service both the construction and operational stages of the Project. There are three operational site access points from Three Springs – Eneabba Road, four from Kangaroo Road and three from First North Road. Additionally, there are four bushfire egress access points; one on Beekeepers Road, one from Three Springs – Eneabba Road, one from First North Road and another from Skippers Road. These are presented in **Appendix A** (Figure A 9). 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.

Further details on the transport route to site for the Project is discussed in the *Traffic Impact Statement & Route Survey (Appendix S)*.

1.1.5 Workforce

Given the size and scale of the Project, construction of the assets will be delivered over multiple overlapping phases within a period of approximately 24-36 months, with a workforce peaking at up to 300 personnel. Accommodation for construction personnel will be sourced from existing suppliers in the local area, where possible, including as far as Jurien Bay and Dongara, as well as local suppliers in surrounding areas.

During operations, both on-site and off-site personnel would manage the Project. It is expected that the Project would create approximately 15 permanent full-time jobs during operation.

1.1.6 Decommissioning and rehabilitation

The proposed technology is expected to have an economic life around 30 years. At the end of the current lease term, a decision would be made whether to either:

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

If the Project is permanently decommissioned, Twin Hills Wind Farm Pty Ltd 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 Projects internal network
- dismantling and removing turbines, BESS, ancillary electrical infrastructure and transmission lines, as well as all other aboveground buildings, and equipment
- removal of wind turbine foundations, unless otherwise agreed with landowners
- 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 and wind turbine foundations).

1.2 Approved proposal/s (for Significant Amendments ONLY)

Not used.

1.3 Proposal alternatives

1.3.1 Need for renewable energy projects

The Project directly supports the *Climate Change Act 2022* targets (43% reduction by 2030) and the WA Government's 80% reduction target for 2030. By injecting ~750 MW of green energy into the SWIS, the project offsets significant carbon-intensive generation and provides critical support for the decarbonisation of the northern grid via the Clean Energy Link North.

1.3.2 Alternatives considered

The Eneabba-Three Springs area 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 Project)
- access to a suitable transmission line within close proximity to the Project
- availability of good road access.

Alternative areas for large-scale wind farms to meet timelines for decarbonisation of the SWIS are limited due to the location of suitable existing transmission infrastructure. Developing projects significant distances from these transmission lines could 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 (DEMIRS, 2023). This would require almost ten times the amount of current generation capacity in the SWIS if electricity is to be generated primarily from renewable sources. Therefore, it is critical that progress towards the transition continues at pace to allow demand to be met.

The existing Western Power transmission line to the south-east of the Proposed Development Envelope provides suitable network access with sufficient capacity to accommodate the Project. 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 Project 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.

1.3.3 Design evolution to avoid and minimise impacts

Throughout the Project 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 wind turbines from 110 to 93.
- Decrease in the Project Area from 11,166.14 ha to 9,912.25 ha.
- Removal and relocation of turbines to meet the WA Environmental Protection (Noise) Regulations 1997 (Noise Regulations) at existing non-involved sensitive receptors and to limit encroachment of the modelled 35 dB noise contour on adjoining properties.
- Relocation of turbines to provide a minimum setback of 330 m from the Project boundary, representing 1.1 times the maximum blade tip height distance from non-involved neighbouring land.
- Removal of turbines to avoid blade overhang into road reserves and Crown land.
- Utilisation of existing farm tracks and entrances for internal access roads and site access to minimise impacts.

The referred Project is the only option to progress a wind farm and BESS proposal of this nature and scale in an acceptable timeframe given the factors listed below:

- The executed agreements, prior engagement, and relationship history with the private landowners that own land that comprises the Project Area.
- The wide, cleared farmland across the Project Area that reduces the need for clearing and managing other constraints related to proximity to dwellings.
- The planned grid upgrades for the nearby SWIS transmission lines that would allow for significant power to be injected into the electricity grid.

A map showing the design constraints can be found in **Appendix A** Figure A 6.

1.4 Local and regional context

1.4.1 Biophysical environment

Biogeographical location

The Project Area is located within the Lesueur Sandplain subregion of the Geraldton Sandplains bioregion. The bioregion is characterised by semi-arid warm Mediterranean conditions supporting mainly proteaceous scrub heaths, rich in endemics, with extensive York Gum and Jam woodlands on outwash plains associated with drainage. The biogeographical location of the Project Area is further discussed in section 2.1.1 of the *Basic and Targeted Fauna Survey Report (Appendix E)*. Mapping of the Project's bioregional context can be found in **Appendix A** Figure A 10 and Figure A 11.

Land systems, soil and vegetation

Five land systems have been identified as occurring within the Project Area, typically comprising undulating sandplains, lateritic plateaus and breakaways, rises and low hills, and sandy drainage lines and springs (**Table 1-3**).

Table 1-3: Land systems within the Project Area

Land system	Description	Area within the Project Area (approx.)	% within the Project Area
Coalara System	Partially dissected plateau with lateritic caps and intervening sandy drainage lines; Pale and yellow deep sand, sandy gravels and sand over gravel	6,424.93	64.29
Otorwiri System	Undulating to rolling sandplain and low hills. Gentle to moderately steep valley sides at margins of Mooladara Hill System. Spring lines are a common occurrence	2,515.35	25.17
Mount Adams Systems	Gently undulating sandplain with low gravel ridges and occasional laterite breakaways	1,045.98	10.47
Mooladara Hill System	Sandplain with dissected lateritic outcrops on margins and prominent dry valleys and drainages; Yellow, pale and brown deep sands, sand over gravel, minor sandy gravel, sandy duplexes	6.97	0.07
Boothendarra System	Subdued stripped lateritic plateau, undulating and gently undulating rises; Sandy duplexes,	0	0

	pale deep sand, sandy and loamy gravels and minor clays
--	---

The predominately sandy and gravelly soils will generally have a high permeability, meaning that low intensity rainfall will generally infiltrate into the soil profile. The areas of lateritic cap rock are likely to sheet water off during minor storms; however, the surrounding sandy soils will generally infiltrate the localised runoff from the rock portions. Once the infiltration capacity of the soil has been exceeded, there is likely a high runoff rate for the steeper slopes around the edge of the hill systems, especially those within contributing cap rock catchments and incised channels that concentrate flows.

These land systems support a range of vegetation including scrub heath, *Eucalyptus tottiana*, and Banksia woodland. The land systems of the Project Area are further discussed in section 2.1.2 of the *Basic and Targeted Fauna Survey Report (Appendix E)*.

Topography

The natural landform of the Project Area is characterised by gentle undulations and varied topography, despite modifications from road infrastructure and lot development. The area features a significant topographic range, with elevations spanning from 26 m AHD to about 370 m AHD. The proposed development site itself ranges from 176 m AHD to 294 m AHD.

The elevation of the study area increases from the western part towards the middle, where hills and ridges are located, before slightly decreasing towards Yarra Yarra Lake and the inner inland area. Both the western and eastern parts of the broader study area are relatively flat compared to the middle section where the majority of the Project infrastructure will be located.

Climate

The climate of the subject site is characterised as a semi-arid Mediterranean climate (Figure 1-1). Based on the long-term rainfall data from Bureau of Meteorology Carnamah Station (located 35 km to the east), the mean annual rainfall is approximately 376.2 mm. The majority of the rainfall is in winter, between the months of May and August. The warmest months of the year are between November and March, with daily maximum temperatures averaging above 30°C. The coolest months occur from June to August, with minimum temperatures consistently falling below 9°C.

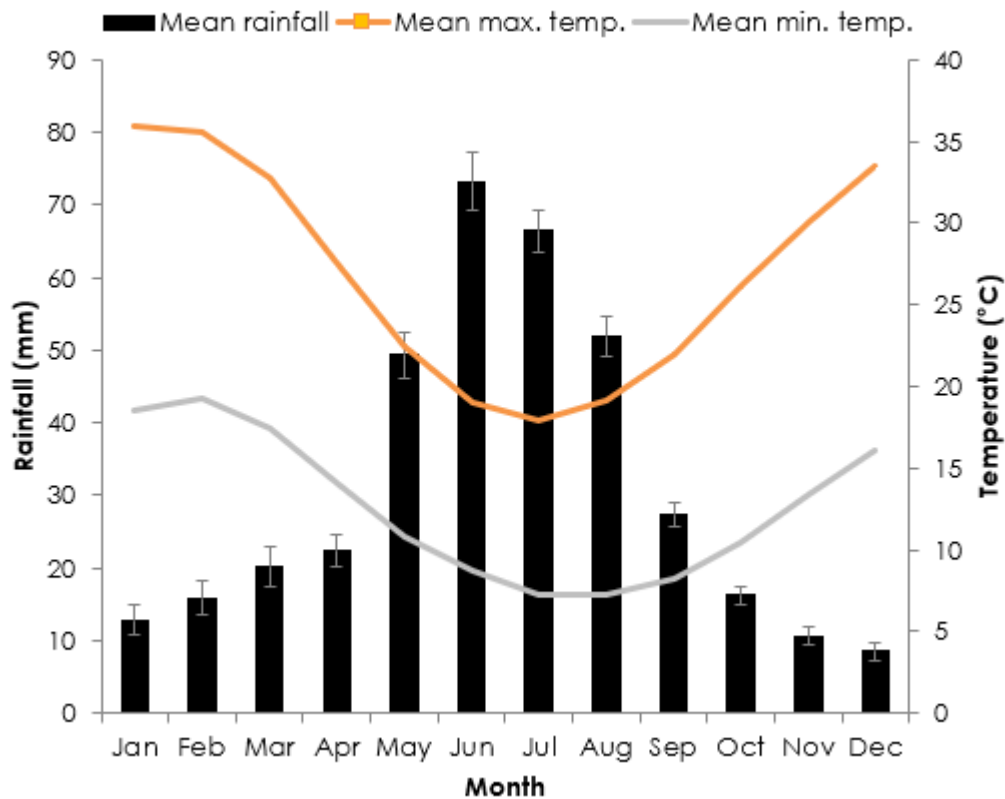


Figure 1-1: Long-term (1901-2023) rainfall (mm) and temperature (°C) from the Carnamah Weather Station (No. 008025) (BoM, 2023)

Hydrology and hydrogeology

The Project Area does not intersect with any Proclaimed Surface Water Areas. The Project Area spans across the Arrowsmith River and Moore-Hill River catchments, does not intersect the Arrowsmith River or any other major watercourses, but does intercept smaller unnamed tributaries. The nearest Protection Zones for Public Drinking Water Source Areas is approximately 15 km to the southwest of the Project Area. The Project Area is located within the Arrowsmith Proclaimed Groundwater Area. There are no Aquatic or Subterranean Groundwater Dependent Ecosystems (GDEs) present in the Project Area, based on mapping by the Bureau of Meteorology. Surface water and hydrology for the Project Area are further discussed in section 5.1 of the *Hydrology Technical Report* (**Appendix Q1**) and section 2.2.2 of the *Basic and Targeted Fauna Survey Report* (**Appendix E**).

Conservation reserves and environmentally sensitive areas

The Project Area does not directly overlap with any conservation reserves. Conservation reserves near to the Project Area include R 48098, R 12705, Wilson Nature Reserve, Depot Hill Nature Reserve, Wotto Nature Reserve, White Gums Nature Reserve, Tathra National Park, and Wilson Nature Reserve (see *Nearby Conservation Reserves* in **Appendix A**; Figure A 13). The Project Area intersects the buffer zones of two Environmentally Sensitive Areas (ESA), and there is an ESA that is

surrounded by the Project Area but does intersect with it. The conservation reserves and ESAs relevant to the Project Area are further discussed in section 2.2.3 of the *Basic and Targeted Fauna Survey Report* (**Appendix E**).

1.4.2 Land tenure and use

Cropping and livestock grazing are the dominant land uses within Project Area. The Proponent is also aware that oil and gas exploration has recently been conducted over the Project Area but is not aware of any proposed production sites. The Proponent has discussed the location of infrastructure for the Project with host landowners to allow for existing / potential future agricultural operations to continue / be facilitated. Once operating, the Project is expected to be highly compatible with ongoing agricultural uses. Existing uses for the Project Area are further discussed in section 2.2.4 of the *Basic and Targeted Fauna Survey Report* (**Appendix E**).

2 Stakeholder engagement

Stakeholder engagement will be undertaken in line with the *Stakeholder Engagement Plan* (Appendix G).

2.1 Key stakeholders

Some key stakeholders for the Project and their respective interests are shown in Table 2-1.

Table 2-1: Key stakeholders and their respective interests

Stakeholder type	Stakeholder	Respective interests
State government organisations	DWER	- Vegetation clearing - Interactions with waterways - Water supply - Noise - Other emissions
	Department of Energy and Economic Diversification (DEED)	Economic growth and employment.
	Western Power	Grid connection
	Main Roads WA (MRWA)	- Traffic and road conditions - Road modifications
Landowners near to the Project	Various individuals and families	- Visual amenity - Noise - Traffic and road conditions
Local community	Community members	- Community benefit fund - Project details - Potential impacts - Social values assessment - Employment opportunities
Local government organisations	The Shire of Three Springs	- Community benefits - Traffic and road conditions - Economic growth and employment - Workforce accommodation

Stakeholder type	Stakeholder	Respective interests
	The Shire of Carnamah	- Traffic and road conditions - Workforce accommodation
	Mid-West Regional Development Commission	- Proposal details - Employment opportunities - Local road usage and maintenance - Community benefits guidelines
Federal government organisations	DCCEEW	Matters of National Environmental Significance (MNES)
	BoM	Meteorological radar
	Air Services Australia and Civil Aviation Safety Authority (CASA)	- Project details - Planning approval
Traditional Custodians	Yamatji Southern Regional Corporation (YSRC)	Heritage impacts and surveys

2.2 Stakeholder engagement process

The process for stakeholder engagement for the Project is outlined in section 5 of the *Stakeholder Engagement Plan* (**Appendix G**).

2.3 Stakeholder consultation outcomes

Stakeholder consultation outcomes for key Project stakeholders are shown in **Table 2-2**: Stakeholder consultation outcomes. Consultation with the Bureau of Meteorology was carried out by the EMI consultant specialist (**Appendix P**). Engagement with CASA and other aviation-related stakeholders was carried out by the aviation specialist consultant (**Appendix T**).

Table 2-2: Stakeholder consultation outcomes

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
DWER	Mar 2026	Pre-referral meeting (ref # ENQ-0003346) – Lindsay Bourke, Deidre Gleeson, Thomas Kathner, Tayla Hunter, Karen McKeough - The company presented the construction water supply surveys undertaken and presented options - DWER provided some general guidance about water licensing and the process involved - The company presented the preferred transport route for wind turbine components to site, and the associated works required with the transportation - DWER suggested that some smaller turbine components could be transported from the Port of Geraldton to reduce the impact on the road network	Updates made to this ERD
	Mar 2026	Pre-referral meeting (ref # ENQ-0003346) – Lindsay Bourke, Nicole Zago, Karen McKeogh, Luke Winkler - Discussed the mitigation hierarchy, quantum of impacts to CBC habitat, offsets, significant impact assessments and cumulative impacts - DWER suggested that a cumulative impact assessment be completed for the Carnaby's Black Cockatoo - DWER suggested meeting with MRWA shortly to discuss impacts along the transport route	- Completed a cumulative impact assessment for the Carnaby's Black Cockatoo (included in the ERD) - Meeting set up with MRWA to discuss impacts along the transport route

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Feb 2026	Pre-referral meeting (ref # PRE-000112) – Lindsay Bourke, Luke Winkler, Nicole Zago, Maryum Mir, Guy Chandler, Lisa Onicas • Discussed EPA Part IV referral and NVCP through EPA Part V. • Discussed updates to the project, which included incorporating parts of the Draft State Renewables Code. • DWER advised that the Proponent should refer to both the Tathra and Yathroo Wind Farm referrals when preparing the Project referral documents. • DWER provided that additional information on Carnaby's Black Cockatoo would need to be submitted; in particular around the quantum of impacts to CBC roosting and foraging habitat. Particular attention was also suggested for the construction water management supply and transport routes. • DWER requested information on offsets, significant impact assessments and cumulative impacts in following meetings.	• ERD amended to add further information about the quantum of impacts to CBC roosting and foraging habitat. Queries made to water and transport specialists, and respective reports updated.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
DWER	Sep 2025	Pre-referral meeting (ref # PRE-0001076) – Lindsay Bourke, Helen Lafuente, Ben Gates • Discussed EPA Part IV referral and NVCP through EPA Part V. • Discussed potential noise impacts from the Project. • DWER noted that the Project must comply with the Environmental Protection (Noise) Regulations 1997 (WA Noise Regulations) and that the South Australian Environmental Protection Authority – Wind Farms Environmental Noise Guidelines (SA Guidelines) should not be used for assessment purposes. • The Proponent noted that the most recent wind farm proposals that have received “Not assess” decisions from the EPA for their respective Part IV referrals and DA determinations from planning authorities have assessed potential wind farm noise against a combination of WA Noise Regulations and SA Guidelines metrics. • DWER noted that submitting a Part IV referral to the EPA can allow for DWER to assess relevant Project factors earlier than they would otherwise through reviewing relevant portions of a DA submission.	• Draft noise report provided to DWER for review, with review comments considered when finalising the report.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Sep 2025	Meeting – Alistair Jones, Donna Braisby - The Proponent noted that potential noise impacts from wind farms in WA have historically been assessed through the planning process against a combination of metrics from both the WA Noise Regulations and SA Guidelines, as the WA Noise Regulations are not fit for purpose to regulate noise from wind farms. - The Proponent petitioned for clear policy guidance from DWER on this matter. - DWER noted that their methodology for assessing wind farms has not changed in recent times. - DWER asked why the Proponent was seeking to submit a Part IV referral to the EPA (rather than just seeking a NVCP through Part V). The Proponent advised that this had been suggested as the preferred course of action by DWER personnel from previous interactions and that it also serves to mitigate some regulatory and planning risks.	Proceeded with preparation of reports to support a Part IV referral.
	May 2024	Pre-referral meeting - Alicia Dudzinska - The Proponent outlined proposed methodology for surveys and studies relating to flora and fauna. - DWER noted that two species of listed orchids, Duck Orchids and Sun-Star Orchids, are known to occur within the area, and that these species are cryptic in nature.	Acted on advice within the meeting to focus particular attention on the orchid species mentioned.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Feb 2024	Pre-referral meeting – Tania Ashworth, Samara Rogers, Koby Anderson - The Proponent outlined approvals strategy for the Project. - DWER agreed with the Proponent that the relevant Environmental Factors for the project are Terrestrial Fauna, Flora and Vegetation, and Social Surroundings. - DWER indicated that they are not seeking to review Management Plans as part of the EPA referral (but that relevant Management Plans are likely to be required as part of the DA submission).	Commenced EPA referral assessment scoping and engaged specialists relevant to the relevant Environmental Factors.
DWER and DEED	Sep 2025	Pre-referral meeting – Lindsay Bourke, Guy Chandler - DWER provided feedback on the aspects of the draft BBMP listed below. - Risks to CBC flightpaths and potential for micro-siting as a mitigation measure. - Listing potential adaptive management actions for consideration. - Querying the validity of the proposed offset approach. - Seeking confirmation on the interaction between the baseline BBUSs, the Collision Risk Model (CRM), and the operational BBUSs. - The Proponent proposed to consider updating BBMP based on feedback received from DWER.	Updates made to the draft BBMP.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Oct 2023	Pre-referral meeting – Tania Ashworth, Guy Chandler - The Proponent provided an overview of the Project. - DEED noted that there is a Lead Agency Framework being developed, within which projects can be designated a “Lead Agency Status”, that allows for DEED to focus on facilitating their development. - DWER advised that any transmission line infrastructure should be included alongside wind farm and BESS infrastructure as part of the planning approval process.	No specific actions.
DEED	Sep 2025	Meeting – Guy Chandler, Lisa Onicas - The Proponent outlined latest development schedule, potential environmental impacts from Project, and efforts to better understand regulator expectations relating to potential noise emissions. - The Proponent discussed proposed approach for transport impact assessment, advising that they will likely submit a report that details a transport route for turbine components from the Port of Henderson. - DEED advised that the Project may be able to be considered for the Commonwealth’s National Renewable Energy Priority List after an EPBC Act referral has been submitted to DCCEE.	No specific actions.
	Oct 2024	Meeting – Leigh Mathieson, Guy Chandler - The Proponent provided an update on the Project. - DEED noted that state- and federal-based offsets will likely be required for the Project to align with respective guidance on vegetation clearing.	Offset requirements investigated (prior to native vegetation surveys being completed).

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
DCCEEW	Apr 2026	Meeting – Dom Vido, Charlie Townsin-Coy - The Proponent presented their responses to DCCEEW - DCCEEW gave some guidance around the minimum tip height and dieback measures.	Minimum bade tip proposed to be increased to 49 m (from 40 m in initial design as referred to DCCEEW in December 2025). [Note: this was subsequently updated to a proposed height of 60 m, which is now a Project commitment]
	Mar 2026	Meeting – Dom Vido, Charlie Townsin-Coy - DCCEEW explained the RFIs that were issued and how this would impact the decision timeframe - DCCEEW explained that the additional information required was mostly in regard to the Carnaby's Black Cockatoo, migratory birds and dieback.	Investigated RFI queries and developed a response.
	Feb 2026	Meeting – Dominic Vido, Charlie Townsin-Coy - Introduction to the project officers - The Proponent revisited some pre-referral items	No specific actions.
	Aug 2025	Prereferral meeting – Maddi Wenczel, Katie Williams, Clara Martinez - Discussed proposed maximum clearing required for the Project. - The Proponent outlined that CBCs have been recorded in the Project Area during survey effort. - The Proponent outlined that the proposed minimum blade tip height of 40 m above ground level has been set based on research completed and inference provided by Ron Johnstone. [Note: this was subsequently updated to a proposed height of 60 m, which is now a Project commitment]	Began preparing EPBC referral and supporting documents.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Apr 2024	Prereferral meeting – Cassandra Elliott, Jane Chimungeni-Brassington - The Proponent introduced the Project. - The Proponent discussed completed and proposed survey effort for birds and bats, fauna, and flora. - DCCEEW noted that survey approach seems in line with expectations and relevant guidance.	Initial advice regarding the EPBC referral process and expectations received at the meeting.
YSRC	Apr 2026	Project briefing – Peta Straiton, Diann McKenzie - The Proponent provided updates to the project and revised schedule - YSRC provided advice about the timing of complex surveys	The Proponent to keep the YSRC informed about the progress of the environmental assessment and planning approvals processes. To re-engage in Q3 to discuss heritage survey timing and scope.
	Oct 2025	Project briefing – Peta Straiton - The Proponent outlined key aspects of the Project. - The Proponent discussed findings of Heritage Desktop Assessment. - The Proponent advised on proposed community engagement strategy and development schedule.	No specific actions.
	Sep 2024	Meeting – Brooke O'Donnell - Discussed provisions within the proposed heritage agreement between YSRC and the Proponent. - Discussed YSRC's proposed attendance on site to investigate the proposed meteorological mast location.	- Updates made to the draft heritage agreement and shared with YSRC. - YSRC attended the site assessment for the meteorological mast, determining that there was no Aboriginal heritage at either sites being considered.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	May 2024	Meeting – Brooke O'Donnell - Discussed completing a heritage survey for the proposed disturbance zone for the Project. - The Proponent asked where sources of heritage information in addition to that available on the Aboriginal Cultural Heritage Inquiry System and through consulting with YSRC can be found. - YSRC advised that the Proponent should contact DPLH to enquire about additional sources of heritage information. - Discussed entering into a heritage agreement prior to completing heritage survey scope.	No specific actions.
	Feb 2024	Project introduction - Brooke O'Donnell, Chris Gordon - The Proponent introduced the Project. - Discussed heritage considerations for the Project, including heritage surveys for both the wind farm and the meteorological mast.	No specific actions.
The Shire of Three Springs	Apr 2026	Meeting – Mark Dacombe, Krys East, Nadine Eva - The Proponent provided details of project updates, EPBC referral and revised schedule. - The Proponent detailed updates to technical studies. - The Proponent presented the State Renewables Code and Community Benefits Guidelines and spoke about how these would impact the project and stakeholders / community. - The Proponent asked about potential locations for workforce accommodation.	The Proponent initiated discussions with potential accommodation providers.
	Aug 2025	Meeting – Krys East, Simon Lancaster	No specific actions.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
		• The Proponent outlined that it seeks to pursue Project approval through the DAP pathway. • Shire agreed with DAP approach, noting the State Pathway is overly onerous, and that there is considerable precedent with DAP determinations for the Shire to review and provide a recommendation to the DAP. • The Proponent queried the status of the draft Local Planning Scheme 3. • Shire noted it was awaiting final approval from the WA Planning Commission, however minimal changes are proposed, particularly to Rural zoned areas. • Shire noted it was not actively preparing any renewables/wind farm-related local planning policy; however it is aware of the PoweringWA Community Benefit Guidelines and would welcome further discussions regarding potential future funds. • The Proponent outlined proposed technical inputs for the Project. • Shire agreed with technical inputs outlined and confirmed that more detailed management plans are likely to be listed as conditions of the DA determination. • Shire advised that they are comfortable with a high-level stormwater assessment and don't require detailed flood modelling. • Shire noted that bushfire, traffic, visual impact are the key elements that generate the greatest agency/community of interest (and that DFES/DWER submissions are typically the most detailed). • Shire recommended each technical report be very clear upfront around conclusions and compliance with relevant Regulations.	

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
		• Shire referenced the proposed solar farm in Three Springs and advised checking their agenda for an outline of submissions and assessment for context. • The Proponent explained the flexible approach being sought, with the parameters outlined in the DA (number of wind turbines, maximum tip height of wind turbines etc.) all representing a maximum case approach that would be the basis for all technical/impact assessments. • Shire agreed with this approach and noted it was consistent with previous DAP approvals. • Shire acknowledged there will be a detailed design process that may alter the layout, however reinforced DA should show maximum case. • The Proponent provided an overview of the proposed engagement approach for informal information sessions where people can attend at their leisure and ask questions (rather than a formal/night event). • Shire agreed with this approach, noting that the community has engagement fatigue given the significant number of renewable energy proposals in the area. • Shire noted the 'Change Makers' is a key community group in the area. • The Proponent noted it will seek to provide regular updates/communication to the Shire moving forward.	

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Dec 2024	Meeting – Keith Woodward • The Proponent provided an update on the Project layout. • The Proponent provided an update on the development timeframe for the Project. • The Proponent provided an update on the planning approval pathway for the Project, outlining that the Project may be progressed through planning via the DAP process or the Significant Development Pathway process. • The Proponent provided an update on the installation of the meteorological mast on the site. • Shire advised that they may request a Bushfire Management Plan to ensure fire prevention and mitigate associated risks.	• Bushfire assessment and management plan scrutinised by the Proponent to ensure it covered off the key concerns of Three Springs Council.
	Feb 2024	Meeting – Shire of Three Springs Council • The Proponent introduced the proposed infrastructure and prior development for the Project. • The Proponent outlined the proposed development timeframe for the Project. • The Proponent outlined the proposed stakeholder engagement activities for the Project. • The Proponent outlined the proposed benefits sharing program for the Project.	• No specific actions.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
The Shire of Three Springs and the Shire of Carnamah	Dec 2023	Meeting – Keith Woodward, Rob Paull • The Proponent introduced the proposed infrastructure and prior development for the Project. • The Proponent outlined the proposed development timeframe for the Project. • Both Shires advised that the Proponent should engage a planning consultant to assist with progressing the Project through planning approvals. • Shire of Three Springs advised that the Shire Councillors would like to hear about the Project in advance of the public being notified. • Shire of Three Springs advised that installing a meteorological mast would require a planning permit. • Both Shires advised that future correspondence between each Shire and the Proponent should be via the respective Shire CEO. • Both shires advised that the most effective means to distribute newsletters to residents would be via a post office box drop. • Both Shire advised that they have a Shire Facebook page and that they are willing to post about upcoming activity for Projects in the region. • Both Shire advised that there is broad community support for development in the region.	• Stakeholder engagement plan updated.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
The Shire of Carnamah	Apr 2026	Meeting – Stuart Taylor - The Proponent provided details of project updates, EPBC referral and revised schedule - The Proponent detailed updates to technical studies - The Proponent presented the State Renewables Code and Community Benefits Guidelines and spoke about how these would impact the project and stakeholders / community. - The Proponent asked about potential locations for workforce accommodation	The Proponent initiated discussions with potential accommodation providers.
The Shire of Carnamah	Oct 2025	Meeting – Stuart Taylor - The Proponent introduced the proposed infrastructure for the Project. - The Proponent outlined the proposed development timeframe for the Project. - The Proponent outlined the proposed stakeholder engagement strategy for the Project. - The Proponent outlined aspects of the Project for which the Shire of Carnamah is a key stakeholder: stakeholder engagement sessions, transport and traffic impacts, and workforce accommodation). - Shire agreed on the Project aspects identified as being those that are significant to the Shire. - The Proponent and Shire agreed to establish regular meetings to check in on progress during the development of the Project.	Regular meeting added to respective calendars.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
	Feb 2024	Meeting – Shire of Carnamah Council - The Proponent introduced the proposed infrastructure and prior development for the Project. - The Proponent outlined the proposed development timeframe for the Project. - The Proponent outlined the proposed stakeholder engagement activities for the Project. - The Proponent outlined the proposed benefits sharing program for the Project.	No specific actions.
Western Power	Apr 2026, Feb 2026 Nov 2025 July 2025	Meeting – Paul Schwenke, Reece Dempster, Kristy Read Discussed grid connection for the Project.	All meetings with Western Power have been to facilitate the grid connection process.
	Dec 2024	Meeting – Paul Schwenke, Ben Wong Discussed Critical Projects Framework.	
	Oct 2024	Meeting – Scott Ferguson, Paul Schwenke Discussed development of Clean Energy Link and implications for the Project.	
	Jun 2024	Meeting – Paul Schwenke Discussed Project details and grid connection process.	
	May 2024	Meeting – Various Western Power personnel Western Power Major Customer Decarbonisation Forum, online session.	
	Oct 2023	Meeting – Scott Ferguson, Rob Chandler Discussed grid connection process.	

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
MRWA	Aug 2025	Meeting – Anthony Williams - MRWA noted that the key deliverable for the DA with respect to traffic is the Traffic Impact Assessment, and that this can include the items listed below. - Routes for equipment transport and vehicle movements. - Volumes of equipment to be transported. - Discussion of different traffic types (e.g. light vehicles, standard heavy transport, and Over Size Over Mass). - For Over Size Over Mass loads: estimates for load numbers, load dimensions, length of construction period, delivery frequency and timeframes, and associated capacity of vessels used to import equipment. - Any new roads proposed to be built to facilitate access for the project. - MRWA noted that routes to the project from Geraldton and / or Henderson can be considered.	Feedback passed on to traffic specialist to aid their assessment and reporting.
	Dec 2024	Meeting – Anthony Williams, Jerolina Rankin - The Proponent introduced the Project. - The Proponent outlined that a condition of the DA for the met mast is to consult with MRWA Heavy Vehicle Services.	No specific actions.

Stakeholder	Dates	Issues / topics raised	Proponent response / outcome
Mid-West Regional Development Commission	Mar 2026	Meeting – Nils Hay • The Proponent introduced the Project. • The Proponent asked for guidance on the new PoweringWA Community Benefit Guidelines and how to best adhere given that there was no specific instruction. • MWRDC advised that a statement on the website was sufficient to mark adherence.	• Agreement to meet again later in 2026 once environmental and planning approval decisions have been made.
Various landowners near to the Project	Dec 2023 – Dec 2025	Meetings, phone calls, emails. • Discussions on various aspects of the Project.	• Wind turbines moved further from project boundaries in some locations,
Local community	Mar 2024, Oct 2025	Community information drop-in sessions in Three Springs and Eneabba	• Interest from community members relating to community benefits

2.4 Other approvals and regulations

In addition to meeting requirements under the EP Act and EPBC Act, the Project will be subject to requirements under other legislation that will mitigate potential environmental impacts as outlined in **Appendix B**.

3 Environmental factor – Flora and vegetation

3.1 EPA environmental factor and objective

The EPA objective of the Flora and Vegetation factor is “*to protect flora and vegetation so that biological diversity and ecological integrity are maintained.*”

3.2 Relevant policy and guidance

Refer to **Table 3-1** for other relevant policy and guidance used to assess this environmental factor. The documents listed here are used in the assessment of the Project to achieve the requirements of the Commonwealth EPBC Act and Western Australian EP Act and BC Act.

Table 3-1: Relevant policy and guidance for flora surveys

EPA policy and guidance	How the EPA policy and guidance have been considered
Environmental Factor Guideline – Flora and Vegetation (EPA, 2016b)	This guideline was used to inform the impact assessment for flora and vegetation.
Statement of Environmental Principles, Factors, Objectives and Aims of EIA (EPA 2023)	Provides the framework for how the impact assessment has been undertaken and communicated.
Technical Guidance: Flora and vegetation surveys for environmental impact assessment (EPA 2016c);	This document was used to plan, implement and report on the flora and vegetation surveys.
Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessment (IBSA) (EPA 2021)	Data collected from the field survey program has been formatted and submitted in accordance with these instructions.
Other State or Commonwealth policy or guidance	How the other State or Commonwealth policy and guidance have been considered
EPBC Act Policy Statement 2.3 Wind Farm Industry (DEWHA 2009)	In particular, the statement guided impact assessments on MNES relevant to wind farms, and related avoidance and mitigation measures.
Matters of National Environmental Significance - Significant impact guidelines (DCCEEW, 2013)	These guidelines were used to prepare significant impact assessments for MNES for the EPBC Act referral for the Project.
Approved Conservation Advice (s266B of the EPBC Act) for <i>Paracaleana dixonii</i> Hopper & A.P.Br. <i>nom. inval.</i> (Sandplain Duck Orchid) (DCCEEW 2008a)	Considered in the environmental impact assessment for this species.
Approved Conservation Advice (s266B of the EPBC Act) for <i>Thelymitra stellata</i> (Star Sun-orchid) (DCCEEW 2008c);	Considered in the environmental impact assessment for this species.
Approved Conservation Advice (s266B of the EPBC Act) for <i>Eucalyptus crispata</i> (Yandanooka Mallee) (DCCEEW 2008b)	Considered in the environmental impact assessment for this species.

EPA policy and guidance	How the EPA policy and guidance have been considered
Survey Guidelines for Australia's Threatened orchids (Australia 2013)	Guided the survey and reporting methodology for threatened orchids.

3.3 Receiving environment

3.3.1 Surveys and studies

The following documents support this referral in relation to the Flora and Vegetation Environmental Factor assessment:

- Twin Hills Wind Farm Detailed and Targeted Flora Survey Report (Stantec, November 2025) (**Appendix F**)
- Twin Hills Wind Farm Orchid Memorandum (Stantec, November 2025) (**Appendix I**)
- Twin Hills Project Vegetation Impact Memorandum (Stantec, April 2026) (**Appendix K**)

A summary of surveys for flora completed for the Project is shown in **Table 3-2**. These surveys are further discussed in the *Detailed and Targeted Flora Survey Report* (**Appendix F**) and in the *Orchid Memorandum* (**Appendix I**).

The ecology Survey Area comprises 9,993 ha of land that is primarily cleared for crops and livestock grazing, with interspersed patches of remnant native vegetation that is generally (but not exclusively) associated with ridges, hills and slopes. The Proposed Development Envelope within an Adjacent Land Parcel was also mapped by Stantec ecologists after it was determined by the Proponent that this land parcel would form part of the Project (see Appendix Q of the *Detailed and Targeted Flora Survey Report*).

Detailed and targeted flora and vegetation surveys were also conducted on 12,769 ha of additional area (defined as 'Additional Area' here and within the *Detailed and Targeted Flora Survey Report*). Information from the Additional Area, including flora and vegetation data collected during the survey, has been provided for local context. A map of the flora survey effort is located in **Appendix A** Figure A 18. A previous desktop survey of flora in the Survey Area can be found in **Appendix A** Figure A 14. The results of the desktop assessment for significant flora and Threatened Ecological Communities within the Project Area and within 20 km can be found in **Appendix A** Figure A 15, Figure A 16 and Figure A 17.

The proposed wind turbines and ancillary permanent and temporary infrastructure associated with the Project are to be established within the Survey Area but not the Additional Area. Refer to **Appendix A** Figure A 30 for a visualisation of the Project Area relative to the ecology survey areas.

Table 3-2: Summary of Flora and Vegetation surveys

Survey description	Survey timing	Person days	Survey scope/method
Preliminary survey	6 – 9 October 2023	10 (2 ecologists)	Assessment of vegetation types within the Survey Area

Survey description	Survey timing	Person days	Survey scope/method
Detailed flora and vegetation survey	23 – 29 June 2024	28 (4 ecologists)	Consideration of the requirement to sample at least three 10m x 10m quadrats per vegetation type, where practical.
Detailed flora and vegetation survey	20 – 26 August 2024	28 (4 ecologists)	As above.
Site visit to Adjacent Land Parcel	During Q2 and Q3 2025 BBUSs	8 (4 ecologists)	Habitat assessments (and resultant vegetation mapping) within the Proposed Development Envelope.
Targeted flora survey	29 October – 2 November 2024	20 (4 ecologists)	Targeted searches for threatened orchids and Yandanooka Mallee were undertaken in vegetation types and habitat types identified within the Survey Area.
Targeted orchid survey	6 – 7 November 2025	4 (2 ecologists)	Targeted orchid survey on a parcel added to the Project in 2025 (Adjacent Land Parcel).

Survey adequacy

The flora and vegetation surveys conducted for the Project are considered adequate to support this referral. Survey effort was conducted across six events by suitably qualified consultants with extensive experience in the Geraldton Sandplains bioregion, in accordance with the EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016c). Between 79% and 90% of total species richness of the Survey Area is estimated to have been recorded, and the floristic richness recorded is considered comparable to other surveys in the area (Stantec, 2025). The entirety of the current Proposed Development Footprint has been surveyed.

Partial constraints on the ecology surveys are disclosed in **Table 4-3** below. None of these constraints are considered to materially affect the adequacy of the surveys for the purposes of this assessment.

Table 3-3: Limitations and constraints of the flora and vegetation assessment

Factor	Extent	Justification
Information sources	Partial	A limited number of studies have been conducted in the region, with data from multiple studies not publicly accessible. Contextual

		information was obtained from broad-scale vegetation mapping and landform mapping, in addition to the numerous flora and vegetation surveys previously conducted within the Survey Area.
Completeness and intensity	Partial	The boundaries of the Survey Area were revised multiple times, with the final extent confirmed after the completion of the field surveys. This included the exclusion of 12,769 ha (referred to as the Additional Area) from the Survey Area, where a large portion of the survey effort had been undertaken. Quadrats sampled within the Additional Area were retained for the vegetation mapping and statistical analysis, as they still provided valuable contextual information and contributed to achieving the minimum requirement of three replicates per vegetation type.
Timing/weather	Partial	Surveys were timed to coincide with the recommended seasons for flora and vegetation surveys as prescribed by ((EPA 2016c)), however, rainfall leading up to the June survey was significantly below historical averages, leading to some specimens lacking essential identifiable floristic material.
Disturbances	Partial	Vegetation was interspersed by paddocks occupied by sheep, and evidence of sheep and wild rabbit grazing was evident at many sites, removing identifiable characteristics of flora and likely eradicating others. No sites showed any signs of recent fire disturbance.

BC Act-listed species of flora whose likelihood of occurrence within the Project Area was deemed as “Likely” or greater through completed ecology surveys and studies for the Project are in **Table 4-4** and Section 5.1.4 of the *Detailed and Targeted Flora Survey Report (Appendix F)*. BC Act-listed species of flora that were confirmed in the Project Area are shown in the *Threatened and Priority Flora Records* figures in **Appendix A** (Figure A 16).

The Project Area has been refined during the project development phase, and various ecological survey reports were prepared progressively as the project boundaries evolved. To assist interpretation of those reports in the context of the current Project, the following explains the relationship between survey coverage and the current Project Area. Also refer to **Appendix A** Figure A 30 for a visual depiction of these areas.

Flora and vegetation surveys (2023 - 2024)

The *Detailed and Targeted Flora and Vegetation Survey Report* (Stantec, November 2025) was prepared when the Project Area encompassed a larger extent than is currently proposed. The survey report distinguishes between:

- the **"Survey Area"** - land parcels that were anticipated at that time to form part of the current Project, and have mostly been retained; and

- **"Additional Areas"** - land parcels that were surveyed contemporaneously and are reported for completeness, but which no longer form part of the current Project.

The current Project Area corresponds broadly to the Survey Area defined in that report, except for the removal of one land parcel (Volume 2066 and Folio 34) and the addition of another in the Project's east (Volume 1705 Folio 383, as referred to in Section 1.1). The Additional Areas are *not* proposed to be disturbed under the current Project and are retained in ecology reports for contextual and methodological completeness only.

Addition of alternative grid connection parcel

Subsequent to the detailed and targeted flora and vegetation surveys, a further land parcel was incorporated into the project to provide an alternative grid connection location, accommodating the terminal station and Battery Energy Storage System (BESS). This parcel was named the "Adjacent Land Parcel" to indicate that it was adjacent to the land parcel that was originally earmarked for the Project's grid connection infrastructure and had been included in the "Survey Area". The Adjacent Land Parcel is proposed to host non-turbine infrastructure.

The Adjacent Land Parcel was surveyed (via an additional targeted survey) specifically for EPBC-listed orchid species in advance of a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (see *Twin Hills Wind Farm Orchid Memorandum* (Stantec, November 2025)). Vegetation mapping was also conducted on the Adjacent Land Parcel within the Proposed Development Envelope and reported on within Appendix Q of the *Detailed and Targeted Flora and Vegetation Survey Report* (Stantec, November 2025) and the *Twin Hills Project Vegetation Impact Memorandum* (Stantec, April 2026).

EPBC referral (December 2025)

A referral was submitted to the Commonwealth Department of Climate Change, Energy, the Environment and Water in December 2025 and accepted as a valid referral in March 2026. That referral addressed the Survey Area, Additional Areas, and the alternative grid connection parcel collectively. The referral is currently under assessment.

Revised Project Area - Current EPA referral

Following further landowner discussions, the original grid connection parcel has been removed from the Project. The current Project Area, as described in this referral, therefore comprises:

- the core wind farm infrastructure area (corresponding to the majority of the Survey Area in the *Detailed and Targeted Flora and Vegetation Survey Report* (Stantec, November 2025)); and
- the alternative grid connection parcel (terminal station and BESS), surveyed for EPBC-listed orchids and subject to vegetation mapping within the Proposed Development Envelope.

Vegetation Impact Memorandum

A Vegetation Impact Memorandum (Stantec, April 2026) (**Appendix K**) has been prepared to assess the vegetation impacts specifically within the footprint of the current revised Project Area and should be read as the primary reference for vegetation impact assessment for this Project. The earlier flora and vegetation survey report remains relevant for broader ecological context and species recorded,

but readers are directed to the Vegetation Impact Memorandum for footprint-specific impact assessment.

The Project Area, Proposed Development Footprint, and Proposed Development Envelope are shown in the *Proposed Development Envelope* and *Proposed Development Footprint* figures in **Appendix A** (Figure A 4, Figure A 5).

Table 3-4: BC Act-listed flora species with a Confirmed or Likely likelihood of occurrence within the Project Area

Scientific name	BC Act Conservation Status	Likelihood of Occurrence within Project Area
<i>Eucalyptus crispata</i>	Threatened	Confirmed (recorded during surveys completed for Project)
<i>Paracaleana dixonii</i>	Threatened	Confirmed (recorded during surveys completed for Project)
<i>Thelymitra stellata</i>	Threatened	Confirmed (recorded during surveys completed for Project)
<i>Chamaescilla maculata</i>	Priority 1	Confirmed (recorded during surveys completed for Project)
<i>Millotia dimorpha</i>	Priority 1	Confirmed (recorded during surveys completed for Project)
<i>Verticordia luteola</i> var. <i>rosea</i>	Priority 1	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Caladenia denticulata</i> subsp. <i>albicans</i>	Priority 1	Likely
<i>Homalocalyx chapmanii</i>	Priority 2	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Micromyrtus uniovulum</i>	Priority 2	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Millotia jacksonii</i>	Priority 2	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Stylidium tinkeri</i>	Priority 2	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Stylidium cornuatum</i>	Priority 2	Confirmed (recorded during surveys completed for Project)
<i>Banksia fraseri</i> var. <i>crebra</i>	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Petrophile septemfida</i>	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Styphelia hyalina</i>	Priority 3	Confirmed (previously recorded within Project Area according to DBCA database searches)

Scientific name	BC Act Conservation Status	Likelihood of Occurrence within Project Area
<i>Verticordia luteola</i> var. <i>luteola</i>	Priority 3	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Banksia cypholoba</i>	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Hemiandra</i> sp. Eneabba (H. Demarz 3687)	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Hensmania stoniella</i>	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Hibbertia subvillosa</i>	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Lechenaultia juncea</i>	Priority 3	Confirmed (recorded during surveys completed for Project)
<i>Stylidium torticarpum</i>	Priority 3	Likely
<i>Calytrix chrysantha</i>	Priority 4	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Banksia chamaephyton</i>	Priority 4	Confirmed (recorded during surveys completed for Project)
<i>Diuris recurva</i>	Priority 4	Likely
<i>Eucalyptus macrocarpa</i> subsp. <i>elachantha</i>	Priority 4	Confirmed (recorded during surveys completed for Project)
<i>Hemiandra</i> sp. Watheroo (S. Hancocks 4)	Priority 4	Confirmed (previously recorded within Project Area according to DBCA database searches)
<i>Lepidobolus densus</i>	Priority 4	Confirmed (recorded during surveys completed for Project)
<i>Pityrodia viscida</i>	Priority 4	Confirmed (recorded during surveys completed for Project)
<i>Schoenus natans</i>	Priority 4	Likely

In the event the Project Area is materially revised prior to construction, supplementary targeted flora surveys will be conducted over any new disturbance areas, consistent with the EPA Technical Guidance (EPA, 2016c).

3.3.2 Existing environment

Regional vegetation

The Project Area is comprised of three pre-European vegetation system associations (VSAs): Tathra 379, Tathra 49 and Tathra 391 (**Table 4-5**). Extensive land clearing has occurred across all three

VSAs at state, bioregion and subregion scales, with close to 50% or less of pre-European vegetation remaining in each case at one or more spatial scales.

Table 4-5 provides pre-European and current extents for each VSA across three spatial scales, together with the proportion currently protected within IUCN Class I–IV reserves. A threshold level of retention below 30% of pre-European extent is generally considered a threshold indicating heightened significance (Stantec, 2025). The current extent of Tathra (379) at the subregion (Lesueur) level is 30.17%, placing it marginally above the 30% threshold. **Appendix A** Figure A 25 provides mapping of the Pre-European Vegetation.

The Vegetation Impact Memorandum (Stantec, April 2026) assessed the impact of the Proposed Development Footprint (543.6 ha total) on the remaining extent of each VSA at state, bioregion and subregion scales. The key findings are:

- **Tathra (391):** The Proposed Development Footprint intersects 90 ha of this VSA. This represents a further decrease of 5.5% of the current remaining extent, after which 1,532.19 ha (50.02% of pre-European extent) remains across all spatial scales.
- **Tathra (49):** The Proposed Development Footprint intersects 10 ha of this VSA. This results in a minor decrease of 0.07% of the remaining subregional (Lesueur) extent, with 41.0% of pre-European subregional extent remaining post-impact.
- **Tathra (379):** The Proposed Development Footprint intersects 443 ha of this VSA. This results in a reduction of approximately 0.39% of the subregional pre-European extent. The remaining subregional extent post-impact is 30.05%.

At the regional scale, the Proposed Development Footprint results in a low proportional reduction in the remaining pre-European extent of each assessed VSA and is therefore not expected to result in a significant impact on regional vegetation extent (Stantec, April 2026). A map showing the regional location of the Project in an environmental context has been included in **Appendix A** Figure A 12.

Table 3-5: Extent of pre-European vegetation system associations for the Proposed Development Footprint remaining across three scales

System	Scale	Pre-European extent (ha)	Current extent (ha)	Proportion remaining (%)	Current extent within the IUCN Class I-IV reserves (ha)	Proportion of extent protected within IUCN Class I-IV reserves (%)
Tathra (391)	State-wide	3063.14	1622.19	52.96	645.60	21.08
	Bioregion (Geraldton Sandplains)	3063.14	1622.19	52.96	645.60	21.08

System	Scale	Pre-European extent (ha)	Current extent (ha)	Proportion remaining (%)	Current extent within the IUCN Class I-IV reserves (ha)	Proportion of extent protected within IUCN Class I-IV reserves (%)
	Subregion (Lesueur)	3063.14	1622.19	52.96	645.60	21.08
Tathra (49)	State-wide	52,134.84	26,102.69	50.17	10,650.49	20.43
	Bioregion (Geraldton Sandplains)	39,718.26	14,489.68	36.48	3,191.34	8.03
	Subregion (Lesueur)	33,139.33	13,618.88	41.10	3,191.30	9.63
Tathra (379)	State-wide	547,736.94	129,736.79	23.69	28,019.02	5.12
	Bioregion (Geraldton Sandplains)	547,507.25	129,495.80	23.70	28,003.65	5.12
	Subregion (Lesueur)	370,029.76	111,632.48	30.17	20,606.46	5.57

Vegetation types

A total of 414 fully identified vascular flora (including species, subspecies, varieties, forms, hybrids, native and introduced species) were recorded during surveys conducted for the Project. The species recorded comprise 62 families and 213 genera, with the most represented families being Myrtaceae (56 species), Proteaceae (55 species) and Fabaceae (44 species), and the most represented genus being Banksia (22), Drosera (13), and Melaleuca (12). The vegetation recorded is considered typical of that within the Geraldton Sandplains bioregion.

Fourteen vegetation types were mapped within the Project Area, none of which represent a TEC or PEC, comprising approximate 27% of the Project Area. These vegetation types broadly occurred in association with the following landforms:

- Sandplains.
- Slopes, breakaways, gravelly areas and drainage lines.
- Hillcrest.
- Ferritic/lateritic rocky areas, flat mesa crest uplands.
- Wetlands and damp areas.

Flora and Vegetation for the Project Area are further discussed in sections 2.2, 5.1, and 5.2 of the *Detailed and Targeted Flora Survey Report (Appendix F)*. Their extents within the Project Area are listed in **Table 3-6: Vegetation types**.

Table 3-6: Vegetation types within the Project Area

Vegetation type	Extent in Project Area (ha)
Allocasuarina campestris tall to medium shrublands (laterite/ferritic rocky areas/flat mesa crests/uplands), often over Hakea auriculata and Petrophile shuttleworthiana shrubs, over mixed shrubs and grasses	153.26
Low Open Woodland of Allocasuarina huegelliana, or mixed Open Shrubland	37.89
Low Open Woodland of Eucalyptus loxophleba	8.23
Low Open Woodland of Eucalyptus todiana (group) - Open Shrubland	397.52
Low Open Woodland of Eucalyptus todiana, over shrubland	1337.68
Low Open Woodland of Eucalyptus todiana in paddocks	309.14
Low Shrubland/Open Shrubland of Melaleuca concreta, Melaleuca viminea or Allocasuarina campestris and/or Acacia rostellifera	13.98
Low Woodland of Eucalyptus accedens, over Tall Shrubland to Closed Heath of Melaleuca concreta and Melaleuca marginata	65.81
Low Woodland to Low Forest of Eucalyptus accedens or Acacia saligna, over Shrubland	89.40

Vegetation type	Extent in Project Area (ha)
Low Woodland, Low Forest or Tall Shrubland of <i>Eucalyptus accedens</i> or <i>Eucalyptus camaldulensis</i> or <i>Acacia saligna</i>	77.21
<i>Melaleuca</i> spp. shrublands in a transitional zone and <i>Melaleuca concreta</i> / <i>Melaleuca</i> spp. open tall shrubland, over <i>Tecticornia lepidosperma</i> (samphire) open low shrubland in a wet area / dampland	33.61
<i>Melaleuca viminea</i> , <i>Melaleuca concreta</i> , open tall to medium shrubland, over closed mixed exotic herbland and grasses	81.84
Open Shrubland to Low Shrubland of <i>Melaleuca marginata</i> , <i>Melaleuca radula</i> and/or <i>Xanthorrhoea drummondii</i> , over <i>Georgeantha hexandra</i>	7.69
Revegetation	4.92
Tall Open Shrubland of <i>Melaleuca hamata</i> , over <i>Thryptomene</i> sp.	1.56
TOTAL	2,659.29

Vegetation condition

Vegetation condition ranged from 'Excellent' to 'Degraded', with over 50% of remnant vegetation within the Project Area mapped as being in 'Excellent' condition. Vegetation condition is discussed in Section 5.2.5 of the *Detailed and Targeted Flora Survey Report* (**Appendix F**) and their extents within the Project Area are shown in **Table 3-7: Vegetation condition**. The extents are shown in **Appendix B** (Figure A 24).

Table 3-7: Vegetation condition within the Project Area

Vegetation condition	Extent in Project Area (ha)
Excellent	1,529.83
Very Good	575.63
Good	120.57
Degraded	433.26
TOTAL	2,659.29

Buffer zones for TECs and PECs are shown to overlap with and be in proximity to the Project Area based on DBCA communities database search results and PMST results. None of the vegetation types described and mapped within the Project Area are considered analogous to any State or Commonwealth listed TECs or PECs as discussed in Section 5.2.2 of the *Detailed and Targeted Flora Survey Report* (**Appendix F**).

Significant flora

Three Threatened flora species have been recorded within the Survey Area, one of which was recorded from database searches and during the Survey (*Eucalyptus crispata* (En/T), and two which were recorded during the Survey only: *Paracaleana dixonii* (En/T), *Thelymitra stellata* (En/T).

There were 30 Priority flora species recorded in the Survey Area from previous surveys/database searches and the Survey: including five Priority 1, six Priority 2, 11 Priority 3 and eight Priority 4 flora species.

No significant flora records have been found within the Proposed Development Footprint (**Appendix A** Figure A 5) and will therefore not be impacted by clearing from the project. The extents of the significant flora within the Proposed Development Envelope and Proposed Development Footprint can be seen in **Table 4-8**.

Table 3-8: Significant flora species and associated vegetation types in relation to the Proposed Development Footprint

Significant flora species	Associated vegetation type	Extent of associated type in Project Area (ha)	Species records within Proposed Development Footprint	Area cleared within Footprint (ha)
<i>Paracaleana dixonii</i> (En/T)	Low Open Woodland of <i>E. todtiana</i> , over shrubland	1,336.37	None	0
<i>Thelymitra stellata</i> (En/T)	Low Open Woodland of <i>E. todtiana</i> , over shrubland	1,336.37	None	0
<i>Eucalyptus crispata</i> (En/T)	Low Woodland of <i>E. accedens</i> over Tall Shrubland to Closed Heath	65.81	None	0

3.4 Proposed mitigation

Mitigation measures for the Project have been applied in line with the mitigation hierarchy outline in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023a) that is shown below.

- **Avoid** – avoid the adverse environmental impact altogether. This may include reducing the footprint or changing the location of the footprint to avoid areas with high environmental values.
- **Minimise** – limit the degree or magnitude of the adverse impact. This may include reducing the footprint or carefully selecting technologies, processes (such as re-use of waste products) and management measures (such as bunding or dust and noise control measures) to reduce the impact.
- **Rehabilitate** – repair, rehabilitate or restore the impacted site as soon as possible. Adequate rehabilitation information is integral to the mitigation hierarchy to ensure early identification of knowledge gaps and risk as well as development of criteria and research to meet objectives.
- **Offset** – undertake a measure or measures to provide a compensatory environmental benefit or reduction in environmental impact to counterbalance significant adverse environmental impacts from implementation of a proposal. The measure(s) are taken after all reasonable mitigation measures have been applied and a significant environmental risk or impact remains. Offsets are not appropriate for all proposals and will be determined on a proposal-by-proposal basis.

The Proponent will seek to reduce impacts to Flora and Vegetation through implementing the avoidance measures listed below:

- Avoid clearing any more than the estimated maximum area of native vegetation (17.14 ha) calculated based on the Proposed Development Footprint (Table 3-9).
- Avoid clearing any native vegetation outside of the Proposed Development Envelope (**Appendix A**; Figure A 5).
- Where practicable, micro-site infrastructure within the Proposed Development Envelope to avoid vegetation analogous to State-listed TECs or PECs and known records of Commonwealth- or State-listed flora identified during surveys.
- Where the Proposed Development Footprint is materially revised during detailed design, undertake supplementary targeted flora surveys over any new disturbance areas (consistent with EPA 2016c) and apply the mitigation hierarchy to any newly identified significant flora.

The Proponent will seek to reduce impacts to Flora and Vegetation through implementing the minimisation measures listed below:

- Site and design non-wind turbine infrastructure to minimise clearing requirements.
- Implement site vehicle and machinery hygiene procedures to minimise the spread of weeds and plant pathogens.
- Prepare a Dieback Management Plan in accordance with the WA Department of Biodiversity Conservation and Attraction's Managing dieback risk associated with disturbance activities.
- Implement appropriate speed limits on unsealed access tracks to control dust generation.
- Develop and implement fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) as well as a BMP.
- Manage any potential and actual impacts to BC Act-listed flora species and other vegetation during the construction phase of the Project through implementing a CEMP.
- Develop and implement awareness, induction, and training packages to effectively implement the CEMP.

The Proponent will seek to reduce impacts to Flora and Vegetation through implementing the rehabilitation measures listed below:

- Restore land used for temporary infrastructure during the construction phase to its pre-construction-state during the operations phase.

No environmental offsets are proposed in response to a finding of significant residual environmental impacts under the Part IV assessment. Native vegetation clearing will require one or more NVCPs under Part V Division 2 of the EP Act, and offsets for that clearing will be developed as a condition of the relevant NVCP in accordance with the WA Environmental Offsets Policy and Guidelines.

3.5 Potential environmental impacts

3.5.1 Identified environmental impacts

Potential *direct* impacts to Flora and Vegetation from Project activities are:

- Loss of BC Act-listed flora species and other vegetation from:
 - clearing
 - fires that result from operating equipment or hot works.

Potential *indirect* impacts to Flora and Vegetation from Project activities are listed below.

- Reduction in vegetation condition due to:
 - introduction of weeds, pathogens, or pest fauna
 - dust generated from vehicle movement and construction activities
 - edge effects from clearing.

3.5.2 Predicted environmental impacts

Clearing

Survey efforts for flora were completed in line with EPA technical guidance and other appropriate guidelines, as discussed in sections 4.3 – 4.5 of the *Detailed and Targeted Flora Survey Report (Appendix F)*, and various metrics suggest that survey efforts conducted for the Project were adequate, as discussed in sections 5.1.2, 5.2.3, and 5.2.4. of the *Detailed and Targeted Flora Survey Report (Appendix F)*. This suggests that the results of the survey effort are robust.

The maximum proposed clearing areas of different vegetation types identified in the Project Area are shown in **Table 3-9: Maximum clearing extents – vegetation type**. The maximum proposed clearing area is less than 3% of the Proposed Development Footprint of 543.6 ha, and less than 1% of all existing vegetation within the Project Area.

Table 3-9: Maximum clearing extents – vegetation type

Vegetation type	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same vegetation type in Project Area
<i>Allocasuarina campestris</i> tall to medium shrublands (laterite/ferritic rocky areas/flat mesa crests/uplands), often over <i>Hakea auriculata</i> and <i>Petrophile shuttleworthiana</i> shrubs, over mixed shrubs and grasses	153.26	0.02	0.01
Low Open Woodland of <i>Allocasuarina huegelliana</i> , or mixed Open Shrubland	37.89	0.74	1.96
Low Open Woodland of <i>Eucalyptus loxophleba</i>	8.23	0	0
Low Open Woodland of <i>Eucalyptus todiana</i> (group) - Open Shrubland	397.52	4.86	1.22
Low Open Woodland of <i>Eucalyptus todiana</i> , over shrubland	1337.68	4.29	0.32
Low Open Woodland of <i>Eucalyptus todiana</i> in paddocks	309.14	0.50	0.16
Low Shrubland/Open Shrubland of <i>Melaleuca concreta</i> , <i>Melaleuca viminea</i> or <i>Allocasuarina campestris</i> and/or <i>Acacia rostellifera</i>	13.98	0	0
Low Woodland of <i>Eucalyptus accedens</i> , over Tall Shrubland to Closed Heath of <i>Melaleuca concreta</i> and <i>Melaleuca marginata</i>	65.81	0	0
Low Woodland to Low Forest of <i>Eucalyptus accedens</i> or <i>Acacia saligna</i> , over Shrubland	89.40	4.92	5.50

Vegetation type	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same vegetation type in Project Area
Low Woodland, Low Forest or Tall Shrubland of <i>Eucalyptus accedens</i> or <i>Eucalyptus camaldulensis</i> or <i>Acacia saligna</i>	77.21	0.97	1.26
Melaleuca spp. shrublands in a transitional zone and <i>Melaleuca concreta</i> /Melaleuca spp. open tall shrubland, over <i>Tecticornia lepidosperma</i> (samphire) open low shrubland in a wet area / dampland	33.61	0	0
<i>Melaleuca viminea</i> , <i>Melaleuca concreta</i> , open tall to medium shrubland, over closed mixed exotic herbland and grasses	81.84	0.05	0.06
Open Shrubland to Low Shrubland of <i>Melaleuca marginata</i> , <i>Melaleuca radula</i> and/or <i>Xanthorrhoea drummondii</i> , over <i>Georgeantha hexandra</i>	7.69	0	0
Revegetation	4.92	0.78	15.91
Tall Open Shrubland of <i>Melaleuca hamata</i> , over <i>Thryptomene sp.</i>	1.56	0	0
TOTAL	2,659.29	17.14	0.64

The maximum proposed clearing areas in the Project Area based on vegetation condition are shown in **Table 3-10: Maximum clearing extents – vegetation condition**. Overall, clearing of vegetation in “excellent” and “very good” condition is near to 1% of that within the Project Area.

Table 3-10: Maximum clearing extents – vegetation condition

Vegetation condition	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same vegetation type in Project Area
Excellent	1529.83	9.07	0.59
Very Good	575.63	5.86	1.02
Good	120.57	0	0
Degraded	433.26	2.22	0.57
TOTAL	2,659.29	17.14	0.64

The maximum proposed clearing of vegetation is 17.14 ha, representing 0.15% of that present within the Project Area + conservation reserves within 10 km of the Project (as shown in Table 4-9). A map showing the conservation areas within 10 km of the Project Area is included in **Appendix A** Figure A 13.

No vegetation that is analogous to State-listed TECs or PECs was identified during surveys, and none will be cleared accordingly.

No clearing will occur in areas outside of the Proposed Development Envelope shown in the *Proposed Development Envelope* figure in **Appendix A** (Figure A 5).

Clearing of any Commonwealth- or State-listed flora identified during surveys over the Project Area will be avoided.

Given the points listed above, clearing for the Project is not considered to pose significant residual impacts to Commonwealth- or State-listed flora identified during surveys, State-listed TECs or PECs, or vegetation generally.

Fires

Suitable fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) developed for the Project as well as a BMP would serve to reduce the potential for loss of flora or vegetation from fire events caused by the Project, as outlined in section 4.2.1 of the *BBMP* (**Appendix D**), to below significant levels.

As can be seen in the *Vegetation Type* figures in **Appendix A** (Figure A 23), most of the vegetation mapped over the Project Area lies outside the Proposed Development Envelope and so will not be cleared for the Project. The Proposed Development Footprint for the Project has been developed to avoid bisecting vegetation patches where possible, thereby reducing the creation of additional “edges” that could result in increased “edge effects”. Potential Project-specific edge impacts from fire events,

introduced species, and dust generation would be mitigated by implementing the measures described above. Given the low amounts of proposed clearing relative to the amount of vegetation within the Project Area, any edge effects that remain are not expected to have a significant residual impact on vegetation.

Dust

Appropriate speed limits set within the Project Area, as outlined in section 4.2.1 of the *BBMP* (**Appendix D**), and other dust management measures included in the CEMP would serve to reduce residual impacts on Flora and Vegetation that are associated with dust generation from vehicles and machinery to below significant levels.

Degradation of vegetation weeds or plant disease

Pathogens such as *Phytophthora cinnamomi* have the potential to cause dieback in some flora species (e.g. *Paracaleana dixonii* (DCCEEW, 2008)). The introduction and spread of weeds have the potential to degrade the condition of vegetation within the Project Area. Some flora species and vegetation types are susceptible to impacts from introduced fauna such as livestock or rabbits (e.g. feral rabbits being a known threat to *Thelymitra stellata* (DCCEEW, 2025)). Suitable site vehicle and machinery hygiene procedures would be implemented during construction, commissioning, operation, and decommissioning phases to minimise the spread of weeds, *Phytophthora cinnamomi*, and similar pathogens as outlined in section 4.2.1 of the *BBMP* (**Appendix D**). It is not foreseeable that the Project would result in an increase in livestock (i.e. sheep, cattle, and goats) or rabbits within the Project Area. As such, residual impacts to Flora and Vegetation from the introduction of weeds, pathogens, or pest fauna are not considered as significant.

No evidence of dieback was observed across the Project Area, noting that it was not specifically surveyed for during the flora surveys. A targeted dieback survey will be conducted prior to construction, consistent with the Department of Biodiversity, Conservation and Attractions' *Managing dieback risk associated with disturbance activities* guidance. A Dieback Management Plan will be prepared in accordance with that guidance and will include a survey methodology, a process to be followed if dieback is discovered, and measures to prevent the introduction of dieback to the Project site.

3.6 Assessment of significance of residual impacts

3.6.1 Proposal

The significance of residual impacts to Flora and Vegetation is considered in **Table 3-11**.

Table 3-11: Flora and Vegetation – significance matters

Significance matter	Discussion
The object and principles of the Act.	Significant flora survey scope (5 x surveys) has been conducted to understand potential impacts on Flora and Vegetation within the Project Area. The precautionary principle has been applied for the Project by committing to the avoidance measures detailed below. • Avoid clearing any more vegetation than that listed for the Proposed Development Envelope. This includes avoiding clearing of: – More than 17.14 ha of vegetation. – Any known flora listed under the BC Act. – Vegetation that is analogous to State-listed TECs or PECs. – Any vegetation outside of the Proposed Development Envelope. Residual impacts that remain after implementing these avoidance measures and other measures are not considered to be significant as discussed in 3.5.2 Predicted environmental impacts
Values, sensitivity and quality of the environment which is likely to be impacted.	Proposed clearing relative to the amount of vegetation within the Project Area and the surrounding area is low. As such, vegetation clearing for the Project is not considered to pose significant residual impacts to Flora and Vegetation. Three Threatened flora species (<i>Eucalyptus crispata</i>, <i>Paracaleana dixonii</i> and <i>Thelymitra stellata</i>) are confirmed within the Survey Area. No records of any Threatened or Priority flora species were identified within the Proposed Development Envelope (Stantec, April 2026). The Envelope does not intersect the vegetation types associated with confirmed Threatened flora records. Clearing for the Project will therefore not directly impact any known Threatened or Priority flora species. None of the 14 vegetation types mapped within the Project Area are considered analogous to any State or Commonwealth listed Threatened Ecological Community or Priority Ecological Community. Buffer zones for TECs and PECs identified through database searches overlap with or are in proximity to the Project Area, but none of the mapped vegetation types within the Project Area are considered analogous to any listed TEC or PEC. Other residual impacts from the Project are not considered to be significant for Flora and Vegetation.

Significance matter	Discussion
All stages and components of the proposal (such as any infrastructure required for the proposal to be practicably implemented, or a proposal life cycle).	All parts of the project over the entire project lifecycle have been considered in the assessment of residual impacts.
Extent (intensity, duration, magnitude, and geographic footprint) of the likely impacts.	No more than 17.14 ha of vegetation would be cleared for the Project over various parts of the Project Area. Construction activities are estimated to last approximately 2 – 3 years and would be managed under an adequate CEMP.
Resilience of the environment to cope with the impacts or change (including considering pressures such as climate change).	Most of the infrastructure for the Project would be situated on already-cleared land. Climate change would likely cause hotter and dryer conditions in the region that may impact native vegetation. The Project would serve to lower the greenhouse gas footprint of power generation in WA.
Consequence of the application of the mitigation hierarchy to the proposal.	Applying the mitigation hierarchy to the Project has resulted in the consequences listed below. • Less than 1% of existing vegetation in the Project Area is in the Proposed Development Footprint. • No clearing of known flora listed under the BC Act. • No clearing of vegetation that is analogous to State-listed TECs or PECs. • No clearing of vegetation outside of the Proposed Development Envelope. • Wind turbines located on cleared land only.
Consequence of the likely impacts (or change), including off-site impacts (such as impacts on a wetland from chemicals discharged into upstream river systems) and indirect impacts (such as reduced fish harvest due to decreased water quality).	See Section 3.5.2 Predicted environmental impacts.

Significance matter	Discussion
Likely environmental outcomes, and whether these are consistent with the EPA Environmental Factor objectives.	See Section 3.7 Environmental outcomes.
Cumulative effects, taking into account cumulative environmental impacts – the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities.	Cumulative environmental impacts from activities in the region are assessed in Section 3.6.3, including a dedicated assessment of cumulative impacts to Carnaby's Black-Cockatoo at a regional scale (Appendix R). In relation to Flora and Vegetation specifically, land in and around the Project Area is already predominantly cleared, and future developments in the region are likely to largely avoid clearing when finalising infrastructure layouts. The cumulative impact of the Proposed Development Footprint on the regional extent of assessed VSAs is assessed as not significant (Stantec, April 2026).
Holistic impacts – connections and interactions between impacts, and the overall impact of the proposal on the environment as a whole.	Interactions between the Flora and Vegetation factor and other environmental factors are assessed in Appendix U (Holistic Impact Assessment). The primary interactions are with Terrestrial Fauna (clearing of vegetation that provides CBC foraging and breeding habitat) and, to a lesser extent, with Social Surroundings (dust generation from construction activities). These interactions are addressed through the mitigation measures described in Section 4.4 and are not considered to elevate the overall significance of residual impacts beyond what is assessed for this factor individually.
Level of confidence in the prediction of residual impacts and the success of proposed mitigation	Impacts were assessed for all Project infrastructure over the entire Project lifecycle. Proposed clearing areas represent the maximum case, and so are likely to be greater than the areas that would be cleared for the Project.
Public interest about the likely effect of the proposal or scheme, if implemented, on the environment, and relevant public information.	The public may be interested in aspects of the Project, including: • Job creation and economic stimulation • Respective reduction in greenhouse gas emissions in the power sector from the Project when operating • Avoidance of clearing of orchids within the Project Area.

3.6.2 Combined effects (for Significant Amendments only)

Not used.

3.6.3 Cumulative impacts

Cumulative impacts arise from the incremental and interacting effects of the Project together with other past, present and reasonably foreseeable activities in the region. For Flora and Vegetation, the relevant consideration is the successive loss of native vegetation, particularly the pre-European vegetation system associations (VSAs) assessed in Section 3.3.2, across the Geraldton Sandplains landscape, which is already extensively cleared for agriculture. The activities and projects with the potential to contribute to cumulative impacts on Flora and Vegetation are summarised in Table 3-12.

Table 3-12: Activities with potential cumulative impacts to Flora and Vegetation

Activity	Description	Potential cumulative impacts to Flora and Vegetation
Agriculture	Cropping and livestock agriculture within the Project Area and in proximity to the Project.	Land in and around the Project Area is already predominantly cleared and any future clearing for agricultural purposes would be subject to environmental regulation, including Part V of the EP Act.
Energy generation developments	Kadathinni Wind Farm: - Proposed wind farm (up to 65 turbines / 400 MW) and BESS (up to 400 MW / 3,200 MWh) within 10 km of the Project. - Targeting submission of planning documentation in early 2026. Killawarra Solar Farm: - Proposed solar farm (up to 400 MW) and BESS (up to 400 MW / 1,600 MWh) within 10 km of the Project. - Has received planning approval. Tathra Wind Farm: - Proposed wind farm (up to 140 turbines / 1,000 MW), solar farm (up to 500 MW), and BESS (up to 500 MW) within 10 km of the Project. - Has received planning approval. South Erregulla Gas Power Station: - Gas power station (90 MW) within 20 km of the Project. - Under construction.	Some native vegetation clearing may be required for these developments. However, they are predominantly sited on already-cleared agricultural land, their layouts can be optimised to avoid native vegetation where practicable, and each is separately regulated (Part V NVCP and/or EPBC Act). Their incremental contribution to regional VSA loss is therefore expected to be minor.

Activity	Description	Potential cumulative impacts to Flora and Vegetation
----------	-------------	--

Warradarge Wind Farm:

- Operating wind farm (51 turbines / 180 MW) within 30 km of the Project.
- Construction in progress to add an additional 30 turbines, bringing its total generation capacity to 283 MW.

The Project's own contribution to regional vegetation loss is low. The Proposed Development Footprint clears no more than 17.14 ha of native vegetation, and the Vegetation Impact Memorandum (Stantec, April 2026) found that the resulting reduction in the remaining pre-European extent of each assessed VSA is low at the regional scale, with all three VSAs retaining above the 30% significance threshold post-impact (Tathra 391 at 50.02%, Tathra 49 at 41.0% sub-regionally, and Tathra 379 at 30.05% sub-regionally). Given that regional development is concentrated on cleared land and that each future proposal will be subject to its own clearing regulation, the cumulative impact of the Project on regional vegetation extent is not considered significant.

3.7 Environmental outcomes

The Project aims to achieve the environmental outcome for Flora and Vegetation that is outlined in **Table 3-13**.

Table 3-13: Flora and Vegetation – environmental outcomes

Environmental outcome	Measurement and assurance
Native vegetation clearing for the Project is limited to no more than 17.14 ha and occurs entirely within the Proposed Development Envelope.	Measurement and assurance - Not clearing more than 17.14 ha of native vegetation (Table 4-9); not clearing outside the Proposed Development Envelope (Figure A 5); native vegetation clearing regulated through a Part V NVCP, with offsets applied as an NVCP condition; and, if the Footprint is materially revised, supplementary targeted survey and application of the mitigation hierarchy prior to clearing.

4 Environmental factor – Terrestrial fauna

4.1 EPA environmental factor and objective

The EPA objective of the Terrestrial Fauna factor is “*To protect terrestrial fauna so that biological diversity and ecological integrity are maintained*” (EPA, 2023a) where ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements.

4.2 Relevant policy and guidance

EPA and other State or Commonwealth policy or guidance that informed the fauna surveys and BBUSs, and the assessment of this Environmental Factor, is listed in **Table 4-1**. Further detail on how specific guidelines were applied is provided in Section 1.3 of the *Basic and Targeted Fauna Survey Report* (**Appendix E**) and Section 1.3 of the *Bird and Bat Utilisation Survey Report* (**Appendix H**).

Table 4-1: Relevant policy and guidance

EPA policy and guidance	How the EPA policy and guidance has been considered
Environmental Factor Guideline – Terrestrial Fauna (EPA, 2016a)	Used to structure the impact assessment for the Terrestrial Fauna Environmental Factor, including the receiving environment, mitigation, significance assessment and environmental outcomes.
Technical Guidance – Terrestrial Fauna surveys for EIA (EPA, 2020)	Used to guide the scope, timing and methodology of the Basic and Targeted Fauna Survey and Bird and Bat Utilisation Surveys, including survey effort, targeted species protocols and limitations disclosure.
Other State or Commonwealth policy or guidance	How the other State of Commonwealth policy and guidance have been considered
Matters of National Environmental Significance - Significant impact guidelines 1.1. (DCCEEW, 2013)	These guidelines were used to prepare significant impact assessments for MNES for the EPBC Act referral for the Project.
EPBC Act Policy Statement 2.3 – Wind Farm Industry (DEWHA, 2009)	Informed the assessment of potential impacts to migratory and threatened species from wind turbine construction and operation, including collision risk and habitat loss.
Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>) Recovery Plan (DPaW, 2013)	Used to inform the assessment of CBC ecology, threats, habitat requirements and the significance of potential impacts from the Project.

EPA policy and guidance	How the EPA policy and guidance has been considered
Referral guideline for 14 birds listed as migratory species under the EPBC Act (DCCEEW, 2015)	Used to assess the likelihood of significant impact on the Fork-tailed Swift and other migratory bird species.
Referral Guideline for 3 WA Threatened Black-Cockatoo Species (DAWE, 2022)	During habitat assessments, suitability of foraging habitat for black cockatoos was assessed in accordance with the foraging habitat scoring tool in the Referral guideline for 3 WA threatened black cockatoo species (DAWE, 2022).
Black-Cockatoo Foraging Habitat Scoring Tool (DAWE, 2022)	Applied to score the quality of CBC foraging habitat within the Project Area and Proposed Development Footprint (including adjacent land parcel) (Table 4-7).
Bird and Bat Monitoring Program Technical Guidance (EPA, 2020)	Informed the design of the Bird and Bat Monitoring Program (<i>BBMP</i> , Appendix D), including carcass search protocols, BBUS design and adaptive management triggers.

4.3 Receiving environment

4.3.1 Surveys and studies

A summary of surveys for Terrestrial Fauna completed for the Project is shown in **Table 4-2: Summary of Terrestrial Fauna surveys**.

Table 4-2: Summary of Terrestrial Fauna surveys

Survey description	Survey timing	Person days
Preliminary Fauna Site Inspection	9 – 13 October 2023	10
Q4 2023 BBUS	11 – 18 December 2023	16
Basic and Targeted Fauna Survey	23 February – 1 March 2024	16

Survey description	Survey timing	Person days
Q1 2024 BBUS	6 – 13 March 2024	16
Q2 2024 BBUS	21 – 27 May; 24 – 25 June 2024	18
Q3 2024 BBUS	5 – 11 August 2024	14
Q4 2024 BBUS	30 September – 6 October 2024	14
Basic and Targeted Fauna Survey	21 – 29 October 2024	18
Q1 2025 BBUS	17 – 21 February 2025	10
Q2 2025 BBUS	19 – 23 May 2025	10
Q3 2025 BBUS	7 – 12 July 2025	12

The fauna surveys conducted for the Project are considered adequate to support this referral. Eight quarterly BBUSs were completed between Q4 2023 and Q3 2025, comprising two full years of baseline bird and bat utilisation data. This exceeds the survey effort available at referral stage for comparable wind farm proposals in the region. The Basic and Targeted Fauna Survey was conducted by suitably qualified zoologists with seven to fifteen years of experience, in accordance with EPA Technical Guidance for Terrestrial Fauna surveys (EPA, 2020). Targeted survey methods were implemented for all significant species confirmed or likely to occur within the Survey Area, including CBC, WSTS, Malleefowl and Black-striped Snake.

BC Act-listed species of mammals, birds and reptiles whose likelihood of occurrence within the Project Area was deemed 'Likely' or greater are listed in Table 4-3 and are further discussed in the *Basic and Targeted Fauna Survey Report (Appendix E)* and *Bird and Bat Utilisation Survey Report (Appendix H)*.

Table 4-3: BC Act-listed species of mammals, birds, and reptiles whose likelihood of occurrence within the Project Area was deemed as “Likely” or greater

Common name (<i>Scientific name</i>)	BC Act Conservation Status	Likelihood of Occurrence within Project Area
Carnaby's Black-Cockatoo (<i>Zanda latirostris</i>)	Endangered	Confirmed
Peregrine Falcon (<i>Falco peregrinus</i>)	Other Specially Protected	Confirmed
Fork-tailed Swift (<i>Apus pacificus</i>)	Migratory	Likely (but not observed)
Blue-billed Duck (<i>Oxyura australis</i>)	Priority 4	Likely (but not observed)
Western Spiny-tailed Skink (<i>Egernia stokesii badia</i>)	Vulnerable	Likely (but not observed)

Further information on the survey methods, survey results, and discussion on limitations and constraints to the surveys is provided in the *Basic and Targeted Fauna Survey Report* (**Appendix E**), and the *Bird and Bat Utilisation Survey Report* (**Appendix H**). Maps of previous survey efforts can be found in **Appendix A** Figure A 19.

Limitations and constraints

No factors were assessed as constituting a significant constraint on the adequacy of the fauna surveys for the purposes of this assessment (refer to **Table 4-4**).

Table 4-4: Survey limitations and constraints

Factor	Constraint	Justification
Competency and experience of consultants	No	Joseph Sollis, an experienced zoologist with eight years' experience, was the technical lead. Joseph was supported by Melissa Jensen (15 years' experience) and Katelyn Gibson (seven years' experience).
Scope	No	All targeted fauna groups were surveyed using standardised and well-established techniques, and available previous survey work in the vicinity of the Survey Area was reviewed. <i>Bird and bat utilisation surveys</i> Available previous survey work undertaken within or in the vicinity of the Survey Area was reviewed. The BBUS assessed bird occurrence within and utilisation of the Survey Area using methods based on the Onshore Wind Farms: Interim guidance on bird and bat management

		(DAWE 2021) and a review of existing literature and best-practice approaches. Bird acoustic recordings were analysed by Nick Leseberg (Adaptive NRM) and Jasmin Pratt (Stantec) and bat echolocation recordings were analysed by Bob Bullen (Bat Call WA). The Ecological Risk Model (ERM) is based on the method described by Reid <i>et al.</i> (2022) for offshore wind farms, with minor amendments to include State- and Commonwealth-level conservation status.
Proportion of species identified	No	A total of 137 terrestrial fauna species were recorded in the Survey Area and Additional Area, representing 41.02 % of the 334 species identified in the desktop assessment. Most taxonomic groups expected within the Survey Area were represented. The species richness for each faunal group was significantly higher than that recorded in previous surveys the vicinity, likely due to the total time spent surveying being considerably longer. Bird and bat utilisation surveys The inventory of 114 bird species recorded during the BBUSs and basic and targeted fauna survey (Stantec 2025)(Appendix E) represents 49.57% of the total number of bird species that have been historically recorded within the desktop search extent (40 km buffer) (n = 230). The species accumulation curves suggest that further survey effort may yield between eight and 15 additional species.
Information sources (e.g. historic or recent)	No	The Survey Area had been previously surveyed, and although the survey effort within the Survey Area was limited, data from databases and other surveys within 30 km of the Survey Area and surrounds provided additional contextual information. Bird and bat utilisation surveys A desktop assessment (Appendix H) was completed to generate a list of bird and bat species previously recorded within and in the vicinity of the Survey Area. The desktop assessment included results compiled from five database searches and seven terrestrial fauna surveys previously undertaken within or in the vicinity of the Survey Area.
Completeness and intensity	No	Targeted survey methods were implemented for all significant species confirmed or likely to occur within the Survey Area. All remnant vegetation within the Survey Area was inspected, and where suitable for significant species was traversed on foot. All eucalypts of species that may form hollows were visited on foot to assess suitability for Carnaby's Black-Cockatoo (these targeted searches also covered all habitat suitable for the Western Spiny-tailed Skink and Malleefowl). Bird and bat utilisation surveys The BBUSs were undertaken based on the <i>Onshore Wind Farm Guidance: Best practice approaches when seeking approval under Australia's national environment law (Draft)</i> (DCCEE 2024a), <i>Onshore Wind Farms: Interim guidance on bird and bat management</i> (DAWE 2021), and a review of existing literature and best-practice approaches for bird and bat surveys approaches (Jenkins <i>et al.</i> 2015; Scottish Natural Heritage 2017) and assessment of surveys undertaken for previous wind turbine assessments (Appendix E). The fixed point (FP) counts aimed to record all birds at each FP for a minimum of 2 ¼ hours over the duration of each survey. FP counts were undertaken during hours in which target bird species were likely to be active.

Timing / weather / season / cycle	No	Surveys were timed to coincide with the recommended timing for targeted fauna species as prescribed by EPA (2020). Where the timing of the basic and targeted fauna was not within the ideal timing for targeted species (particularly the Black-Striped Snake), supplementary targeted survey effort was conducted during the BBUSs However, rainfall leading up to the June survey was significantly below historical averages, leading to some specimens lacking essential identifiable floristic material.
Disturbances	Minor	Much of the fauna habitat within the Survey Area shows evidence of disturbance by sheep, weeds and feral predators. However, areas of pristine and excellent habitat remain. As the Survey Area is predominantly agricultural crop and paddock, these disturbances are expected and are considered minor limitations only.
Resources	No	Resources were adequate to carry out the Survey and the field personnel were competent in the identification of species present.
Remoteness / access problems	No	Access was arranged with property owners prior to field surveys.

4.3.2 Existing environment

Vertebrate Fauna

Of the of 341 species of terrestrial fauna identified as previously recorded and/or having the potential to occur within the Survey Area, 66 were significant vertebrate fauna, comprising six mammals, 57 birds, three reptiles; and seven were significant invertebrate fauna (**Appendix E**).

A total of 28 significant fauna species identified in the desktop assessment were not assessed against the likelihood of occurrence criteria, as their current range is located outside of the Survey Area and no recent records were identified, or because they were recorded in the desktop searches only from coastal or marine habitats that do not occur in the Survey Area. Following the exclusion of the above species, 45 significant fauna species were known and/or have the potential to occur within the Survey Area.

Records of significant vertebrate and invertebrate species from recent surveys are presented in the Significant Fauna Records figures in **Appendix A** Figure A 7, Figure A 20 and Figure A 21.

The relationship between the Survey Area, Additional Areas, Adjacent Land Parcel and current Project Area is described in Section 3.3.1.

Table 4-5: Summary of significant fauna recorded during the desktop assessment. Species in bold are known to occur in the Survey Area.

Scientific Name	Common Name	BC Act Status	EPBC Act Status
Mammals			
<i>Dasyurus geoffroii</i>	Chuditch	Vulnerable	Vulnerable
<i>Notamacropus eugenii</i>	Tammar Wallaby	Priority 4	-
<i>Notamacropus irma</i>	Western Brush Wallaby	Priority 4	-
<i>Phascogale tapoatafa wambenger</i>	Brush-tailed Phascogale	Priority 4	-
Aves			
18 migratory shorebirds (incl. Sandpipers, Plovers etc.)		Critically Endangered, Endangered, Vulnerable, Priority 4, Migratory	Critically Endangered, Endangered, Vulnerable, Priority 4, Migratory
<i>Zanda baudinii</i>	Baudin's Black-Cockatoo	Endangered	Endangered
<i>Zanda latirostris</i>	Carnaby's Cockatoo	Endangered	Endangered
<i>Leipoa ocellata</i>	Malleefowl	Vulnerable	Vulnerable
<i>Falco hypoleucos</i>	Grey Falcon	Vulnerable	Vulnerable
<i>Aphelocephala leucopsis</i>	Southern Whiteface	-	Vulnerable
<i>Falco peregrinus</i>	Peregrine Falcon	Other Specially Protected	-
<i>Apus pacificus</i>	Fork-Tailed Swift	Migratory	Migratory
<i>Motacilla cinerea</i>	Grey Wagtail	Migratory	Migratory
<i>Pandion haliaetus</i>	Osprey	Migratory	Migratory
<i>Plegadis falcinellus</i>	Glossy Ibis	Migratory	Migratory
<i>Bubulcus ibis</i>	Eastern Cattle Egret	-	Migratory
<i>Elanus scriptus</i>	Letter-winged Kite	Priority 4	-
<i>Oxyura australis</i>	Blue-billed Duck	Priority 4	-
Reptiles			
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	Vulnerable	Endangered
<i>Aspidites ramsayi</i>	Woma Python	Priority 1	-
<i>Neelaps calonotos</i>	Black-striped Snake	Priority 3	-

Scientific Name	Common Name	BC Act Status	EPBC Act Status
Invertebrates			
<i>Idiosoma nigrum</i>	Shield-backed Trapdoor Spider	-	Vulnerable
<i>Idiosoma kwongan</i>	Heath Shield-backed Trapdoor Spider	Priority 1	-
<i>Bothriembryon perobesus</i> (Terrestrial Snail)		Priority 1	-
<i>Hemisaga vepreculae</i>	Thorny Bush Katydid	Priority 2	-
<i>Hylaeus globuliferus</i>	Woolybush Bee	Priority 3	-
<i>Phasmodes jeeba</i>	Springtime Corroboree Stick Katydid	Priority 3	-
<i>Synemon gratiosa</i>	Graceful Sunmoth	Priority 4	-

Table 4-6 summarises the broad fauna habitat types in the Proposed Development Envelope, and their suitability for conservation significant fauna. Detailed fauna habitat type descriptions are provided in the *Basic and Targeted Fauna Survey Report* (Stantec, 2026) (**Appendix E**).

The fauna habitat types in the PDE were used to guide early Project design and avoidance of potentially significant habitat values. Fauna habitat type mapping was refined and updated within the Targeted Fauna Habitat Survey Area. Fauna habitat type mapping was refined and updated following targeted fauna habitat surveys, as described in the *Basic and Targeted Fauna Survey Report* (**Appendix E**).

Table 4-6: Fauna habitat extents

Fauna habitat type	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same fauna habitat type in Project Area
Cleared (paddock/crop/infrastructure)	6,347.39	525.76	8.28
Diverse Shrubland and Heath	1,776.31	10.38	0.58
Low Eucalypt Woodland	86.00	5.03	5.85
Melaleuca Wetland	22.07	0	0
Minor Drainage Line	12.11	0.21	1.70
Open Woodland on Farmland	257.33	1.77	0.69
Shrubland on Lateritic Ridge/Outcrop	166.23	0.07	0.04
Unmapped (Adjacent Land Parcel outside of Development Envelope)	1,244.83	0.44	0
TOTAL	9,912.25	543.6	5.48

Carnaby's Black Cockatoo

The Carnaby's Black-Cockatoo (*Zanda latirostris*) is listed as Endangered under the EPBC Act and the BC Act. The species breeds primarily within the Wheatbelt, including areas between Three Springs and Eneabba, before moving coastward outside the breeding season. Long-term monitoring indicates an ongoing population decline driven by historical clearing, fragmentation of breeding habitat, and loss of high-quality foraging resources (DPaW, 2013). The Twin Hills Project Area falls within the known range of CBC and supports habitat suitable for foraging, roosting and breeding. Survey records confirm that the species utilises the broader landscape intermittently and opportunistically, consistent with its highly mobile and seasonally variable ecology, rather than as a site of continuous local residency.

Although Carnaby's Black-Cockatoos have not been observed breeding or nesting within the Project Area, a Red-tailed Black-Cockatoo *Calyptrorhynchus banksii esconditus* (not a significant species) was observed roosting or sheltering in a hollow in a dead *Eucalyptus accedens* (Powderbark Wandoo) indicating that these hollows are utilised by Black-Cockatoo species. Powderbark Wandoo is common throughout the Survey Area (Stantec, 2025a). In White Gums Nature Reserve, approximately 7.5 km outside the Project Area, Carnaby's Black-Cockatoos were observed foraging on *Allocasuarina campestris* and *Banksia* sp. in Shrubland on Lateritic Ridge/Outcrop

Across all reviewed studies, habitats relevant to Black-Cockatoos are consistently identified, including:

- Proteaceous heath and Banksia-dominated kwongan, supporting foraging.
- Scattered Eucalyptus trees, often associated with paddocks or cleared land, with potential value for roosting and historical breeding.
- Drainage lines and remnant woodland patches, contributing to habitat connectivity.

Importantly, these habitat types occur broadly across the landscape, not solely within the Twin Hills Project Area. The Twin Hills site forms part of a larger, continuous mosaic of modified agricultural land and remnant vegetation that is already subject to:

- Clearing and fragmentation.
- Existing infrastructure such as roads, farms, and exploration activities.
- Previous and approved developments, including wind farms and seismic surveys.

Foraging habitat

Foraging scores for habitats within the Survey Area are presented in **Table 4-7** and shown in the Carnaby's Black-Cockatoo Foraging Habitat Scores figures in **Appendix A** (Figure A 26). A total of 2,273.00 ha of the Survey Area is high-quality foraging habitat for Carnaby's Black-Cockatoo. Within the Survey Area, Carnaby's Black-Cockatoos were observed foraging on species including *Banksia* spp. and *Callitris arenaria* in Diverse Shrubland and Heath, and three individuals were observed feeding on introduced *Pinus radiata* cones beside a homestead. In White Gums Nature Reserve, Carnaby's Black-Cockatoos were observed foraging on *Allocasuarina campestris* and *Banksia* sp. in Shrubland on Lateritic Ridge/Outcrop.

Foraging habitat scores on the Adjacent Land Parcel are shown in Carnaby's Black-Cockatoo Foraging Habitat Scores figures in **Appendix A** Figure A 26.

Table 4-7: Carnaby's Black-Cockatoo foraging scores by habitat type.

Foraging habitat scoring tool steps (DAWE 2022a)	Fauna habitat								Comment
	Diverse Shrubland and Heath	Open Woodland on Farmland	Low Eucalypt Woodland	Shrubland on Lateritic Ridge/Outcrop	Wetland	Minor Drainage Line	River Red Gum Forest (Additional Area only)	Cleared (Paddock / crop / infrastructure	
Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as <i>Banksia</i> spp. (including <i>Dryandra</i> spp.), <i>Hakea</i> spp. and <i>Grevillea</i> spp., as well as native eucalypt woodland and forest that contains foraging species	10	0	10	10	10	0	0	0	
Subtract 2 from your score if there is no evidence of feeding debris on your site	-	-	-	-	-	-	-	-	Feeding observed within the Survey Area. No change to scores
Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site	-	-	-	-	-	-	-	-	Foraging habitat widespread within the region. No change to scores
Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat	-	-	-	-	-	-	-	-	Breeding habitat present within 12 km. No change to scores
Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat	-	-	-	-	-	-	-	-	Night roost present within 12 km. No change to scores
Subtract 1 if your site has disease present (e.g. <i>Phytophthora</i> spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present	-	-	-	-	-	-	-	-	Disease not affecting more than 50% of preferred food plants. No change to scores
Final score	10	0	10	10	10	0	0	0	

Table 4-8: Counts of potential and suitable breeding trees recorded.

Breeding Tree Category	Survey Area				Additional Area					Nature and Road Reserves				Total
	<i>Eucalyptus accedens</i>	<i>Eucalyptus camaldulensis</i>	<i>Eucalyptus loxophleba</i>	Subtotal	<i>Eucalyptus accedens</i>	<i>Eucalyptus camaldulensis</i>	<i>Eucalyptus loxophleba</i>	<i>Eucalyptus gomphocephala</i>	Subtotal	<i>Eucalyptus accedens</i>	<i>Eucalyptus camaldulensis</i>	<i>Eucalyptus loxophleba</i>	Subtotal	
Potential Breeding Trees	734	140	22	896	865	900	26	4	1,795	27	133	13	173	2,864
Suitable Breeding Trees	329	7	0	336	459	155	0	1	615	10	32	3	45	996
Confirmed Breeding Trees	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Roosting

No Carnaby's Black-Cockatoo roosts were identified within the Survey Area. One roost was confirmed during the Survey, located within nature reserve R 12705 approximately 2 km north of the Survey Area (**Appendix A** Figure A 27) On 26 May 2024 between 5pm and 6pm, 274 Carnaby's Black-Cockatoos were observed moving between low trees throughout nature reserve R 12705, before moving to a grove of relatively taller (~20 m) River Red Gum and *Melaleuca* sp. trees above a spring. The tops of the River Red Gum trees in this grove were defoliated. This roost location had not previously been recorded according to desktop database searches (BirdLife Australia 2023; DBCA 2023a).

Within the Survey Area, 336 suitable breeding trees and an estimated 896 potential breeding trees were recorded using the methods described in Section 4.3.1 (Table 4-8). No confirmed breeding trees were identified. In addition to the trees recorded within the Survey Area, 615 suitable and an estimated 1,795 potential breeding trees were recorded in the Additional Area; and 45 suitable and 173 potential breeding trees were recorded in adjacent Nature Reserves and road reserves.

The majority of suitable trees (with suitable hollows present, but no evidence of use by listed Black-Cockatoo species) and potential breeding trees (trees of a suitable size to form hollows, but with no suitable hollows) were Powderbark Wandoo. Although no Carnaby's Black-Cockatoos have been observed breeding or nesting in the Survey Area, Red-tailed Black-Cockatoos (*Calyptrorhynchus banksii samueli*) were observed utilising two very low, exposed hollows in a dead Powderbark Wandoo approximately 3 m above the ground. Other potential and suitable trees identified in the Survey Area and surrounds are River Red Gums (*E. camaldulensis*), York Gum (*E. loxophleba*) and Tuart (*E. gomphocephala*).

A table of all Black-Cockatoo tree assessments for the Survey Area is presented in **Appendix F**.

Breeding trees on the Adjacent Land Parcel are discussed in **Appendix J**.

Peregrine Falcon

The Peregrine Falcon is listed as “other taxa in need of special protection” under the BC Act. The Peregrine Falcon is a powerful aerial hunter that inhabits most environments with suitable nest sites across Australia, with a preference for cliff faces (Menkhorst et al. 2019). Occurring across a range of habitats from woodlands to open grasslands and coastal cliffs, it hunts and feeds predominantly on other birds, but is also known to prey on rabbits and other moderate-sized mammals, bats and reptiles (DEE 2016). One Peregrine Falcon was observed foraging within the Survey Area during the Q4 2024 BBUS. The species was observed opportunistically near the north-eastern boundary of the Survey Area.

No Peregrine Falcon nesting sites were identified within the Project Area during surveys. Given the species' preference for cliff-face nest sites and the predominantly flat to gently undulating topography of the Project Area, the likelihood of active nesting within the Proposed Development Envelope is considered low. See **Appendix A** Figure A 28 for mapping of Peregrine Falcon habitat in the Proposed Project Area.

Malleefowl

One Malleefowl mound was recorded within the Survey Area during the Q2 2024 BBUS. The mound was approximately 2.5 m x 1 m, with a flat profile and no evidence of recent use and is therefore classified as a “long unused” mound (National Malleefowl Recovery Team 2020). Small pieces of eggshell and a thin layer of incubating material were present. Based on the age of the mound, the lack of other mounds/activity within the Survey Area, and the activity of foxes and cats in the vicinity, the species likelihood within the Survey Area remains “possible”. See **Appendix A** Figure A 28 for mapping of Malleefowl habitat in the Proposed Project Area.

Western Spiny-tailed Skink

The Western Spiny-tailed Skink (*Egernia stokesii badia*) is listed as Vulnerable under the BC Act and Endangered under the EPBC Act. The species inhabits rocky outcrops and lateritic ridges, living colonially in rock crevices and relying on surrounding vegetation for foraging. The Project Area contains 166.23 ha of Shrubland on Lateritic Ridge/Outcrop and 86 ha of Low Eucalypt Woodland - the two fauna habitat types considered most likely to support WSTS (**Appendix E**). The species was not confirmed during surveys but is assessed as Likely given the presence of suitable habitat. Conservation reserves within 10 km of the Project Area (totalling 10,169 ha,) provide habitat refuge and connectivity for the species at a landscape scale.

Fork-tailed Swift

The Fork-tailed Swift (*Apus pacificus*) is listed as Migratory under both the BC Act and the EPBC Act. It is a non-breeding visitor to Australia, present between approximately October and April. Within its non-breeding range, it is exclusively aerial, foraging high above the tree canopy across a wide range of habitats. The species was not observed during surveys for the Project but is assessed as Likely given documented records in the region and suitable aerial foraging habitat. As an exclusively aerial

species, it is not subject to habitat clearing impacts but has potential exposure to turbine collision risk, which is assessed in Section 4.6.

Blue-billed Duck

The Blue-billed Duck (*Oxyura australis*) is listed as Priority 4 under the BC Act. It is a specialised diving duck that favours large, deep, permanent freshwater wetlands with fringing and emergent vegetation for breeding, dispersing more widely across a range of wetland types outside the breeding season. Within the Project Area, the fauna habitat type most likely to support the species is Melaleuca Wetland, of which 22.07 ha occurs within the Project Area (Table 4-6). The species was not recorded during the Basic and Targeted Fauna Survey or any of the eight quarterly BBUSs but is assessed as Likely to occur given the presence of suitable wetland habitat within the Project Area. Potential impacts to the Blue-billed Duck are assessed in Section 4.6.

Migratory shorebirds

Eighteen species of migratory shorebird were identified in the desktop assessment as having the potential to occur within the Survey Area, including species listed as Critically Endangered, Endangered and Vulnerable under the EPBC Act. The Project Area does not contain coastal or intertidal habitat used by migratory shorebirds for foraging or roosting. The Yarra Yarra Lakes system, located approximately 15 km east of the Project Area, provides the nearest significant shorebird habitat in the region. No migratory shorebirds were recorded during BBUSs within the Survey Area. Potential impacts on migratory shorebirds from the Project are considered negligible given the absence of suitable shorebird habitat within the Proposed Development Envelope and the low likelihood of shorebird utilisation of the Project Area.

Wedge-tailed Eagle

The Wedge-tailed Eagle (*Aquila audax*) is not listed under the BC Act or the EPBC Act. It is a widespread resident raptor and was the most frequently observed raptor species during the baseline bird and bat utilisation surveys (BBUSs) for the Project, accounting for 226 observations in total (**Appendix H**). Two Wedge-tailed Eagle nests were identified within the Survey Area, and pairs were observed hunting in proximity to these nests. The species was typically recorded soaring and gliding at rotor-swept area (RSA) height while scouting for prey across all habitat types, and along ridges and outcrops where it conserves energy by utilising updrafts.

Although not a species of conservation significance, the Wedge-tailed Eagle is relevant to the collision-risk assessment because a high proportion of its flight activity occurs within the RSA; 182 of the 226 observations (80.53%) were recorded at RSA height (40–300 m). In the preliminary Ecological Risk Model applied in the *BBUS Report* (**Appendix H**), the species returned a risk index of 2.24, the third highest of all species recorded after Carnaby's Black-Cockatoo and the Australian Pelican, but below the low–medium threshold of 2.30, and was therefore assessed as low risk. Its long life span, low fecundity and long generation time nonetheless warrant management of collision risk. As the species is not conservation-listed, it is not carried into the significance assessment in Section 4.6; potential collision risk is instead managed through the 500 m setback of turbine towers from the two identified nests committed to in Section 4.4, together with the collision monitoring,

carcass searching and adaptive management provisions of the *Bird and Bat Management Plan* (Appendix D).

4.4 Proposed mitigation

Mitigation measures for the Project have been applied in line with the mitigation hierarchy outline in the *Statement of environmental principles, factors, objectives and aims of EIA* (EPA, 2023a) that is shown below.

- Avoid – avoid the adverse environmental impact altogether. This may include reducing the footprint or changing the location of the footprint to avoid areas with high environmental values.
- Minimise – limit the degree or magnitude of the adverse impact. This may include reducing the footprint or carefully selecting technologies, processes (such as re-use of waste products) and management measures (such as bunding or dust and noise control measures) to reduce the impact.
- Rehabilitate – repair, rehabilitate or restore the impacted site as soon as possible. Adequate rehabilitation information is integral to the mitigation hierarchy to ensure early identification of knowledge gaps and risk as well as development of criteria and research to meet objectives.
- Offset – undertake a measure or measures to provide a compensatory environmental benefit or reduction in environmental impact to counterbalance significant adverse environmental impacts from implementation of a proposal. The measure(s) are taken after all reasonable mitigation measures have been applied and a significant environmental risk or impact remains. Offsets are not appropriate for all proposals and will be determined on a proposal-by-proposal basis.

For Terrestrial Fauna, the most significant application of the mitigation hierarchy is the avoidance of CBC foraging and breeding habitat within the Proposed Development Footprint, and the design of turbine parameters to avoid CBC collision risk. These measures are described below.

The Proponent will seek to reduce impacts to Terrestrial Fauna through implementing the avoidance measures listed below:

- Design the wind turbine layout using fauna habitat type mapping to locate turbines on cleared (paddock/crop/infrastructure) habitat wherever practicable, avoiding Diverse Shrubland and Heath, Low Eucalypt Woodland, and Shrubland on Lateritic Ridge/Outcrop habitat types to the extent achievable within the Proposed Development Envelope.
- Clearing no more than 17.14 ha of native vegetation (Table 3-9).
- Do not clear more than 14.97 ha of CBC foraging habitat.
- Avoid clearing of any CBC breeding trees designated as “suitable” and not clear more than two “potential” CBC breeding trees.
- Avoid any clearing outside of the Proposed Development Envelope.

- Implement a minimum turbine blade tip height of 60 m above ground level, which is above the observed CBC flight heights of 0-40 m recorded during baseline BBUSs for the Project (**Appendix H**) and documented at comparable sites in the region (**Appendix J**).
- Ensure no wind turbines are installed within 2 km of the CBC roost identified during the baseline BBUSs that is located north of the Project Area.
- Ensure no wind turbine towers are installed within 500 m of Wedge-tailed Eagle nests identified during baseline BBUSs.

The Proponent will seek to reduce impacts to Terrestrial Fauna through implementing the minimisation measures listed below:

- Site and design non-wind turbine infrastructure to minimise clearing requirements.
- Implement lighting options that minimise potential impacts to bird and bat species where practicable. These may include:
 - Implementing directive lighting that minimises high intensity light spill beyond fenced areas (e.g., substations and maintenance yards, etc).
 - Installing light hoods.
 - Using lighting technologies and wavelengths that minimise attraction of nocturnal fauna, in accordance with manufacturer recommendations and best practice guidance applicable at the time of construction.
- Implement site vehicle and machinery hygiene procedures to minimise the spread of weeds and plant pathogens.
- Implement appropriate speed limits on unsealed access tracks to control dust generation.
- Develop and implement fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) as well as a BMP.
- Undertake monitoring (including carcass searches) in accordance with the Monitoring Program described within the *BBMP* (**Appendix D**).
- Undertake carrion removal in accordance with the Bird and Bat Monitoring Program within the *BBMP* (**Appendix D**).
- Re-evaluate the risk rating of at-risk bird and bat species following the annual review of qualitative risk assessment based on the results from the operational BBUS compared to those from the baseline BBUS data collected during the Bird and Bat Monitoring Program.
- Develop and implement awareness, induction, and training packages to effectively implement the *BBMP* (**Appendix D**).
- Actively manage any potential and actual impacts to birds, bats, and associated habitats during the construction phase of the Project through implementing a CEMP.
- Implement a pre-construction dieback survey and Dieback Management Plan consistent with the commitment described in Section 3.4, to minimise the risk of introducing or spreading *Phytophthora cinnamomi* within CBC foraging and breeding habitat in the Project Area.

- Develop and implement awareness, induction, and training packages to effectively implement the CEMP.

The Proponent will seek to reduce impacts to Terrestrial Fauna through implementing the rehabilitation measures listed below:

- Restore land used for temporary infrastructure during the construction phase to its pre-construction-state during the operations phase.

No environmental offsets are proposed in response to a finding of significant residual environmental impacts under the Part IV assessment. Native vegetation clearing will require one or more NVCPs under Part V Division 2 of the EP Act, and offsets for that clearing will be developed as a condition of the relevant NVCP in accordance with the WA Environmental Offsets Policy and Guidelines.

4.5 Potential environmental impacts

4.5.1 Identified environmental impacts

The potential direct and indirect impacts to Terrestrial Fauna from Project activities are identified below. Each is carried into the quantification in Section 4.5.2 and the significance assessment in Section 4.6.

Direct impacts - construction:

- Loss, fragmentation, or modification of habitat from clearing vegetation.
- Loss of or injury to individuals from clearing vegetation, collisions with vehicles, and fires resulting from operating equipment or hot works.

Direct impacts - operation:

- Loss of or injury to individuals from collisions with wind turbines or other Project infrastructure, collisions with vehicles, and fires resulting from operating equipment.
- Altered fauna behaviour due to the presence of operating wind turbines and increased human presence.

Indirect impacts – all phases

- Introduction of weeds, pathogens, or pest fauna from vehicle movements and from rubbish and refuse generated by site personnel.
- Reduction in vegetation condition from dust generated by vehicle movements and construction activities.

4.5.2 Predicted environmental impacts

This subsection quantifies the predicted direct impacts to Terrestrial Fauna values in absolute and relative terms. Indirect impacts (weeds, pathogens, pest fauna and dust) are managed to below significant levels through the measures in Section 4.4 and are addressed qualitatively. The significance of all predicted impacts is assessed in Section 4.6.

Native vegetation clearing

The maximum proposed clearing area of all vegetation and its respective percentage as a total of that within the Project Area + Conservation reserves within 10 km of the Project Area that could provide potential fauna habitat is shown in Table 4-9.

Table 4-9: Maximum clearing extents – vegetation within Project Area + conservation reserves within 10km of the Project Area

Extent of vegetation in Project Area + Conservation reserves within 10km of the Project Area (ha)	Extent of vegetation in Proposed Development Footprint	
	ha	% of vegetation in Project Area + Conservation reserves within 10km of the Project Area
11,237.29	17.14	0.15

Conservation reserves within 10 km of the Project Area boundary include those shown in Table 4-10.

Table 4-10: Conservation reserves within 10km of the Project Area

Conservation reserve	Gazetted area (ha)
Depot Hill	63
Dookanooka	300
Kadathinni – Part lot 3 on Plan 15105	131*
Tathra	4,322
Unnamed WA12705	214
Unnamed WA48098	209
White Gums	160
Wilson	1,099
Wotto	3,671
TOTAL	10,169

*Gazetted in progress.

Carnaby's Black Cockatoo

The maximum proposed clearing areas of CBC foraging habitat with a score of 10 and its respective percentage as a total of that within the Project Area are shown in Table 4-11.

Table 4-11: Maximum clearing extents – Carnaby's Black-Cockatoo habitat with score of 10

Extent in Project Area (ha)	Extent in Proposed Development Footprint	
	ha	% of CBC foraging habitat with score of 10 in Project Area
2,002.33	14.97	0.75

The locations of CBC foraging habitat with a score of 10 with respect to the Proposed Development Footprint and the Project Area are shown in the *Carnaby's Black-Cockatoo Foraging Habitat Scores* figures in **Appendix A** (Figure A 26).

The number of potential and suitable CBC breeding trees and their respective percentages as a total of those within the Project Area are shown in Table 4-12.

Table 4-12: Maximum clearing extents – Carnaby's Black-Cockatoo breeding trees

Carnaby's Black-Cockatoo breeding tree designation	Extent in Project Area (number of trees)	Extent in Proposed Development Footprint	
		Number of trees	% of number of trees in Project Area
Potential	899	2	0.22
Suitable	213	0	0
TOTAL	1,120	2	0.18

The two trees within the Proposed Development Footprint are classified as potential breeding trees under the DAWE (2022) assessment methodology, meaning they are of a size capable of forming hollows but do not currently possess suitable hollows or evidence of use by listed Black-Cockatoo species. It is understood that Bamford Consulting Ecologists (BCE) have not published formal guidelines for scoring breeding trees. However, based on BCE methods published in other reports (e.g. Harewood 2025; Focused Vision 2020), it appears trees without hollows would be identified as “potentially suitable” or “rank 5” trees, which is comparable to the classification of “potential breeding tree” under the DAWE (2022) assessment methodology.

The locations of potential and suitable CBC breeding trees with respect to the Proposed Development Footprint and the Project Area are shown in the *Carnaby's-Black Cockatoo Breeding Trees* figures in **Appendix A** (Figure A 27).

No CBC roosts were identified within the Project Area as described in Section 0 of this ERD and the *Basic and Targeted Fauna Survey Report* (**Appendix E**). One roost was confirmed approximately 2 km north of the Survey Area within nature reserve R12705, where 274 CBCs were observed on 26 May 2024. No wind turbines will be installed within 2 km of this roost, consistent with the avoidance commitment in Section 4.4. The Proposed Development Footprint does not intersect nature reserve R12705 or any other conservation reserve within 10 km of the Project Area.

Peregrine Falcon

Fauna habitat types within the Project Area in which Peregrine Falcons are considered most likely to occur are 1) Open Woodland on Farmland, and 2) Shrubland on Lateritic Ridge/Outcrop, as outlined in Table 5-9 of the *Bird and Bat Utilisation Survey Report* (**Appendix H**). The maximum proposed clearing areas of these vegetation types and their respective percentages as a total of those within the Project Area are shown in Table 4-13.

Peregrine Falcons are highly agile aerial predators with exceptional manoeuvrability and visual acuity. A single individual was observed opportunistically during one survey event, with no nesting sites identified within the Project Area. The species is a solitary hunter with large home ranges and low site fidelity to any particular foraging location, meaning that the probability of repeated exposure to turbine collision risk at this site is low.

Table 4-13: Maximum clearing extents – Peregrine Falcon habitat

Fauna habitat type	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same fauna habitat type in Project Area
Open Woodland on Farmland	257.33	1.77	0.69
Shrubland on Lateritic Ridge/Outcrop	166.23	0.07	0.04

The locations of these fauna habitats with respect to the Proposed Development Footprint and the Project Area are shown in *Fauna Habitat Types* figures in **Appendix A** (Figure A 22).

Western Spiny-tailed Skink

Fauna habitat types within the Project Area in which Western Spiny-tailed Skink (WSTS) are considered most likely to occur are 1) Low Eucalypt Woodland, and 2) Shrubland on Lateritic Ridge/Outcrop, as discussed in section 4.6.1 of the *Basic and Targeted Fauna Survey Report* (**Appendix E**). The maximum proposed clearing areas of these vegetation types and their respective percentages as a total of those within the Project Area are shown in Table 4-14.

Table 4-14: Maximum clearing extents – Western Spiny-tailed Skink habitat

Fauna habitat type	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same fauna habitat type in Project Area
Low Eucalypt Woodland	86.00	5.03	5.85
Shrubland on Lateritic Ridge/Outcrop	166.23	0.07	0.04

Fauna habitat type	Extent in Project Area (ha)	Extent in Proposed Development Footprint	
		ha	% of same fauna habitat type in Project Area
TOTAL	252.23	5.10	5.89

The locations of these fauna habitats with respect to the Proposed Development Footprint and the Project Area are shown in *Fauna Habitat Types* figures in **Appendix A** (Figure A 22).

4.6 Assessment of significance of residual impacts

4.6.1 Proposal

Residual impacts from the Project on BC Act-listed species of mammals, birds, and reptiles whose likelihood of occurrence within the Project Area was deemed as “Likely” or greater through completed ecology surveys and studies are assessed below.

The significance of residual impacts to Terrestrial Fauna is considered in and within the balance of this section. Other approvals and regulatory processes relevant to the Project, including those that can mitigate potential impacts to Terrestrial Fauna, are described in **Appendix E**.

Table 4-15: Terrestrial Fauna – significance matters

Significance matter	Discussion
The object and principles of the Act.	A significant ecology survey program has been conducted to understand potential impacts on Terrestrial Fauna, comprising eight quarterly BBUSs spanning two full years of baseline data (Q4 2023 to Q3 2025), a Preliminary Fauna Site Inspection, and a Basic and Targeted Fauna Survey including targeted surveys for all significant species confirmed or likely to occur within the Survey Area. This survey effort exceeds that available at referral stage for comparable wind farm proposals in the region.

Significance matter	Discussion
Values, sensitivity and quality of the environment which is likely to be impacted.	Proposed clearing relative to the amount of vegetation within the Project Area and the surrounding area is low. As such, vegetation clearing for the Project is not considered to pose significant residual impacts to Terrestrial Fauna. CBCs are unlikely to enter RSAs for wind turbines based on their known and observed behaviour in the Project Area and within nearby wind farms. Spacing between wind turbines and measures in the BBMP reduce residual impacts to other bird species to levels that are considered to be below significant. All suitable CBC breeding trees (336 within the Survey Area) are located outside the Proposed Development Footprint. The one confirmed CBC roost in the vicinity - 274 birds observed in nature reserve R12705 - is located approximately 2 km north of the Survey Area and is protected by a 2 km turbine exclusion zone. No Threatened or Priority flora species occur within the Footprint, removing any interaction between flora clearing impacts and fauna habitat quality at the species level. Other residual impacts from the Project are not considered to be significant for Terrestrial Fauna.
All stages and components of the proposal (such as any infrastructure required for the proposal to be practicably implemented, or a proposal life cycle).	All parts of the project over the entire project lifecycle have been considered in the assessment of residual impacts.
Extent (intensity, duration, magnitude, and geographic footprint) of the likely impacts.	No more than 17.14 ha of vegetation would be cleared for the Project over various parts of the Project Area. Construction activities are estimated to last approximately 2 – 3 years and would be managed under an adequate CEMP.
Resilience of the environment to cope with the impacts or change (including considering pressures such as climate change).	Most of the infrastructure for the Project would be situated on already-cleared land. Climate change would likely cause hotter and dryer conditions in the region that may impact native vegetation and Terrestrial Fauna. The Project would serve to lower the greenhouse gas footprint of power generation in WA.

Significance matter	Discussion
Consequence of the application of the mitigation hierarchy to the proposal.	Applying the mitigation hierarchy to the Project has resulted in the consequences listed below. • Less than 1% of existing vegetation in the Project Area is in the Proposed Development Footprint. • Less than 1% of CBC foraging habitat with a score of 10 in the Project Area is in the Proposed Development Footprint. • All suitable CBC breeding trees are outside the Proposed Development Footprint. • Less than 0.2% of the potential CBC breeding trees in the Project Area are in the Proposed Development Footprint. • Wind turbines located on cleared land only. • A minimum blade tip height of 60 m above ground level. • No wind turbines installed within 2 km of the CBC roost identified during the baseline BBUSs that is located north of the Project Area. • No wind turbine towers are installed within 500 m of Wedge-tailed Eagle nests identified during baseline BBUSs.
Consequence of the likely impacts (or change), including off-site impacts (such as impacts on a wetland from chemicals discharged into upstream river systems) and indirect impacts (such as reduced fish harvest due to decreased water quality).	See Assessment of significance of residual impacts.
Likely environmental outcomes, and whether these are consistent with the EPA Environmental Factor objectives.	The proposed loss of fauna habitat and the risk of fauna-turbine collision are not expected to cause a loss of biological diversity or reduce ecological integrity at the local or regional scale. The Project can be implemented in a manner consistent with the EPA objective for Terrestrial Fauna.

Significance matter	Discussion
Cumulative effects, taking into account cumulative environmental impacts – the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities.	Cumulative environmental impacts are assessed in Section 4.6.3, including a dedicated assessment of cumulative impacts to Carnaby's Black-Cockatoo at a regional scale (Appendix R). Additional wind turbines in the region may incrementally increase the cumulative risk of bird collisions; however, the Twin Hills Project contributes a Low incremental impact to regional cumulative effects on CBC, as assessed in Appendix R. Cumulative impacts to all other fauna species assessed in this chapter are not considered significant given the low proportional clearing of relevant habitat types and the absence of confirmed records of most species during baseline surveys.
Holistic impacts – connections and interactions between impacts, and the overall impact of the proposal on the environment as a whole.	The primary holistic interaction for Terrestrial Fauna is the shared physical footprint with the Flora and Vegetation factor — the 17.14 ha of maximum clearing and the avoidance of clearing on already-cleared land addresses both factors simultaneously, and the significance conclusions for each are mutually reinforcing rather than additive. A secondary interaction exists between the Social Surroundings factor (lighting for substation and maintenance yard safety) and nocturnal fauna, which is managed through the directive lighting and light hood commitments in Section 4.4. Neither interaction creates a residual impact that elevates the overall significance of the Terrestrial Fauna assessment. See Appendix U (Holistic Impact Assessment).
Level of confidence in the prediction of residual impacts and the success of proposed mitigation	Impacts were assessed for all Project infrastructure over the entire Project lifecycle. Proposed clearing areas represent the maximum case, and so are likely to be greater than the areas that would be cleared for the Project. Confidence in the CBC collision risk assessment is high. Flight height data were collected across eight quarterly BBUSs and are consistent with published literature from comparable sites (Appendix J). The 60 m minimum blade tip height commitment provides a clear, measurable and enforceable design parameter. Adaptive management triggers in the <i>BBMP</i> (Appendix D) provide a structured response framework if collision events occur during operation.
Public interest about the likely effect of the proposal or scheme, if implemented, on the environment, and relevant public information.	The public may be interested in the aspects of the Project that are listed below. • Job creation and economic stimulation. • Respective reduction in greenhouse gas emissions in the power sector from the Project when operating. • Conservation of Carnaby's Black-Cockatoo, an Endangered species of significant public interest in Western Australia, through design measures including minimum blade tip height, roost setback, and breeding tree avoidance.

Carnaby's Black Cockatoo

Clearing

Given the low amounts of proposed clearing of CBC foraging habitat with score of 10 and CBC breeding trees relative to their respective amounts within the Project Area and surrounding area (as quantified in Section 4.5.2), vegetation clearing for the Project is not considered to pose significant residual impacts to CBC that relate to:

- Loss, fragmentation, or modification of habitat from clearing vegetation; or
- Loss of or injury to individuals.

Also given the 2 km setback and the location of the roost within a gazetted nature reserve, residual impacts to CBC roosting behaviour from the Project are not considered significant.

Collisions with wind turbines or other Project infrastructure

It is considered unlikely that CBCs would collide with wind turbines and / or powerlines constructed for the Project for the reasons listed below:

- All CBCs observed during fauna surveys and BBUSs for the Project were seen flying between 0 – 40 m above ground level (with the maximum observed flight being about 35 m) as discussed in Section 5.3.5.5 of *Bird and Bat Utilisation Survey Report (Appendix H)*, which is below the minimum blade tip height of 60 m above ground level proposed of any wind turbine that would be constructed as part of the Project.
- “Carnaby's Cockatoo usually fly just above the ground in open areas, or just above the vegetation in heathlands or continuous tracts of vegetation. There are very few reports of birds flying at Turbine Rotor Sweep height. At Cataby, pairs and flocks flew between foraging sites and over cleared farmland at about 5-15 m and occasionally at 15-40 m and avoided the adjacent windfarm turbines and the power transmission towers” (*Carnaby's Cockatoo *Calyptorhynchus latirostris* in the Eneabba Region*, **Appendix J**).
- The tallest vegetation type recorded across the Project Area is Low Woodland, Low Forest or Tall Shrubland; with individual *Eucalyptus camaldulensis* being recorded at heights of 18 m tall, as shown in Appendix E of the *Detailed and Targeted Flora Survey Report (Appendix F)*, and able to grow to heights of 20 m tall (DBCA, 2019). These heights are well below the minimum blade tip height of 60 m above ground level proposed of any wind turbine that would be constructed as part of the Project.

Based on the points above, it is considered unlikely that CBCs would be flying at heights corresponding to the rotor swept area (RSA).

The *BBMP (Appendix D)* includes two adaptive management triggers specific to CBC. Finding one injured or deceased CBC within 300 m of a turbine triggers an internal investigation to determine whether the incident is attributable to turbine collision. If attributed, additional mitigation measures will be considered and may be implemented as outlined in Table 4-2 of the *BBMP*. Finding multiple injured or deceased CBCs within 300 m of any turbine over a 12-month period triggers an investigation with outcomes discussed with DWER and DCCEEW, with additional measures implemented if required.

Behaviour and flying ability

Evidence from long-term monitoring at comparable wind farm sites in the region demonstrates that CBC actively avoid turbine infrastructure and are capable of doing so in poor light conditions, noting that:

- “At windfarms at Cataby, Walkaway, Emu Downs and Joanna Plains cockatoos appear to show a high avoidance of turbines and avoid or manoeuvre around them” (*Carnaby’s Cockatoo Calyptorhynchus latirostris in the Eneabba Region*, **Appendix J**).
- “The Cataby wind farm [Yandin Wind Farm] is in similar habitat to that proposed at Eneabba site and at Cataby (which has a small breeding population of Carnaby’s Cockatoo in adjacent remnant bushland) birds rarely flew across the wind turbine footprint, generally avoiding both turbines and transmission towers” (*Carnaby’s Cockatoo Calyptorhynchus latirostris in the Eneabba Region*, **Appendix J**).
- “[CBCs] are very competent flyers in poor light (dawn, dusk and twilight) and would be capable of avoiding wind turbines. Our data bank contains several records of small flocks flying through the canopy of eucalypt woodlands at dusk; flying into and through pine plantations at dusk and dawn; and small groups returning to nest hollows in eucalypt woodlands after dark” (*Carnaby’s Cockatoo Calyptorhynchus latirostris in the Eneabba Region*, **Appendix J**).
- “The Storr-Johnstone Bird Data Bank contains no records of birds hitting power lines. ... Flocks of Carnaby’s Cockatoos are regularly observed in Perth suburbs ... negotiating a maze of power lines and buildings” (*Carnaby’s Cockatoo Calyptorhynchus latirostris in the Eneabba Region*, **Appendix J**).
- The average and minimum distances between proposed wind turbine towers are 684 m and 550 m respectively, which should provide sufficient space for CBCs to travel between wind turbines without being harmed.

Based on the points above, it is considered unlikely that CBCs would collide with wind turbines, transmission line infrastructure, and other infrastructure proposed for the Project.

Other residual impacts

Appropriate speed limits set within the Project Area to reduce dust generation, as outlined in section 4.2.1 of the *BBMP* (**Appendix D**), would serve to reduce residual impacts of CBCs colliding with vehicles to below significant levels. Dust generation from Project activities is not anticipated to impact CBCs.

Suitable fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) developed for the Project as well as a BMP would serve to reduce the potential for loss of or injury to CBCs from fire events caused by the Project, as outlined in section 4.2.1 of the *BBMP* (**Appendix D**), to below significant levels.

Some plant pathogens, such as *Phytophthora cinnamomi*, can impact CBC habitat (DPaW, 2013) (Murdoch University, 2015). Suitable site vehicle and machinery hygiene procedures would be implemented during construction, commissioning, operation, and decommissioning phases to minimise the spread of weeds, *Phytophthora cinnamomica*, and similar pathogens as outlined in section 4.2.1 of the *BBMP* (**Appendix D**). As such, residual impacts to CBCs from the introduction of weeds and pathogens are not considered as significant.

Diseases that affect CBCs directly include Beak and Feather Disease Virus, *Avian polyomavirus*, and chlamydiosis (*Chlamydia psittaci*) (DPaW, 2013) (Murdoch University, 2015). These diseases are transferred between birds, so it is considered unlikely that the Project would introduce these or similar diseases that may cause the species to decline.

Activities conducted during construction, commissioning, and operation are not considered likely to introduce any invasive bird species that may compete for resources with CBC. Other pest fauna such as rats or cats could be drawn to rubbish and refuse generated from site personnel. General site hygiene procedures for the Project would ensure rubbish and refuse are managed appropriately to avoid attracting pest fauna, reducing any respective residual impacts to CBCs to below significant levels.

Peregrine Falcon

Clearing

Given the low amount of proposed clearing of Peregrine Falcon habitat relative to its respective amount within the Project Area and surrounding area, vegetation clearing for the Project is not considered to pose significant residual impacts to Peregrine Falcon that relate to:

- Loss, fragmentation, or modification of habitat from clearing vegetation; or
- Loss of or injury to individuals.

Collisions with wind turbines or other Project infrastructure

The Peregrine Falcon observed during surveys for the Project was foraging within RSA height as outlined in Table 5-9 of the *Bird and Bat Utilisation Survey Report (Appendix H)*. It is considered unlikely that Peregrine Falcons would collide with wind turbines constructed for the Project for the reasons listed below:

- The average and minimum distances between proposed wind turbine towers are 684 m and 550 m respectively, which provides space for Peregrine Falcon to travel between wind turbines without being harmed.
- Finding one injured or deceased Peregrine Falcon within 300 m of the same turbine or adjacent turbines 1) during each of two successive Carcass Searches, or 2) over a 6-month period, would trigger an internal investigation into whether the incident should be attributed to turbine collision in line with the provisions included in the *BBMP (Appendix D)*. If the impact was attributed to turbine collision, additional mitigation measures to lower the likelihood of future turbine collisions would be considered and may be implemented as outlined in Table 4-2 of the *BBMP (Appendix D)*.
- Finding three injured or deceased Peregrine Falcons within 300 m of the same turbine or adjacent turbines 1) during each of two successive Carcass Searches, or 2) over a six-month period, would trigger an internal investigation into whether the incident should be attributed to turbine collision in line with the provisions included in the *BBMP (Appendix D)*. If the impact was attributed to turbine collision, additional mitigation measures to lower the likelihood of future turbine collisions would be discussed with DWER and DCCEEW and may be implemented as outlined in Table 4-2 of the *BBMP (Appendix D)*.

- Based on the triggers above, turbine collision impacts attributed to Peregrine Falcons would result in consideration and potential implementation of additional measures that would serve to mitigate the likelihood of future Peregrine Falcon turbine collision impacts.

Other residual impacts

Appropriate speed limits set within the Project Area to reduce dust generation, as outlined in section 4.2.1 of the *BBMP (Appendix D)*, would serve to reduce residual impacts of Peregrine Falcons colliding with vehicles to below significant levels. Dust generation from Project activities is not anticipated to impact Peregrine Falcons.

Suitable fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) developed for the Project as well as a BMP would serve to reduce the potential for loss of or injury to Peregrine Falcons from fire events caused by the Project, as outlined in section 4.2.1 of the *BBMP (Appendix D)*, to below significant levels.

Some plant pathogens, such as *Phytophthora cinnamomi*, could impact Peregrine Falcon habitat. Suitable site vehicle and machinery hygiene procedures would be implemented during construction, commissioning, operation, and decommissioning phases to minimise the spread of weeds, *Phytophthora cinnamomi*, and similar pathogens as outlined in section 4.2.1 of the *BBMP (Appendix D)*. As such, residual impacts to Peregrine Falcons from the introduction of weeds and pathogens are not considered as significant.

Pest fauna such as rats or cats could be drawn to rubbish and refuse generated from site personnel. General site hygiene procedures for the Project would ensure rubbish and refuse are managed appropriately to avoid attracting pest fauna, reducing any respective residual impacts to Peregrine Falcons to below significant levels.

Fork-tailed Swift

Clearing

“Important habitat” for the Fork-tailed Swift (FTS) is considered as “non-breeding habitat only ... across a range of habitats, from inland open plains to wooded areas, where it is exclusively aerial” (DCCEEW, 2015). Given that the FTS is likely to be exclusively aerial within the Project Area, any residual impacts from clearing are not considered as significant.

Collisions with wind turbines or other Project infrastructure

Given that the FTS forages high above the tree canopy it is likely to fly within the RSA height. It is considered unlikely that an ecologically significant proportion of 0.1% of the population would be seriously disrupted due to collisions with wind turbines. An ecologically significant impact would require serious disruption to 0.1% of that population - a number far exceeding any plausible Project-level impact given the species' vast range across Australia and worldwide and the small geographic footprint of the Project. The following reasons are provided for this conclusion:

- The average and minimum distances between proposed wind turbine towers are 684 m and 550 m respectively, which provides space for FTS to travel between wind turbines without being harmed.

- Finding four FTSs injured or deceased within 300 m of a turbine within a three-month period would trigger an internal investigation into whether the incident should be attributed to turbine collision in line with the provisions included in the *BBMP* (**Appendix D**). If the impact was attributed to turbine collision, additional mitigation measures to lower the likelihood of future turbine collisions would be considered and may be implemented as outlined in Table 4-2 of the *BBMP* (**Appendix D**).
- Finding 0.05% of the population of FTSs injured or deceased within 300 m of any turbine within a 12-month period would trigger an internal investigation into whether the incident should be attributed to turbine collision in line with the provisions included in the *BBMP* (**Appendix D**). If the impact was attributed to turbine collision, additional mitigation measures to lower the likelihood of future turbine collisions would be discussed with DWER and DCCEEW and may be implemented as outlined in Table 4-2 of the *BBMP* (**Appendix D**).
- Based on the triggers above, turbine collision impacts attributed to FTSs (that are under the lower threshold for ecologically significant proportions of the population) would result in consideration and potential implementation of additional measures that would serve to mitigate the likelihood of future FTS turbine collision impacts.

Other residual impacts

Given that the FTS forages high above the tree canopy, any residual impacts from factors listed below are considered to be below significant levels:

- Collisions with vehicles
- Fires
- Weeds, pathogens, or pest fauna
- Dust.

Blue-billed Duck

Blue-billed Duck is assessed as Likely but not observed within the Project Area. No Melaleuca Wetland habitat - the fauna habitat type considered most likely to support BBD - occurs within the Proposed Development Footprint. No clearing of BBD habitat is proposed. BBD is not considered likely to fly within RSA height. Given the absence of habitat clearing impacts and the low likelihood of turbine collision, residual impacts to BBD from the Project are not considered significant.

Western Spiny-tailed Skink

Clearing

Given the low amounts of proposed clearing of WSTS habitat relative to its respective amount within the Project Area and surrounding area, vegetation clearing for the Project is not considered to pose significant residual impacts to WSTS that relate to:

- Loss, fragmentation, or modification of habitat from clearing vegetation; or
- Loss of or injury to individuals.

Other residual impacts

Appropriate speed limits set within the Project Area to reduce dust generation, as outlined in section 4.2.1 of the *BBMP* (**Appendix D**), would serve to reduce residual impacts of WSTSs colliding with vehicles to below significant levels. Dust generation from Project activities is not anticipated to impact WSTSs.

Suitable fire prevention and management procedures (e.g. hot works procedures, fuel storage procedures) developed for the Project as well as a BMP would serve to reduce the potential for loss of or injury to WSTSs from fire events caused by the Project, as outlined in section 4.2.1 of the *BBMP* (**Appendix D**), to below significant levels.

Some plant pathogens, such as *Phytophthora cinnamomi*, could impact WSTS habitat. Suitable site vehicle and machinery hygiene procedures would be implemented during construction, commissioning, operation, and decommissioning phases to minimise the spread of weeds, *Phytophthora cinnamomi*, and similar pathogens as outlined in section 4.2.1 of the *BBMP* (**Appendix D**). As such, residual impacts to WSTSs from the introduction of weeds and pathogens are not considered as significant.

Pest fauna such as rats or cats could be drawn to rubbish and refuse generated from site personnel. General site hygiene procedures for the Project would ensure rubbish and refuse are managed appropriately to avoid attracting pest fauna, reducing any respective residual impacts to WSTSs to below significant levels.

Migratory shorebirds

Eighteen migratory shorebird species were identified in the desktop assessment as having the potential to occur in the broader region. No migratory shorebirds were recorded during any of the eight quarterly BBUSs conducted for the Project. The Project Area does not contain coastal or intertidal habitat used by migratory shorebirds for foraging or roosting. The nearest significant shorebird habitat - the Yarra Yarra Lakes system - is approximately 15 km east of the Project Area. Given the absence of suitable habitat within the Proposed Development Footprint and the absence of shorebird records during two years of baseline surveys, residual impacts to migratory shorebirds from the Project are not considered significant.

Malleefowl

Malleefowl is assessed as having a "possible" likelihood of occurrence within the Survey Area (Section 0), below the "Likely or greater" threshold applied to the species carried into this significance assessment. A single long-unused mound was recorded during the Q2 2024 BBUS, with no evidence of recent use, no other mounds or activity identified within the Survey Area, and no confirmed breeding. On this basis, Malleefowl is not carried forward as a species requiring detailed residual impact assessment. Notwithstanding, the clearing limits, access-track speed limits, fire prevention and management procedures, and hygiene measures described in Section 4.4 would apply across the Project Area and would reduce the likelihood of any incidental impact to the species and its habitat to below significant levels.

4.6.2 Combined effects

Not applicable. Applies to Significant Amendments only.

4.6.3 Cumulative impacts

Cumulative impacts arise from the incremental and interacting effects of the Project together with other past, present and reasonably foreseeable activities in the region. For Terrestrial Fauna, the relevant considerations are the cumulative risk of bird and bat collision across the regional wind farm cluster and the successive loss of fauna habitat, particularly Carnaby's Black-Cockatoo (CBC) foraging and breeding habitat. The activities and projects with potential to contribute to these cumulative impacts are summarised in Table 5-16.

Table 4-16: Activities with potential cumulative impacts to Terrestrial Fauna

Activity	Description	Potential cumulative impacts to Terrestrial Fauna
Agriculture	Cropping and livestock agriculture within the Project Area and in proximity to the Project.	Land in and around the Project Area is already predominantly cleared; any future agricultural clearing would be subject to environmental regulation and would result in limited additional loss of fauna habitat.
Energy generation developments	Kadathinni Wind Farm: - Proposed wind farm (up to 65 turbines / 400 MW) and BESS (up to 400 MW / 3,200 MWh) within 10 km of the Project. - Targeting submission of planning documentation in early 2026. Killawarra Solar Farm: - Proposed solar farm (up to 400 MW) and BESS (up to 400 MW / 1,600 MWh) within 10 km of the Project. - Has received planning approval. Tathra Wind Farm: - Proposed wind farm (up to 140 turbines / 1,000 MW), solar farm (up to 500 MW), and BESS (up to 500 MW) within 10 km of the Project.	Additional turbines in the region may incrementally increase the cumulative risk of bird and bat collision and the cumulative loss of CBC foraging and breeding habitat. These impacts are reducible through species-specific mitigation (robust BBMPs, minimum blade-tip heights consistent with observed CBC flight heights) and through siting on predominantly cleared land with layouts optimised to avoid native vegetation.

Activity	Description	Potential cumulative impacts to Terrestrial Fauna
	- Has received planning approval. South Erregulla Gas Power Station: - Gas power station (90 MW) within 20 km of the Project. - Under construction. Warradarge Wind Farm: - Operating wind farm (51 turbines / 180 MW) within 30 km of the Project. - Construction in progress to add an additional 30 turbines, bringing its total generation capacity to 283 MW.	

The introduction of additional wind turbines in the region has the potential to increase the cumulative risk of bird and bat collisions. This risk is most acute for Carnaby's Black-Cockatoo and is addressed in detail in **Appendix R**. For other bird species - including the Fork-tailed Swift (Migratory under the EPBC Act) and migratory shorebirds identified in the EPBC RFIs - the cumulative risk is considered low given the small total proportion of the regional population that would interact with wind farm infrastructure in this landscape. Cumulative impacts to all bird and bat species would be reduced by other wind farm proponents in the region implementing robust BBMPs with appropriate species-specific mitigation measures.

The key considerations for CBC are summarised below:

- Relevant future activities and pressures, including additional wind farms, seismic surveys and other approved developments in the region, together with land clearing, fire and climate change, have been considered in relation to CBC and other significant fauna values.
- Additional turbines in the region may incrementally increase the cumulative risk of bird collision and the cumulative loss of CBC foraging and breeding habitat. The Twin Hills Project contributes a Low incremental impact to regional cumulative effects on CBC (**Appendix R**), reflecting the low proportional clearing (<1% of foraging habitat with a score of 10 and <0.2% of potential breeding trees in the Project Area), avoidance of all suitable breeding trees, the 60 m minimum blade-tip height, and the 2 km roost setback.
- The addition of the Project is not expected to take CBC, or any other significant fauna value, to an ecological or management threshold (for example, a change in conservation status).

Cumulative impacts to all other fauna species assessed in this section are not considered significant, given the low proportional clearing of relevant habitat types and the absence of confirmed records of most species during two years of baseline survey.

A standalone Carnaby's Black-Cockatoo Cumulative Impact Assessment (**Appendix R**) has been prepared for the Project, specifically addressing the cumulative impact of the Twin Hills Wind Farm in the context of existing, approved and proposed wind farms in the region, including the Tathra Wind Farm, Kadathinni Wind Farm and Warradarge Wind Farm expansion. This assessment was prepared

in response to a request from DWER and represents a more detailed treatment of CBC cumulative impacts than is presented in this chapter.

The key findings of the *CBC Cumulative Impact Assessment* (**Appendix R**) are that the Twin Hills Wind Farm Project is not expected to result in a significant cumulative impact on CBC at a population or regional scale. This conclusion is based on:

- The absence of confirmed CBC breeding colonies within the Proposed Development Footprint of any of the assessed wind farm proposals.
- The availability of similar foraging and roosting habitat across the wider region, maintaining connectivity for a mobile species.
- Evidence from baseline BBUSs and the broader literature (**Appendix J**) that CBC use the Project Area opportunistically and intermittently, and demonstrate active avoidance behaviour around wind turbine infrastructure at comparable sites including Cataby, Walkaway and Emu Downs.
- The minimum turbine blade tip height of 60 m above ground level proposed for Twin Hills, which is above the observed CBC flight heights of 0-40 m recorded during baseline surveys, and which - if adopted consistently by other proponents in the region - would substantially reduce the cumulative turbine collision risk for CBC across the regional wind farm cluster.
- Previous nearby developments have not resulted in documented population-level effects on CBC.

The Twin Hills Project represents a small additional contribution to regional cumulative pressures when assessed against existing and approved developments. Consistent with the CIA ranking framework applied in the Cumulative Impact Assessment (**Appendix R**), no High cumulative impacts were identified, with the Project contributing a Low incremental impact to the regional cumulative effect on CBC.

Potential cumulative impacts to CBC from turbine collisions across the regional wind farm cluster can be further reduced by other proponents committing to a minimum blade tip height consistent with observed CBC flight heights, and by implementing robust BBMPs with species-specific adaptive management provision

4.7 Environmental outcomes

The Project aims to achieve the environmental outcomes for Terrestrial Fauna that is outlined in **Table 4-17**.

Table 4-17: Terrestrial Fauna – Environmental outcomes

Environmental outcome	Measurement and assurance
No clearing of suitable or confirmed CBC breeding trees within the Proposed Development Footprint.	Measured by pre-construction survey of all trees within the final construction footprint against the breeding tree assessment in the Basic and Targeted Fauna Survey Report (Appendix E). Assured through the avoidance commitment in Section 4.4 and proposed CEMP obligations.
No clearing of CBC foraging habitat with a score of 10 beyond the 14.97 ha identified in Section 4.5.2.	Measured by comparison of final clearing extents against the CBC Foraging Habitat Scores figures in Appendix A (Figure A 26). Assured through the NVCP clearing limit and proposed CEMP obligations.
Total clearing of native vegetation for the Project does not exceed 17.14 ha	Measured against the Proposed Development Footprint and NVCP clearing limits (see also the Flora and Vegetation factor). Assured through the NVCP under Part V of the EP Act and the proposed CEMP obligations.
No wind turbines installed within 2 km of the confirmed CBC roost in nature reserve R12705.	Measured by confirmation of final turbine layout against roost location at detailed design stage. Assured through the avoidance commitment in Section 4.4.
Minimum turbine blade tip height of 60 m above ground level maintained throughout the operational life of the Project.	Measured by turbine specification confirmation at detailed design and commissioning verification. Assured through EPBC approval condition and the BBMP (Appendix D).
Turbine-collision mortality of CBC and other significant fauna species remains below the adaptive-management trigger thresholds specified in the BBMP (Appendix D).	Measured by carcass search results assessed against adaptive management triggers in the BBMP. Assured through BBMP implementation and annual review of qualitative risk assessment.

Environmental outcome Measurement and assurance

Restoration of land used for temporary construction infrastructure to pre-construction condition.	Measured by post-construction rehabilitation survey. Assured through proposed CEMP rehabilitation obligations.
---	--

The level of certainty that these outcomes will be achieved is high. The habitat-avoidance and clearing-limit outcomes are secured by measurable, enforceable design parameters (the clearing caps, the 60 m minimum blade-tip height and the 2 km roost setback) that are verifiable at detailed design and pre-construction. The collision-related outcomes are supported by long-term operational monitoring at comparable regional wind farms (Cataby/Yandin, Walkaway, Emu Downs and Joanna Plains), which demonstrates that CBC actively avoid turbine infrastructure (**Appendix J**), and by two years of baseline flight-height data collected across eight quarterly BBUSs. Adaptive-management triggers in the BBMP (**Appendix D**) provide a structured response should operational monitoring indicate otherwise.

These outcomes are consistent with the EPA objective for Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained. The Project can therefore be implemented in a manner consistent with that objective.

5 Environmental Factor – Social surrounds

5.1 EPA environmental factor and objective

The EPA objective for the Social Surroundings factor is '*to protect social surroundings from significant harm.*'

5.2 Relevant policy and guidance

Relevant EPA policy and guidance used to assess this environmental factor is listed in **Table 6-1**. State and Commonwealth policy and guidance consulted in preparing the specialist reports supporting this chapter is also included.

Table 5-1: Relevant policy and guidance for Social Surroundings

Policy / guidance	How the policy and guidance has been considered
Environmental Factor Guideline – Social Surroundings (EPA, 2023b)	Used to structure the impact assessment for all Social Surroundings sub-factors, including ACH, noise, visual amenity, shadow flicker and EMI.
Technical Guidance: Environmental impact assessment of Social Surroundings – Aboriginal cultural heritage (EPA, 2023c)	Used to guide the scope and methodology of the Aboriginal Heritage Desktop Assessment (Appendix L) and to identify required pre-construction field survey obligations.
Environmental Protection (Noise) Regulations 1997 (WA Noise Regulations) WAPC Position Statement: Renewable Energy Facilities (March 2020)	The applicable legislative noise standard in Western Australia. Compliance with the WA Noise Regulations at all non-host receivers is a Project commitment. The WA Noise Regulations are administered by DWER. Confirms the WA Noise Regulations as the applicable noise legislation and references the SA Guidelines as a procedural framework for wind farm noise assessment. Assessment methodology for the Project is consistent with this Position Statement.
SA Environmental Protection Authority – Wind Farms Environmental Noise Guidelines (revised November 2021) (SA Guidelines)	Used as a procedural framework for wind turbine noise assessment, with modifications to reflect the WA Noise Regulations night period minimum assigned level, consistent with established practice for wind farm assessments in WA. The SA Guidelines provide a methodology specific to the characteristics of wind turbine noise, which differs from general industrial noise sources addressed by the WA Noise Regulations.
WAPC Draft Renewable Energy Planning Code (draft), Element 5 – Shadow Flicker	Provides the shadow flicker assessment requirements applied in the Shadow Flicker Assessment (Appendix O): 30 hours per year / 30 minutes per day (theoretical) or 10 hours per year (actual) for non-host receptors.

Policy / guidance	How the policy and guidance has been considered
Draft National Wind Farm Development Guidelines (EPHC, 2010)	Referenced for shadow flicker methodology and blade glint considerations.
Visual Landscape Planning in Western Australia (WAPC, 2007)	Used to guide the methodology and mitigation recommendations in the Visual Impact Assessment (Appendix M).
Draft National Wind Farm Development Guidelines – EMI assessment methodology (EPHC, 2010)	Used by DNV to assess potential EMI impacts in accordance with industry standard practice (Appendix P).

5.3 Receiving environment

5.3.1 Surveys and studies

The following specialist reports support this chapter and are provided as appendices to this ERD:

- Aboriginal Heritage Desktop Assessment (**Appendix L**)
- Detailed Acoustic Assessment and Background Noise Monitoring report (**Appendix M**)
- Visual Impact Assessment (**Appendix N**)
- Shadow Flicker Assessment (**Appendix O**)
- EMI Assessment (**Appendix P**)

A summary of the studies and surveys relevant to Social Surroundings is provided in **Table 6-2**.

Table 5-2 Studies and Surveys relevant to Social Surroundings

Study	Date	Consultant	Scope
Background Noise Monitoring (Appendix M)	December 2025	Marshall Day Acoustics	Background noise monitoring at surrounding receivers to derive applicable noise criteria under the WA Noise Regulations / SA Guidelines.
Detailed Acoustic Assessment (Appendix M)	February 2026	Marshall Day Acoustics	Assessment of predicted wind turbine, BESS and substation noise levels at all non-host and host receivers under the WA Noise Regulations / SA Guidelines framework.
Visual Impact Assessment (Appendix N)	March 2026	Urbis	Viewshed analysis, photomontage preparation from 20 viewpoints, and visual impact rating for the Project in the surrounding landscape.

Study	Date	Consultant	Scope
Shadow Flicker Assessment (Appendix O)	March 2026	Entura	Theoretical shadow flicker modelling for all receptors within 50 m of the Proposed Development Footprint, assessed against WAPC Draft Renewable Energy Planning Code requirements.
EMI Assessment (Appendix P)	March 2026	DNV	Assessment of potential EMI impacts on point-to-point and point-to-multipoint links, meteorological radar, broadcasting services, satellite services, and other communication infrastructure.
Aboriginal Heritage Desktop Assessment (Appendix L)	April 2026	Urbis	Desktop assessment of ACH site records, heritage significance and constraints within and surrounding the Project Area.

5.3.2 Existing environment

Aboriginal Cultural Heritage

An *Aboriginal Heritage Desktop Assessment* (**Appendix L**) was completed for the Project Area. The assessment identified the following:

- There are zero Registered, Lodged or Historic ACH sites within the Project Area.
- Within the Project Area, there is a high potential for the presence of artefact scatters, culturally modified trees and potential archaeological deposits.
- There is moderate potential for burials, water sources, and ethnographic and historic sites.
- There is a low potential for all other ACH site types.

There are no historic heritage constraints within the Project Area. The Project Area contains no heritage-listed places and carries no statutory protection under the Heritage Act 2018 or the Shire of Three Springs Local Planning Scheme.

The Yamatji Southern Regional Corporation (YSRC) is the relevant Native Title representative body for the Project Area. Engagement with YSRC commenced in February 2024 and is ongoing, as documented in Section 2 of this ERD. An ethnographic and archaeological heritage field survey within the Proposed Development Footprint has not yet been completed.

Noise

The Project Area is located in a rural setting within the Shire of Three Springs, characterised by broadacre agriculture. Sensitive receivers in proximity to the Project are private residences associated with agricultural landholdings. A background noise monitoring survey was conducted at receivers surrounding the Project Area to establish baseline noise conditions and derive applicable noise criteria in accordance with the WA Noise Regulations and the SA Guidelines methodology. The results of the monitoring are reported in the Background Noise Monitoring report (**Appendix M**).

There are 14 identified dwellings within approximately 5 km of the Project Area, two of which are host (involved) dwellings. The nearest non-host dwelling is identified as receiver D20.

Visual amenity

The Project Area is located within an open, slightly undulating agricultural landscape characterised by cleared farmland, remnant bushland, and road corridors. The landscape has been extensively modified for broad-acre agricultural use and is assessed as having a low to low-moderate scenic quality. There are limited areas of tall, retained vegetation within the study area. The topography, combined with limited vegetative screening, means that wind turbine structures will be visible from a broad visual catchment.

A viewshed analysis of the Project identified 20 viewpoint locations within the study area from which turbine visibility was assessed. Photomontages were prepared from five key viewpoints representing the closest publicly accessible locations adjacent to sensitive receptors, key public destinations, and prominent locations within the study area.

Shadow flicker

Shadow flicker is a visual phenomenon caused by the rotating blades of wind turbines periodically blocking sunlight, creating a flickering shadow effect. Shadow flicker is most relevant at dwellings within approximately 10 rotor diameters of a turbine, and its frequency and duration depend on turbine location, rotor diameter, receptor location, and the amount of sunshine hours at the site.

There are 14 identified dwellings within 5 km of the Project, including two host (involved) dwellings. Shadow flicker modelling was undertaken for all receptors within 50 m of the Proposed Development Footprint.

EMI

Electromagnetic interference can result from wind turbine structures disrupting radio frequency signals in their vicinity. Potential EMI impacts relevant to the Project include effects on point-to-point links, point-to-multipoint services, meteorological radar, broadcasting services, satellite services, and other communication infrastructure in the region.

The *EMI Assessment (Appendix P)* assessed the current turbine layout of 93 wind turbines with a rotor diameter of 200 m and maximum tip height of 300 m. There are 14 identified dwellings within 5 km of the Project, two of which are host dwellings.

5.4 Proposed mitigation

Aboriginal Cultural Heritage — Avoid

- Prior to completing activities that involve ground disturbance an Activity Notice letter will be submitted to Yamatji Southern Regional Corporation (YSRC) and discussions held on surveys requirements.

- Avoid disturbance of any ACH discovered during heritage survey where practicable.
- For ACH that cannot be avoided, consult with YSRC to determine appropriate management.
- Seek to enter into a heritage agreement with YSRC and consult with YSRC in relation to all ground-disturbing activities consistent with the terms of that agreement.
- Implement appropriate incidental ACH discovery procedures throughout construction.

Noise — Avoid and minimise

- Set wind turbines back a minimum of 330 m from neighbouring property boundaries, representing approximately 1.1 times the maximum blade tip height.
- Apply noise control modes if required to achieve the 35 dB L_{Aeq} design objective at all non-host receivers.
- Undertake a noise compliance assessment at the detailed design stage, once final wind turbine model and layout are confirmed, to verify compliance with the WA Noise Regulations at all non-host receivers
- Undertake noise compliance verification monitoring at commissioning.
- Design BESS and substation equipment to comply with the most stringent 35 dB L_{A10} night period limit under the WA Noise Regulations at all non-host receivers.

Visual amenity — Avoid and minimise

- Retain existing roadside and other significant bands of vegetation where practicable to provide natural screening.
- Apply non-reflective semi-matte coatings to turbine structures to minimise blade glint and visual contrast.
- Use low-profile building designs for substations and operational facilities to minimise industrial character.
- Apply directive lighting and motion-activated security lighting to minimise light spill from the site.
- Consult with owners of neighbouring dwellings experiencing moderate visual impact to explore targeted screening measures such as vegetation planting.

Shadow flicker — Avoid and minimise

- Ensure the final wind turbine layout complies with the 30-hour per year / 30-minute per day theoretical limit for all non-host receptors.
- If the decommissioned non-host dwelling is recommissioned in the future (with any required planning permission obtained), implement an Operational Management Plan including turbine curtailment to ensure actual shadow flicker at that receptor does not exceed 10 hours per year.
- Apply blade coatings with low reflectivity treatment to all wind turbines, consistent with standard practice for modern large wind turbines, to prevent blade glint.

EMI — Avoid and minimise

- Seek to avoid known EMI constraints including affected point-to-multipoint link paths in the final wind turbine layout.
- Continue engagement with the Bureau of Meteorology to determine whether the current 93-turbine layout materially impacts the Watheroo radar and, if required, implement appropriate mitigation measures (such as installation of supplementary automatic weather stations or wind profiling devices).
- Continue engagement with BAI Communications to confirm whether any dwellings fall within interference zones for the Morawa broadcast transmitter based on the current turbine layout, and implement rectification measures if required.
- Engage with the owner of the identified dwelling potentially affected by geostationary satellite internet interference to confirm the impact and establish mitigation options.
- Confirm with Western Power that the two rerouted point-to-multipoint links are clear of turbine exclusion zones in the final layout.
- If interference to any service is experienced following commissioning, implement appropriate rectification measures (including adjusting turbine layout, rerouting links, or increasing signal strength) in consultation with the affected operator.

5.5 Potential environmental impacts

5.5.1 Identified environmental impacts

Potential direct impacts to Social Surroundings from the Project are:

- Disturbance to ACH from ground disturbance during construction activities.
- Noise emissions from operating wind turbines affecting non-host and host receivers.
- Noise emissions from the BESS and substation affecting nearby receivers.
- Visual amenity impacts at publicly accessible viewpoints and residential dwellings from the presence of large-scale wind turbine structures.
- Shadow flicker at dwellings within range of rotating turbine blades.
- Electromagnetic interference to communication services, meteorological radar, and broadcasting infrastructure.

Potential indirect impacts to Social Surroundings from the Project are:

- Changes to landscape character at local and sub-regional scales from the introduction of wind turbine structures into an open agricultural landscape.
- Temporary increases in traffic volumes on local roads during the construction period.

5.5.2 Predicted environmental impacts

Aboriginal Cultural Heritage

Ground disturbance associated with wind turbine foundations, access track construction, cable trenching, and substation construction has the potential to disturb subsurface ACH deposits within the Proposed Development Footprint. The desktop assessment found a high potential for artefact scatters and a moderate potential for burials and ethnographic sites within the Project Area. No registered, lodged or historic ACH sites are known to exist within the Project Area, however, there remains a 'high risk' of the Project impacting Aboriginal heritage. A heritage field survey of the final development footprint will be undertaken as required following consultation with YSRC prior to construction to characterise and, where practicable, avoid any ACH present.

Noise

Wind turbine noise predictions were undertaken using the Vestas V162-6.8 MW candidate turbine model with a hub height of 138 m, and the ISO 9613-2 propagation standard with adjustments appropriate for wind farm noise assessment. Noise predictions were made for the wind speed resulting in the highest predicted levels (15 m/s).

Predicted noise levels at non-host receivers with levels at or above 30 dB L_{Aeq} are shown in **Table 6-3**. The highest predicted level is 35.0 dB L_{Aeq} at receivers D20 and D84, achieved with two turbines applying noise control modes at limited wind speeds. All non-host receivers comply with the 35 dB L_{Aeq} design objective. Receivers (i.e., dwellings) are shown in the *Detailed Acoustic Assessment and Background Noise Monitoring report (Appendix M)*.

Table 5-3: Highest predicted wind turbine noise levels at non-host receivers (30 dB L_{Aeq} or above)

Receiver	Predicted noise level (dB L_{Aeq})
D20	35.0
D84	35.0
D78	32.4
D6	32.2
D96	31.8
D48	31.8
D19	31.6
D2	30.8
D95	30.7

NOTE ON NOISE METHODOLOGY: The noise assessment uses the SA Guidelines as a procedural framework, with modifications to reflect the WA Noise Regulations minimum assigned level for the night period, consistent with established practice for wind farm assessments in Western Australia and as recommended in the WAPC Position Statement on Renewable Energy Facilities. The WA Noise Regulations do not contain assessment procedures specifically designed for the characteristics of wind turbine noise; the SA Guidelines provide the appropriate methodology for this purpose. The Proponent is aware that WA noise policy for wind turbines is under review. Regardless of any future policy update, the Project design has sufficient flexibility within the Proposed Development Envelope and through turbine noise control modes to comply with the WA Noise Regulations for the constructed project.

Predicted BESS and substation noise levels at receivers within four km comply with the most stringent 35 dB LA10 night period limit under the WA Noise Regulations at all non-host receivers, with the highest predicted level being 28 dB at receiver D78. Noise from the BESS and substation has negligible impact on cumulative noise levels from the Project.

Visual amenity

A viewshed analysis identified 20 viewpoint locations within the study area. Photomontages were prepared from five key viewpoints. The visual impact ratings at assessed viewpoints are present in **Table 6-4**.

Table 5-4: Visual impact ratings at assessed viewpoints

VP	Viewpoint	Assessed visual impact
1	Intersection of Three Springs–Eneabba Rd and Reserve Rd	Moderate
2	Entrance of 3282 Three Springs–Eneabba Rd	Moderate
3	Entrance of 1741 Bunney Rd	Low/Moderate
4	Entrance of 1783 Skipper Rd	Moderate
5	Entrance of 757 First North Rd	Low/Moderate

For the remaining 15 viewpoints not subject to photomontage, views to turbines are fully screened at six locations and partially screened at nine locations. No viewpoint is assessed as High or Very High visual impact. Background views from the Three Springs Townsite and along Brand Highway will not be available due to restriction by vegetation and landform.

The predominant landscape character of the Mid West region and the Shire of Three Springs, defined by undulating farmland and bushland, will remain dominant following construction of the Project. The Project Area, in a landscape assessed as low to low-moderate scenic quality and already extensively modified for agriculture, has the capacity to accommodate large-scale wind turbine structures.

Shadow flicker

Shadow flicker modelling was undertaken for all receptors within 50 m of the Proposed Development Footprint using the WAPC Draft Renewable Energy Planning Code methodology. Results are summarised below:

- All non-host receptors are predicted to receive no shadow flicker except one, which is a decommissioned and currently uninhabited dwelling. That receptor is modelled to receive a theoretical maximum of 55 hours per year and 35 minutes per day. As the dwelling is currently uninhabited and decommissioned, it may not be considered a receptor with a visually sensitive land use at this time. In the event it is recommissioned (with any required planning permission obtained), an operational curtailment will be implemented to ensure actual shadow flicker does not exceed 10 hours per year.
- Four host (involved) receptors are modelled to receive shadow flicker exceeding 30 hours per year and 30 minutes per day. Consent agreements are in place with all relevant host landowners accepting shadow flicker durations above the limit.
- Blade glint is not expected to cause any issue, provided turbine blades are coated with a low-reflectivity treatment, which is standard practice for modern large wind turbines.

The actual shadow flicker experienced at receptors is typically considerably less than the modelled theoretical maximum due to cloud cover, rotor direction, stationary rotor periods, and vegetation screening.

EMI

The EMI assessment was undertaken for the current 93-turbine layout with a maximum rotor diameter of 200 m and tip height of 300 m. The key findings are:

- Point-to-point links: Potential impacts are not expected or are minor. Western Power's two affected point-to-multipoint link paths are being rerouted clear of the proposed turbine locations; modelled exclusion zones confirm the rerouted links are clear of turbines.
- Bureau of Meteorology – Watheroo radar: The Bureau's analysis, based on the preliminary turbine layout, indicated the Project has potential to materially impact the Watheroo radar (approximately 101 km southeast). Most turbines identified as causing interference have since been relocated or removed. The Bureau has been provided the current layout and no response has been received to date. Further engagement is required to determine whether mitigation is needed based on the current layout. Potential mitigation measures include installation of supplementary automatic weather stations, wind profiling devices, or a new meteorological radar.
- Broadcasting services: BAI Communications advised, based on the preliminary layout, that while the Project may cause interference to signals from the Morawa transmitter, there are no dwellings within the modelled interference zones. No response has been received regarding the current layout. A range of rectification options are available if interference is experienced.

- Satellite services: One dwelling may be affected by interference to geostationary satellite internet signals. Further engagement with the owner of that dwelling is recommended to confirm the potential impact and establish mitigation options.
- Emergency services and other point-to-multipoint links: Potential impacts cannot be determined without further information from relevant operators. No concerns have been raised to date from consultees based on the preliminary layout.
- Water Corporation: No Water Corporation assets are located close to the Project (nearest site more than 13 km away).

5.6 Assessment of significance of residual impacts

5.6.1 Proposal

Details of the significance of residual impacts for the project are detailed in **Table 6-5**.

Table 5-5: Social Surroundings – significance matters

Significance matter	Discussion
The object and principles of the Act.	Specialist studies have been commissioned and completed for all relevant sub-factors of Social Surroundings, including noise, visual amenity, shadow flicker, EMI and ACH. The precautionary principle has been applied through conservative design assumptions (candidate turbine model with maximum expected noise emissions) and maximum-case shadow flicker and EMI assessments. Avoidance measures committed to include: minimum 330 m boundary setbacks; noise control modes applied if required; heritage field survey prior to construction; and seeking to avoid known EMI constraints in the final layout.
Values, sensitivity and quality of the environment which is likely to be impacted.	The Project Area is located in a rural agricultural setting of low to low-moderate scenic quality, already extensively modified. There are 14 dwellings within 5 km of the Project Area. No registered or lodged ACH sites exist within the Project Area. The background noise environment is consistent with a quiet rural setting. All assessed social surroundings sub-factors are manageable through design and operational measures to residual impacts that are not significant.
All stages and components of the proposal.	All phases of the Project (construction, operation and decommissioning) have been considered. Construction noise and traffic impacts are temporary and managed through the CEMP. Operational noise, visual, shadow flicker and EMI impacts are assessed for the full operational life of the Project. ACH field survey and agreement obligations apply from pre-construction through to decommissioning.
Extent of the likely impacts.	Noise: all non-host receivers comply with the 35 dB L _{Aeq} design objective. BESS and substation comply with the 35 dB L _{A10} night period limit. Visual: no viewpoints assessed higher than Moderate impact. Moderate impacts predicted at three viewpoints (middle-ground views along Three Springs–Eneabba Road, Skipper Road), mitigated by transient viewing and roadside vegetation.

Significance matter	Discussion
	Shadow flicker: all non-host receptors at zero hours except one decommissioned dwelling; operational curtailment commitment in place if recommissioned. EMI: all identified impacts either confirmed as minor, being resolved through link rerouting, or subject to ongoing engagement with relevant stakeholders.
Resilience of the environment to cope with the impacts.	The existing landscape has been substantially modified by agriculture and can accommodate wind turbine structures without irreversible change to landscape character. The dominant rural character will be maintained. Noise, shadow flicker and EMI impacts are operational and reversible at decommissioning. Heritage impacts are managed through survey and avoidance.
Consequence of the application of the mitigation hierarchy.	Application of the mitigation hierarchy has resulted in: all non-host receivers within the noise design objective; no assessable shadow flicker at non-host receptors; heritage field survey prior to construction; re-routing of two Western Power link paths; and ongoing engagement with the Bureau of Meteorology and BAI Communications. No residual impact to Social Surroundings is considered significant.
Cumulative effects.	See Section 5.6.3. The Project is one of several energy generation proposals in the region (including the Tathra Wind Farm, Kadathinni Wind Farm, Killawarra Solar Farm, and Warradarge Wind Farm expansion). The nearest of these is the Tathra Wind Farm, which is proposed to the south. Given the geographic separation between the projects and the differing affected receiver populations, cumulative noise, visual and EMI impacts are not expected to be significant.
Holistic impacts.	See Appendix U (Holistic Impact Assessment). Social Surroundings interactions with Flora and Vegetation (edge effects from clearing near residences, dust) and Terrestrial Fauna (vehicle movements, lighting) are addressed through the CEMP and BBMP. No holistic interaction creates a residual impact to Social Surroundings that would be considered significant.
Level of confidence in the prediction of residual impacts.	Noise predictions are based on manufacturer-confirmed sound power level data for the candidate turbine model and internationally accepted propagation methodology. Shadow flicker modelling uses the conservative theoretical maximum approach. Visual impact assessment is based on photomontages from agreed viewpoints. EMI assessment is based on the actual turbine layout with consultation responses from key stakeholders. Confidence in significance conclusions is high, acknowledging that final WTG selection and layout confirmation at the detailed design stage will require re-verification of noise compliance.
Public interest.	The Project has been the subject of substantial community and stakeholder engagement, as documented in Section 2. Key social interest matters include: noise amenity at residences; visual change to the rural landscape; employment and economic opportunities in the Three Springs area; and potential EMI impacts on communication services. These have all been assessed and are not considered to give rise to significant residual impacts.

5.6.2 Combined effects

Not applicable. Applies to Significant Amendments only.

5.6.3 Cumulative impacts

Cumulative impacts on Social Surroundings arise where the Project's effects combine with those of other past, present and reasonably foreseeable activities in the region as experienced by shared receptors. The activities and projects with potential to contribute are summarised in Table 5-6. See **Appendix A** Figure A 29 for a map of the cumulative impact assessment area.

Table 5-6: Activities with potential cumulative impacts to Social Surroundings

Activity	Description	Potential cumulative impacts to Social Surroundings
Agriculture	Cropping and livestock agriculture within the Project Area and in proximity to the Project.	Existing land use that defines the modified agricultural landscape context; negligible cumulative interaction with the Project's social surroundings impacts.
Energy generation developments	Kadathinni Wind Farm: Proposed wind farm (up to 65 turbines / 400 MW) and BESS (up to 400 MW / 3,200 MWh) within 10 km of the Project. Targeting submission of planning documentation in early 2026. Killawarra Solar Farm: Proposed solar farm (up to 400 MW) and BESS (up to 400 MW / 1,600 MWh) within 10 km of the Project. Has received planning approval. Tathra Wind Farm: Proposed wind farm (up to 140 turbines / 1,000 MW), solar farm (up to 500 MW), and BESS (up to 500 MW) within 10 km of the Project. Has received planning approval. South Erregulla Gas Power Station: Gas power station (90 MW) within 20 km of the Project. Under construction. Warradarge Wind Farm: Operating wind farm (51 turbines / 180 MW) within 30 km of the Project. Construction in progress to add an additional 30 turbines, bringing its total generation capacity to 283 MW.	Additional wind farms in the region may increase the number of turbines visible from shared viewpoints and contribute to combined noise and EMI environments at shared receptors. These interactions have been assessed for noise, visual amenity and EMI as set out below.

Cumulative assessments have been undertaken for the sub-factors with a genuine regional dimension:

- **Noise:** The nearest turbine of any neighbouring wind farm would be that of the approved Tathra Wind Farm, whose closest turbine (if constructed) would sit approximately 8.6 km from the Project; all other Tathra infrastructure, including its BESS, is more than 10 km away. At these separations the cumulative wind turbine noise contribution at Project receivers is negligible, and the *Detailed Acoustic Assessment* (**Appendix M**) concluded that a cumulative wind farm noise assessment was not required. The Kadathinni Wind Farm remains a proposal that has not received planning approval; should it proceed, cumulative wind farm noise would be assessed against its confirmed layout at that stage. Cumulative noise from the Project's own elements (wind turbines, BESS and substation combined) was assessed and predicted to remain within the applicable criterion at all receivers (**Appendix M**, Table 13)
- **Visual amenity:** The introduction of additional wind farm developments in the region, including the Tathra Wind Farm, will increase the number of wind turbines visible from some viewpoints. Given the geographic separation between developments and the already-modified agricultural landscape context (assessed as low to low-moderate scenic quality), cumulative visual impacts are not expected to increase the significance of visual impact beyond that assessed for the Twin Hills Wind Farm alone.
- **EMI:** The EMI Assessment (**Appendix P**) addresses the cumulative EMI environment, with the Bureau of Meteorology Watheroo radar assessment considering the existing Warradarge Wind Farm layout as context. No cumulative EMI impact has been assessed as significant.

The remaining sub-factors do not have a material cumulative dimension. Aboriginal cultural heritage impacts are confined to ground disturbance within the Proposed Development Footprint and are managed through pre-construction field survey and consultation with YSRC; they do not compound with impacts from geographically separate developments. Shadow flicker affects only receptors in close proximity to the Project's own turbines and does not accumulate with developments located kilometres away.

On this basis, the cumulative impact of the Project on Social Surroundings is not considered significant.

5.7 Environmental outcomes

Environmental outcomes for the Social Surroundings are outlined in **Table 6-6**.

Table 5-7: Social Surroundings – environmental outcomes

Environmental outcome	Measurement and assurance
Avoid disturbance of any ACH discovered within the final development footprint during the pre-construction heritage field survey.	This outcome will be measured and assured by: • completing a heritage field survey within the final development footprint, as required following consultation with YSRC, prior to any ground-disturbing construction activities;

Environmental outcome	Measurement and assurance
	• seeking to enter into a heritage agreement with YSRC; and • consulting with YSRC in relation to all ground disturbance activities as required under that agreement.
Ensure wind turbine noise levels comply with the WA Noise Regulations at all non-host receivers throughout the operational life of the Project.	This outcome will be measured and assured by: • undertaking a noise compliance assessment at the detailed design stage once the final turbine model and layout are confirmed; • verifying compliance through noise monitoring at commissioning; and • ongoing compliance with operational noise limits throughout the Project's operational life. This outcome can be assured through conditions of the Development Approval requiring noise compliance assessment at detailed design and noise verification monitoring at commissioning.
Avoid visual impact levels of Moderate/High or greater at neighbouring dwellings.	This outcome will be measured by photomontage assessment from agreed viewpoints as part of the detailed design process, updated for the final turbine layout. Where moderate impacts are identified at dwellings, targeted consultation and mitigation measures (including screening vegetation in proximity to affected viewpoints) will be implemented in agreement with landowners. This outcome can be assured through conditions of the Development Approval requiring updated visual impact assessment at detailed design and consultation with affected landowners.
Ensure shadow flicker at non-host receptors does not exceed applicable limits.	This outcome will be measured by theoretical shadow flicker modelling for the final turbine layout at the detailed design stage. If the currently decommissioned non-host dwelling is recommissioned (with any required planning permission obtained), an Operational Management Plan will be implemented to ensure actual shadow flicker does not exceed 10 hours per year at that receptor. This outcome can be assured through conditions of the Development Approval requiring shadow flicker compliance verification at detailed design and an Operational Management Plan for any receptor approaching or exceeding the actual shadow flicker limit.
Resolve all identified EMI impacts prior to or at commissioning.	This outcome will be assured through ongoing engagement with the Bureau of Meteorology, BAI Communications, and other identified stakeholders prior to construction; implementation of agreed mitigation measures (link rerouting, supplementary weather monitoring equipment, or other rectification as required); and monitoring of EMI impacts following commissioning with remediation if interference is experienced.

Environmental outcome	Measurement and assurance
	This outcome can be assured through conditions of the Development Approval requiring evidence that EMI engagement and mitigation obligations have been discharged prior to commissioning.

6 Offsets

6.1 Summary of significant residual impacts

As discussed in Sections 3.6 and 1.1, no residual impacts from the Project on the Flora and Vegetation or Terrestrial Fauna Environmental Factors are considered to be significant following application of the mitigation hierarchy.

6.2 Details of proposed offsets

No environmental offsets are proposed at this stage in response to a finding of significant residual environmental impacts under the EP Act Part IV assessment. However, as native vegetation clearing will require NVCPs under Part V Division 2 of the EP Act, offsets for that clearing (if required) will be developed as a condition of the relevant NVCP or NVCPs in accordance with the WA Environmental Offsets Policy (WA Government, 2011) and WA Environmental Offsets Guidelines (WA Government, 2014). Maximum clearing extents by vegetation type are set out in Table 3-7.

Should DCCEEW determine, through the assessment of EPBC referral 2025/10407, that any residual impacts on MNES require offsetting under the EPBC Act, those offsets would be developed separately in accordance with the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (DCCEEW, 2012). This is addressed further in Section 8 (Matters of National Environmental Significance).

7 Matters of National Environmental Significance

7.1 EPBC referral and decision

A referral was submitted to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) in December 2025. The referral (EPBC 2025/10407) was accepted as a valid referral in March 2026.

DCCEEW issued a 'Not a Controlled Action – Particular manners' decision on 28 May 2026 for the Twin Hills Wind Farm project (EPBC 2025/10407). The Part IV ERD and the EPA referral documentation are consistent with the particular manners copied into the text box below.

Notification of referral decision – not controlled action if taken in a particular manner

Twin Hills Wind Farm (EPBC 2025/10407)

Part A – Particular manners specific to the Action

The following measures must be taken to avoid significant impacts on:

- Listed threatened species and communities (sections 18 and 18A)

CLEARING LIMITS

1) To avoid impacts to **protected matters**, the person taking the Action must not: **clear** outside of the **Action area**.

- a) **clear** more than 14.97 ha of **Carnaby's Black Cockatoo foraging habitat**.
- b) **clear** more than two **potential black cockatoo breeding trees**.
- c) **clear** more than 5.10 ha of **Western Spiny-tailed Skink habitat**.
- d) **clear** more than 4.29 ha of **threatened Flora habitat**.
- e) **harm** any **threatened flora** individuals.

WIND TURBINE CONSTRUCTION

2) The person taking the Action must not construct wind turbines outside of the **Action area**.

3) To avoid and mitigate harm to **Carnaby's Black Cockatoo**, the person taking the action must ensure that no part of any wind turbine blade attached to an operating wind turbine is less than 60 m above ground level.

7.2 Significant impact assessments for MNES

The following Matters of National Environmental Significance (MNES) were identified as relevant to the Project and addressed in the EPBC Act referral documentation:

- Threatened Species and Ecological Communities:
 - Carnaby's Black-Cockatoo (*Zanda latirostris*) - Endangered
 - Western Spiny-tailed Skink (*Egernia stokesii badia*) - Vulnerable
 - Sandplain Duck Orchid (*Paracaleana dixonii*) - Endangered
 - Star Sun-orchid (*Thelymitra stellata*) - Endangered
 - Yandanooka Mallee (*Eucalyptus crispata*) - Endangered

Migratory Species:

- Fork-tailed Swift (*Apus pacificus*)

Significant Impact Assessments (SIAs) prepared for each of these MNES are consistent with the Matters of National Environmental Significance — Significant impact guidelines 1.1 (DCCEEW, 2013) and concluded that potential impacts from the Project are unlikely to constitute significant impacts under the EPBC Act. The basis for this conclusion for each MNES is summarised below.

Carnaby's Black-Cockatoo: CBC is confirmed within the Project Area and is discussed in detail in Section 5 (Terrestrial Fauna). The Proposed Development Footprint contains 14.97 ha of CBC foraging habitat with a score of 10 (0.75% of that within the Project Area) and two potential breeding trees (0.22% of those within the Project Area). No confirmed or suitable breeding trees occur within the Proposed Development Footprint. One CBC roost has been identified approximately 2 km north of the Project Area, and no turbines will be installed within 2 km of that roost. The minimum turbine blade tip height of 60 m above ground level is above the observed CBC flight heights of 0 – 40 m recorded during baseline BBUSs and documented in the broader literature (**Appendix J**). These measures, together with the adaptive management provisions in the BBMP (**Appendix D**), are considered adequate to avoid significant impacts to CBC under both the EPBC Act and the BC Act.

Western Spiny-tailed Skink: WSTS is discussed in Section 4 (Terrestrial Fauna). The species has not been confirmed within the Project Area during surveys and is assessed as Likely (but not observed). The Proposed Development Footprint intersects 5.03 ha of Low Eucalypt Woodland and 0.07 ha of Shrubland on Lateritic Ridge/Outcrop - the two habitat types considered most likely to support WSTS. These areas represent 5.85% and 0.04% respectively of those habitat types within the Project Area, and clearing is confined to the maximum extents set out in . Conservation reserves within 10 km of the Project Area (totalling 10,169 ha,) provide habitat connectivity. Residual impacts are considered unlikely to be significant.

Sandplain Duck Orchid, Star Sun-orchid and Yandanooka Mallee. All three of these threatened flora species are confirmed within the Survey Area and are discussed in Section 3 (Flora and Vegetation). Critically, no records of any of these species occur within the Proposed Development Footprint (Stantec, April 2026 (**Appendix F**)). The Footprint does not intersect the vegetation types in which confirmed records were made. No direct impacts to any of these species are predicted, and residual impacts are considered unlikely to be significant.

Fork-tailed Swift. FTS is assessed as Likely (but not observed) within the Project Area and is discussed in Section 4 (Terrestrial Fauna). As an exclusively aerial species within its non-breeding range, it is not subject to habitat clearing impacts. Any risk of turbine collision is addressed through the adaptive management provisions in the *BBMP* (**Appendix D**). An ecologically significant proportion of 0.1% of the FTS population is considered unlikely to be seriously disrupted by the Project, consistent with the DCCEEW significant impact threshold for migratory species (DCCEEW, 2015). Residual impacts are not considered likely to be significant.

7.3 EPBC offsets

In line with the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy (DCCEEW, 2012), no EPBC offsets have been proposed in the referral or stipulated in the particular manners, as potential impacts on MNES are unlikely to be significant.

References

- DBCA. (2019). *Profile of Eucalyptus camaldulensis*. Retrieved from Florabase:
<https://florabase.dbca.wa.gov.au/browse/profile/5580>
- DCCEEW. (2008). *Approved Conservation Advice for Paracaleana dixonii Hopper & A.P.Br. nom. inval. (Sandplain Duck Orchid)*. Retrieved from SPRAT Database:
https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=87944
- DCCEEW. (2012). *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Retrieved from
<https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy>
- DCCEEW. (2013). *Matters of National Environmental Significance - Significant impact guidelines 1.1*. Retrieved from DCCEEW Publications:
<https://www.dcceew.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance>
- DCCEEW. (2015). *Referral guideline for 14 birds listed as migratory species under the EPBC Act (Draft)*. Retrieved from SPRAT Database: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678
- DCCEEW. (2025). *Thelymitra stellata — Star Sun-orchid*. Retrieved from SPRAT Database:
https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=7060
- DPaW. (2013). *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Retrieved from
<https://www.agriculture.gov.au/sites/default/files/documents/carnabys-cockatoorecovery-recovery-plan.pdf>
- EPA. (2016a). *Environmental Factor Guideline - Terrestrial Fauna*. Retrieved from
<https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-terrestrial-fauna>
- EPA. (2016b). *Environmental Factor Guideline - Flora and Vegetation*. Retrieved from
<https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-flora-and-vegetation>
- EPA. (2021). *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual*. Retrieved from <https://www.epa.wa.gov.au/procedures-manual>
- EPA. (2023a). *Statement of environmental principles, factors, objectives and aims of EIA*. Retrieved from <https://www.epa.wa.gov.au/statement-environmental-principles-factors-and-objectives>
- EPA. (2023b). *Environmental Factor Guideline - Social Surroundings*. Retrieved from
<https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-social-surroundings>
- EPA. (2023c). *Technical Guidance: Environmental impact assessment of Social Surroundings – Aboriginal cultural heritage*. Retrieved from <https://www.epa.wa.gov.au/policies-guidance/aboriginal-cultural-heritage-eia>

- EPA. (2025). *Instructions: How to prepare an environmental review document*. Retrieved from <https://www.epa.wa.gov.au/forms-templates/instructions-how-prepare-environmental-review-document>
- Murdoch University. (2015). *A study of the health of wild Carnaby's cockatoo (Calyptorhynchus latirostris) nestlings at key breeding sites in Western Australia*. Retrieved from DBCA Library: <https://library.dbca.wa.gov.au/static/FullTextFiles/C20234.a.pdf>
- WA Government. (2011). *WA Environmental Offsets Policy*. Retrieved from <https://www.wa.gov.au/service/environment/environmental-impact-assessment/environmental-offsets>
- WA Government. (2014). *WA Environmental Offsets Guidelines*. Retrieved from <https://www.wa.gov.au/service/environment/environmental-impact-assessment/environmental-offsets>

Appendix A – Figures

Figure A 1: Regional Location.....	1
Figure A 2: Land parcels within Project Area.....	2
Figure A 3: Overview of Project infrastructure	3
Figure A 4: Project Development Footprint.....	4
Figure A 5: Proposed Development Envelope.....	5
Figure A 6: Constraints and infrastructure	6
Figure A 7: Fauna survey effort	7
Figure A 8: Proposed transport route to site	0
Figure A 9: Project access points	1
Figure A 10: IBRA bioregions.....	2
Figure A 11: Land systems	3
Figure A 12 : Regional Location (environmental context).....	4
Figure A 13: Conservation reserves and environmentally sensitive areas	5
Figure A 14: Previous surveys within 20 km of the Survey Area	6
Figure A 15: Desktop results – Significant flora within 20 km of the Survey Area	7
Figure A 16: Desktop results – Significant flora within the Survey Area.....	8
Figure A 17: Desktop assessment of TECs within 20 km of the Survey Area.....	9
Figure A 18: Flora survey effort	10
Figure A 19: Previous fauna surveys	11
Figure A 20: Desktop records of significant vertebrates	12
Figure A 21: Desktop records of potential SRE significant invertebrates	13
Figure A 22: Habitat mapping	14
Figure A 23: Vegetation mapping	15
Figure A 24: Vegetation condition mapping	16
Figure A 25: Pre-European vegetation	17
Figure A 26: CBC records and foraging habitat score	18
Figure A 27: CBC breeding and roosting	19
Figure A 28: Significant species records (excluding CBC)	20
Figure A 29: Cumulative impact assessment.....	21
Figure A 30: Survey Area.....	22

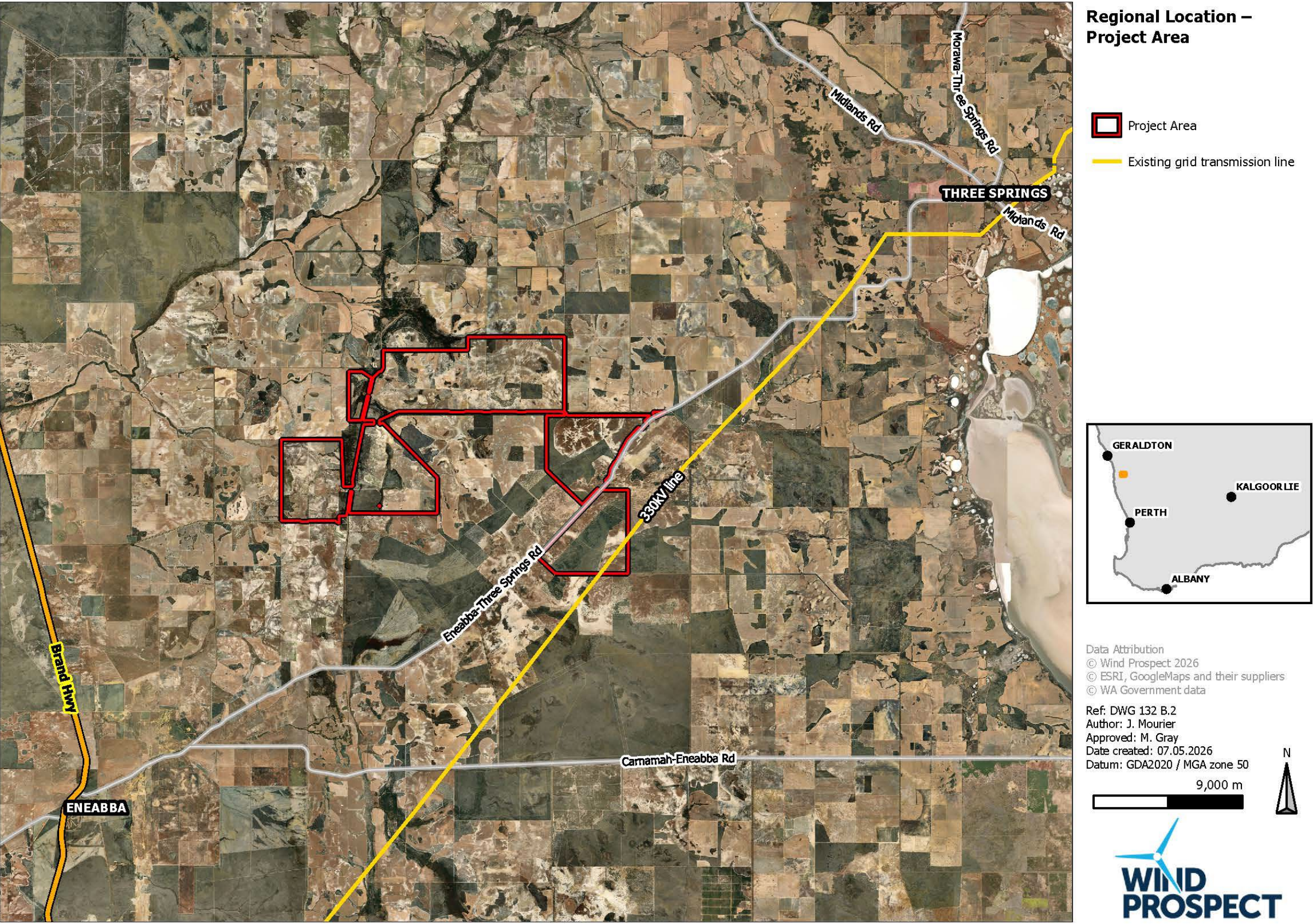


Figure A 1: Regional Location

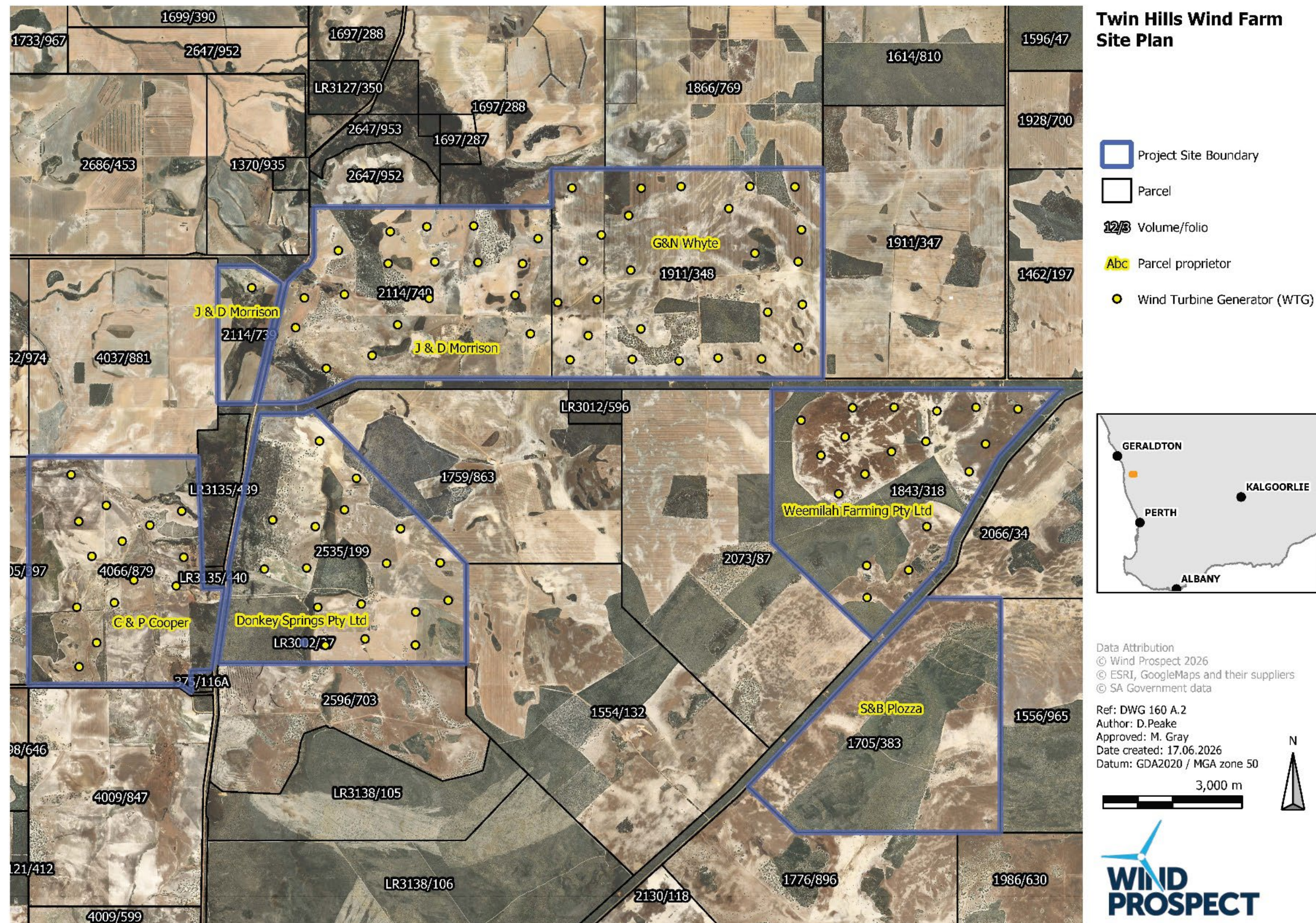


Figure A 2: Land parcels within Project Area

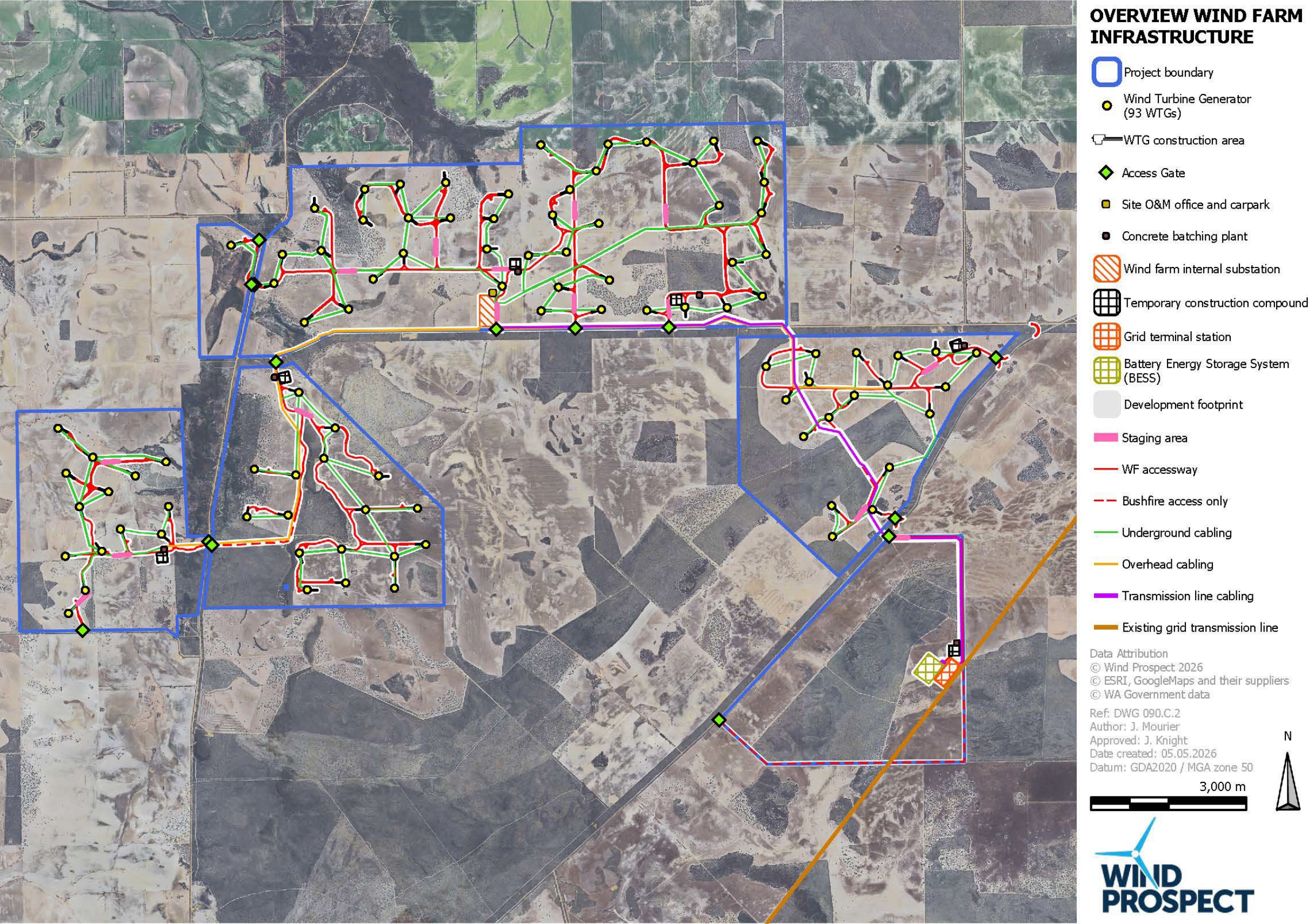


Figure A 3: Overview of Project infrastructure

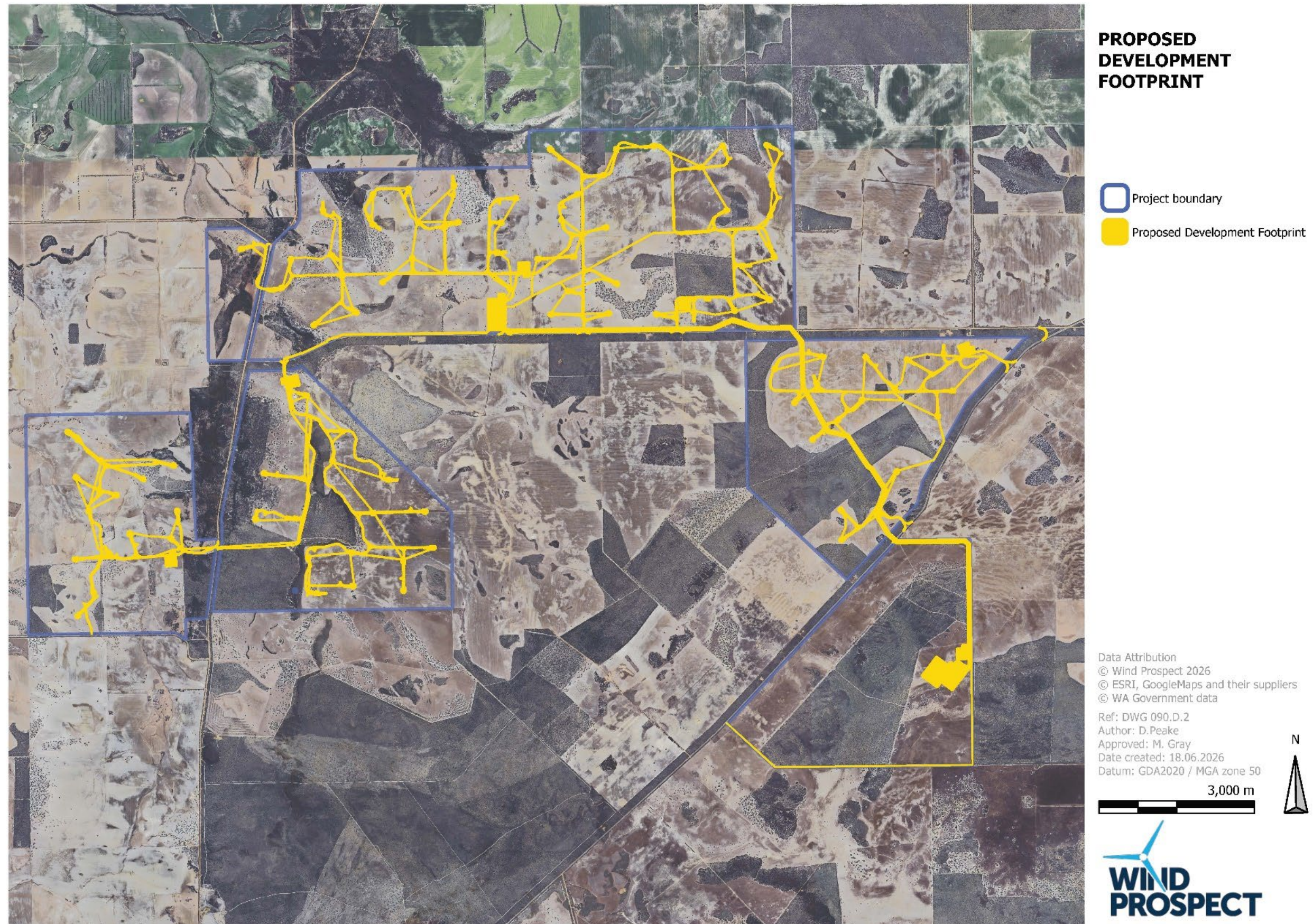
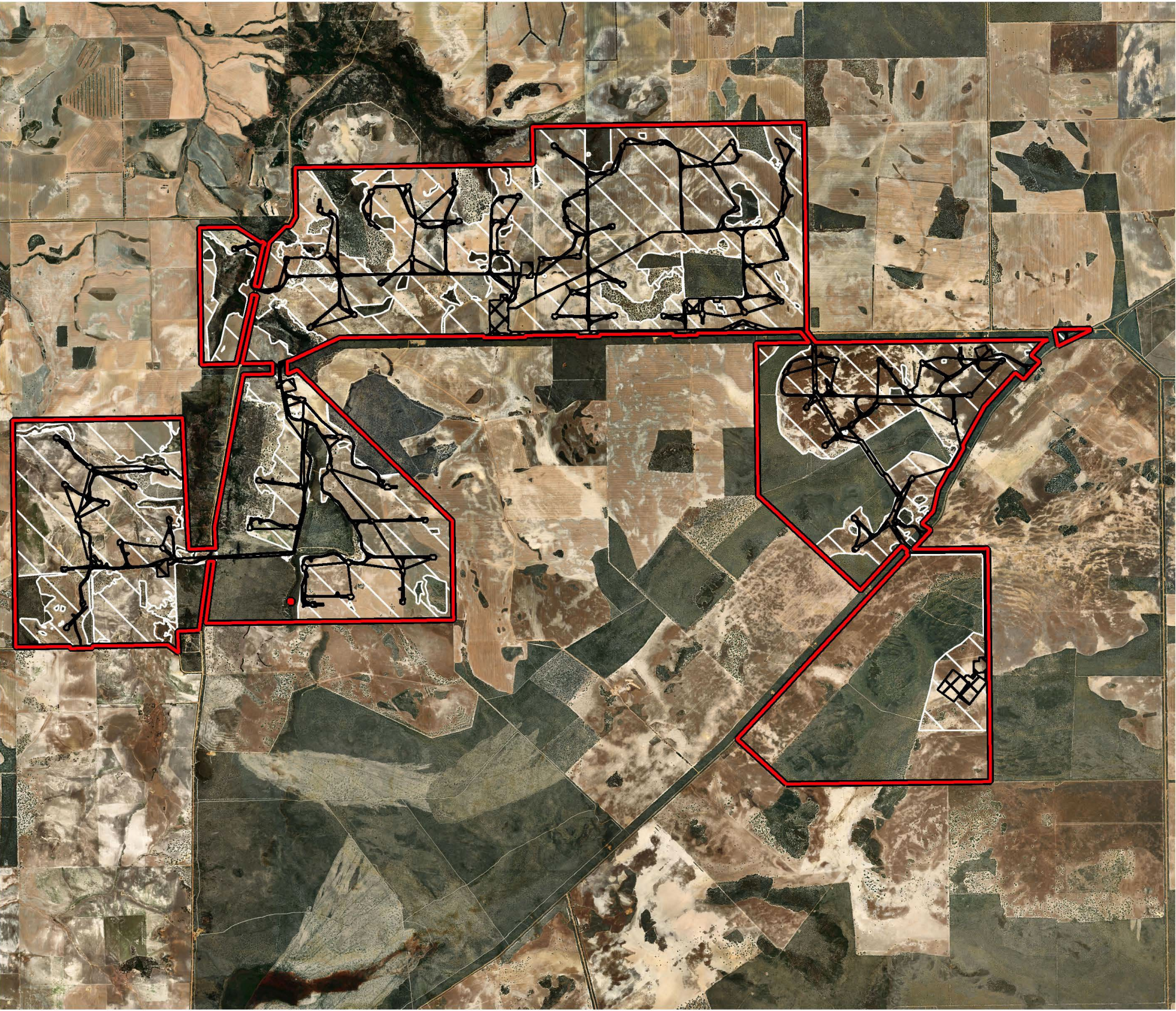
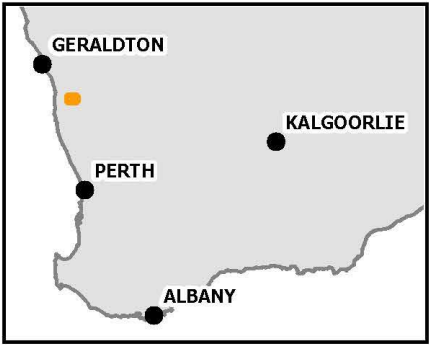


Figure A 4: Project Development Footprint



Proposed Development Envelope and Proposed Development Footprint – Project Area

-  Project Area
-  Proposed Development Footprint
-  Proposed Development Envelope



Data Attribution
© Wind Prospect 2026
© ESRI, GoogleMaps and their suppliers
© WA Government data

Ref: DWG 135 C.1
Author: J. Mourier
Approved: M. Gray
Date created: 11.06.2026
Datum: GDA2020 / MGA zone 50

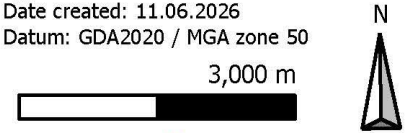


Figure A 5: Proposed Development Envelope

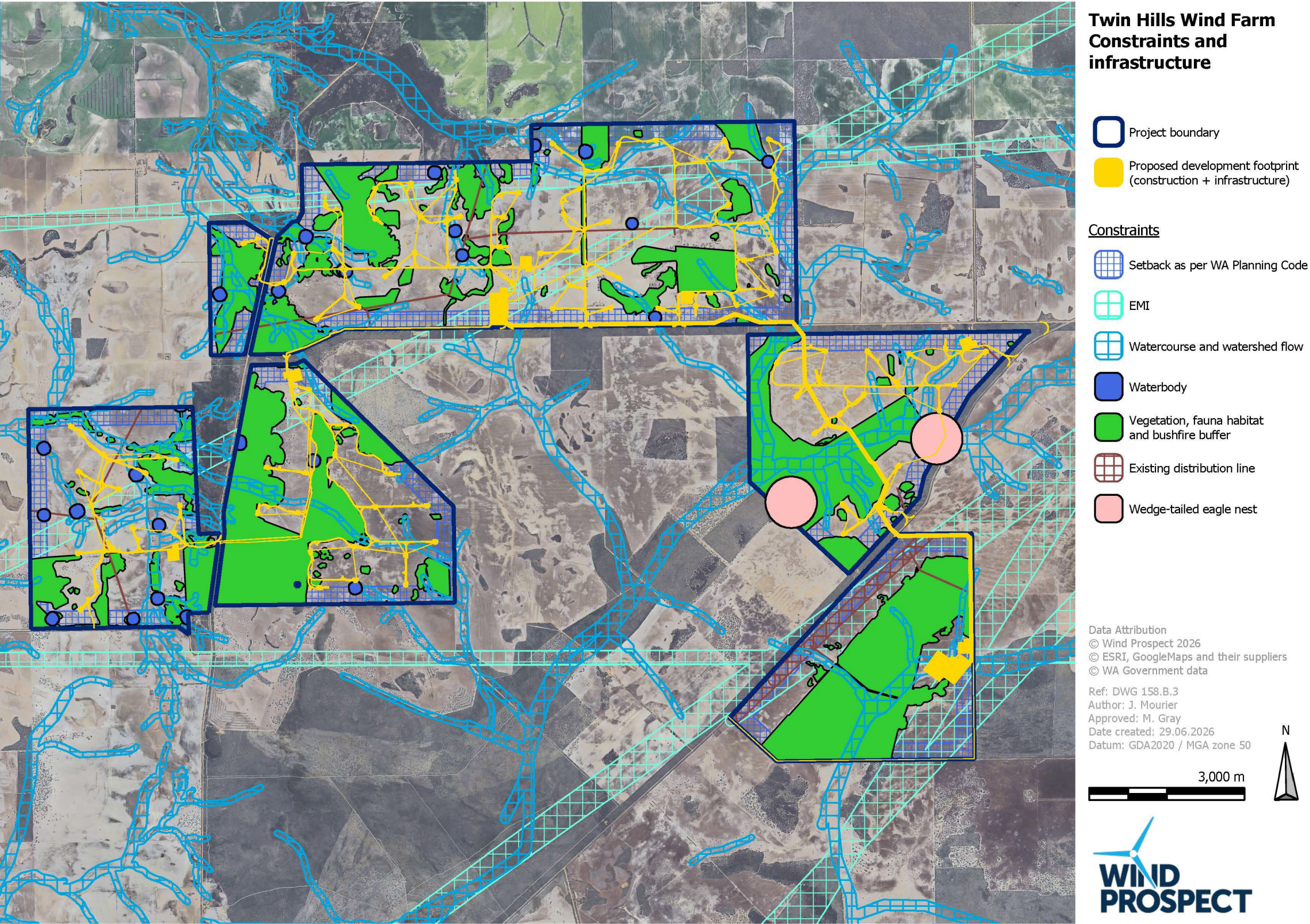


Figure A 6: Constraints and infrastructure

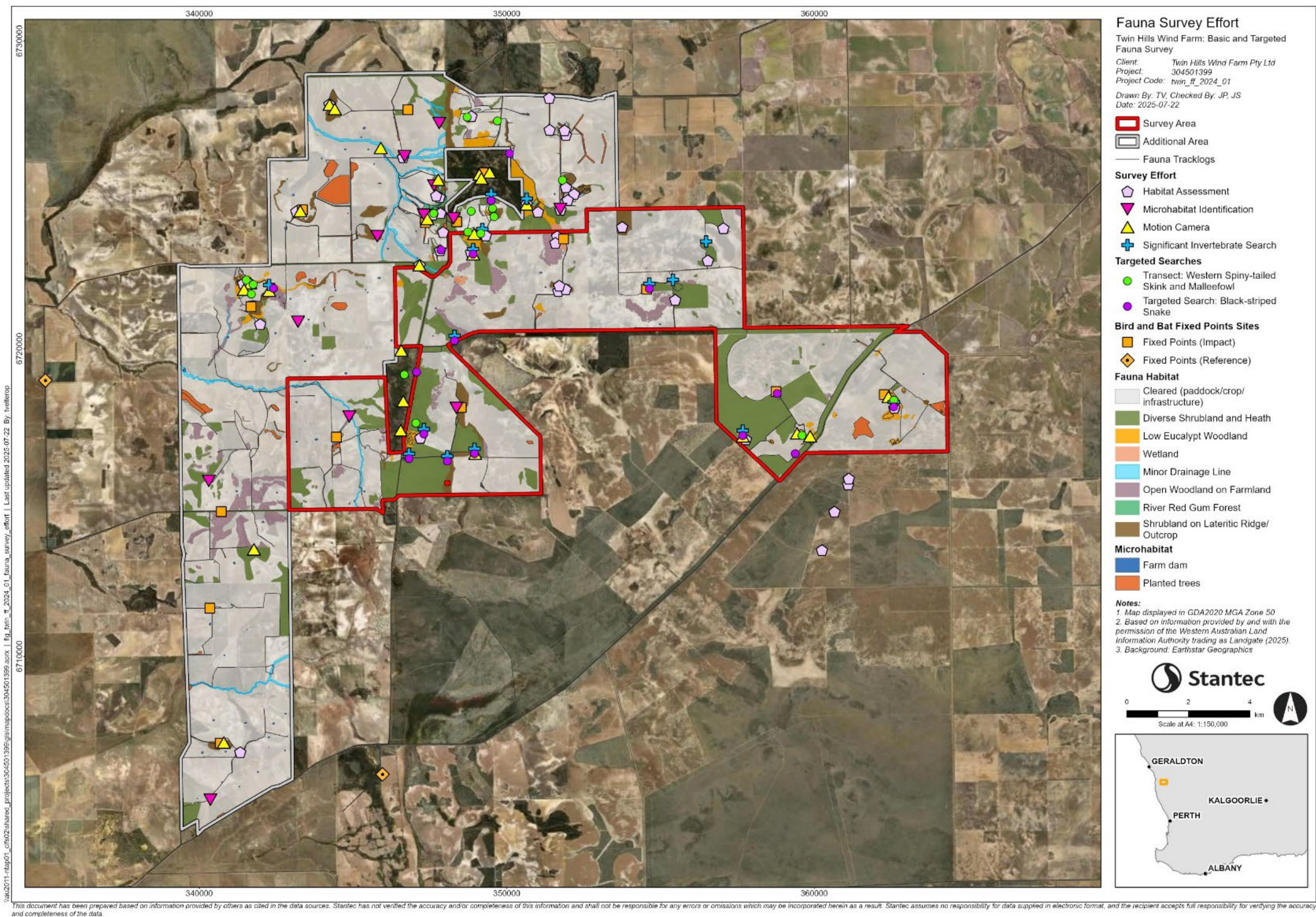


Figure A 7: Fauna survey effort

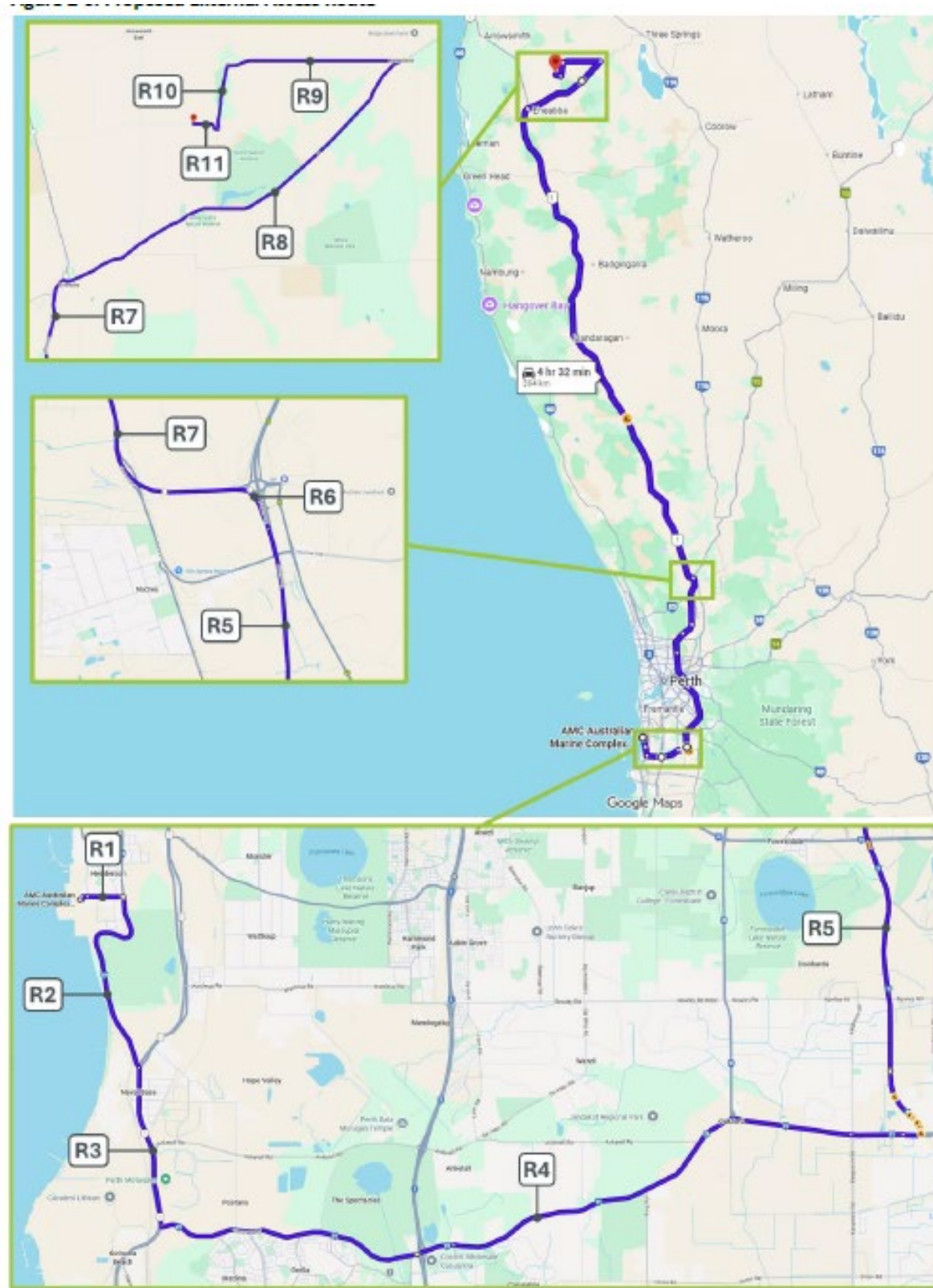


Figure A 8: Proposed transport route to site

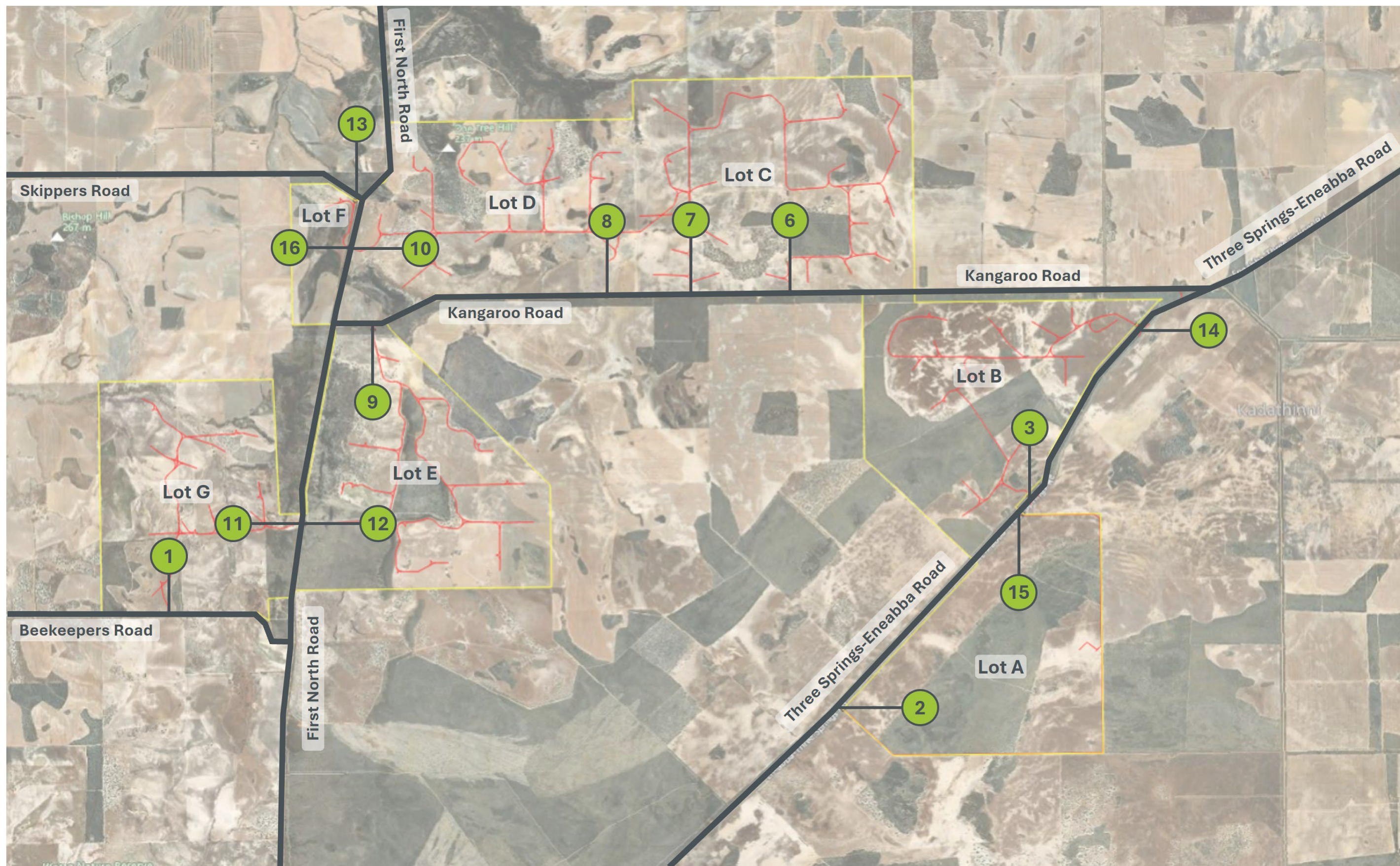


Figure A 9: Project access points

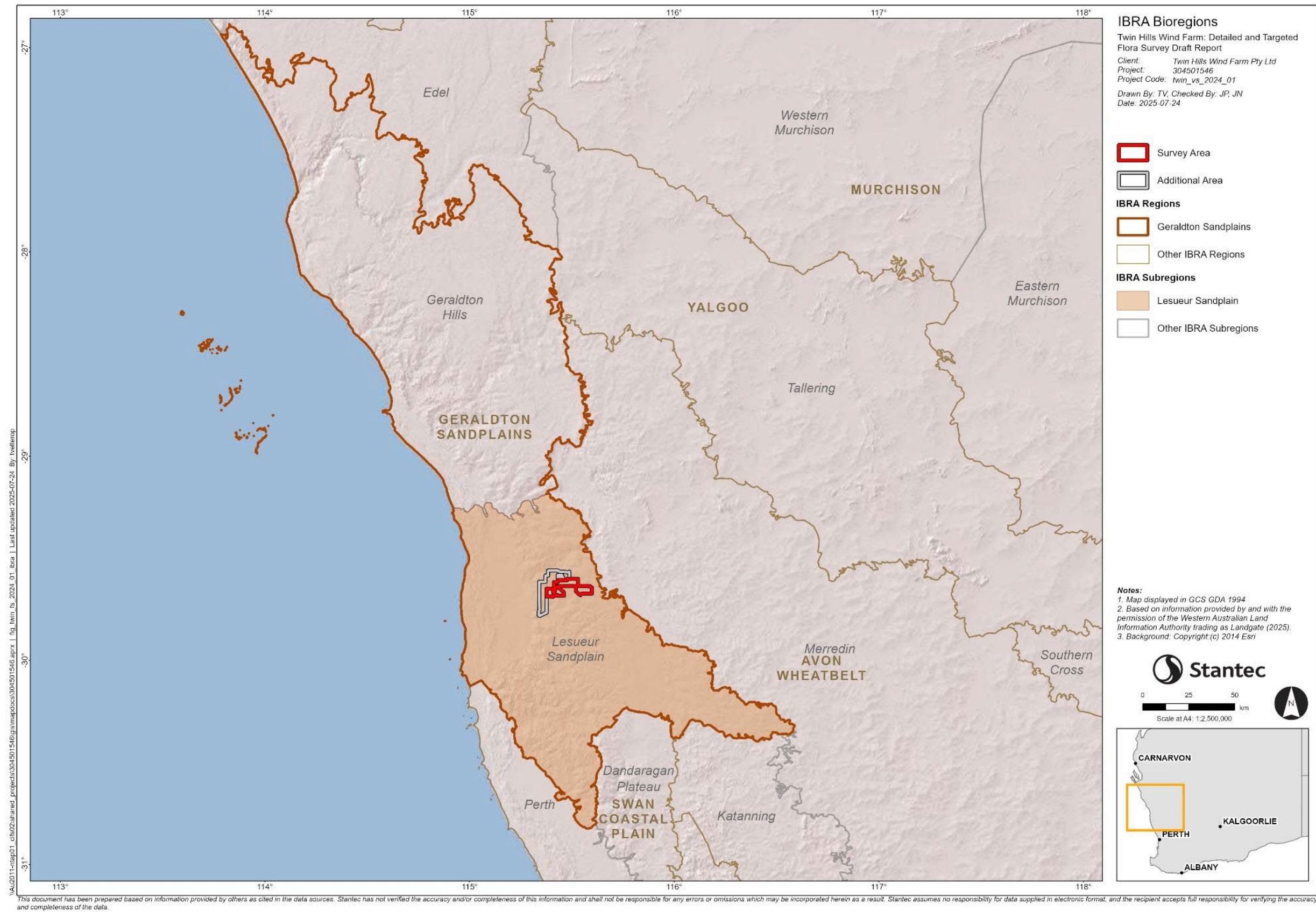


Figure A 10: IBRA bioregions

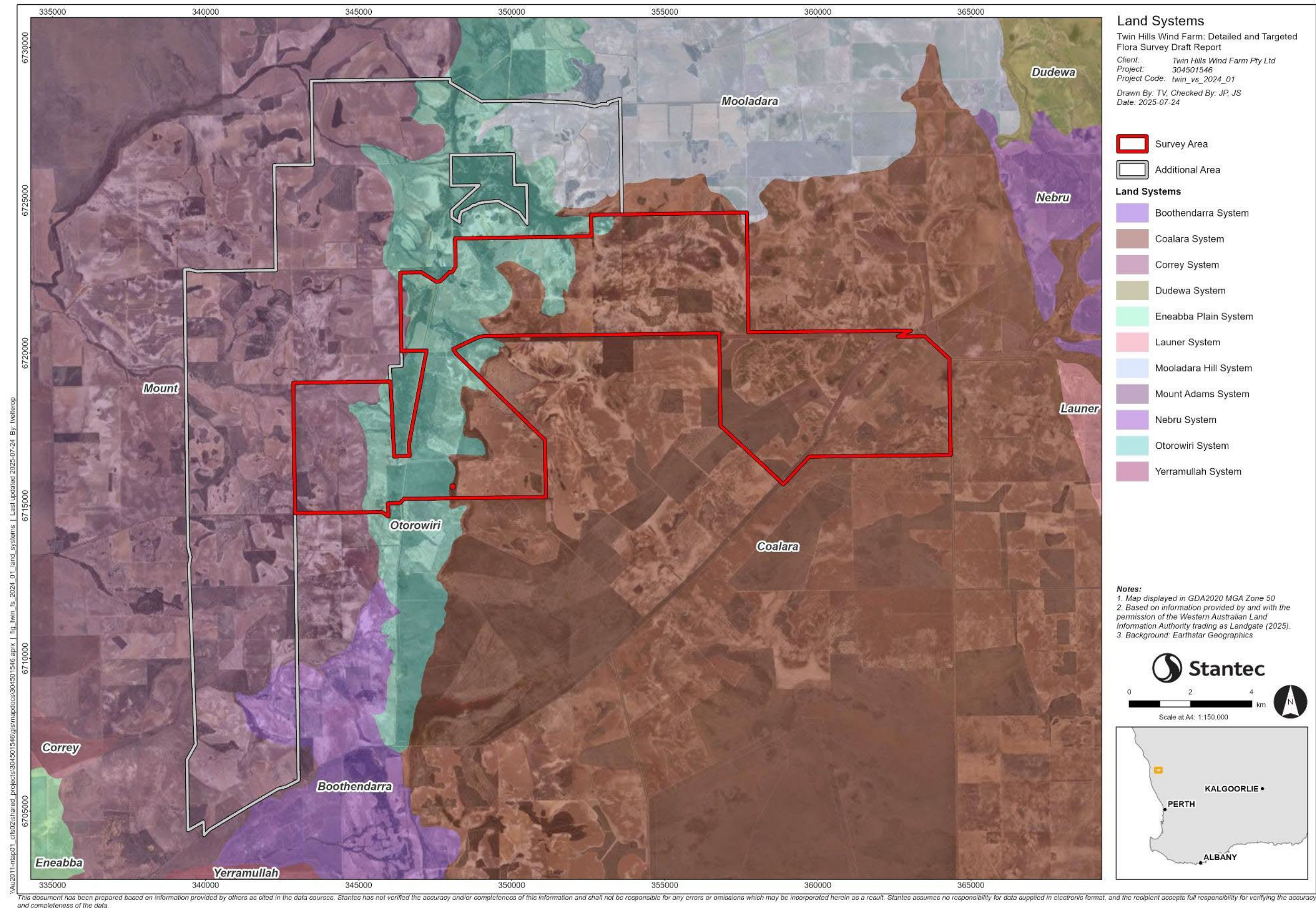


Figure A 11: Land systems

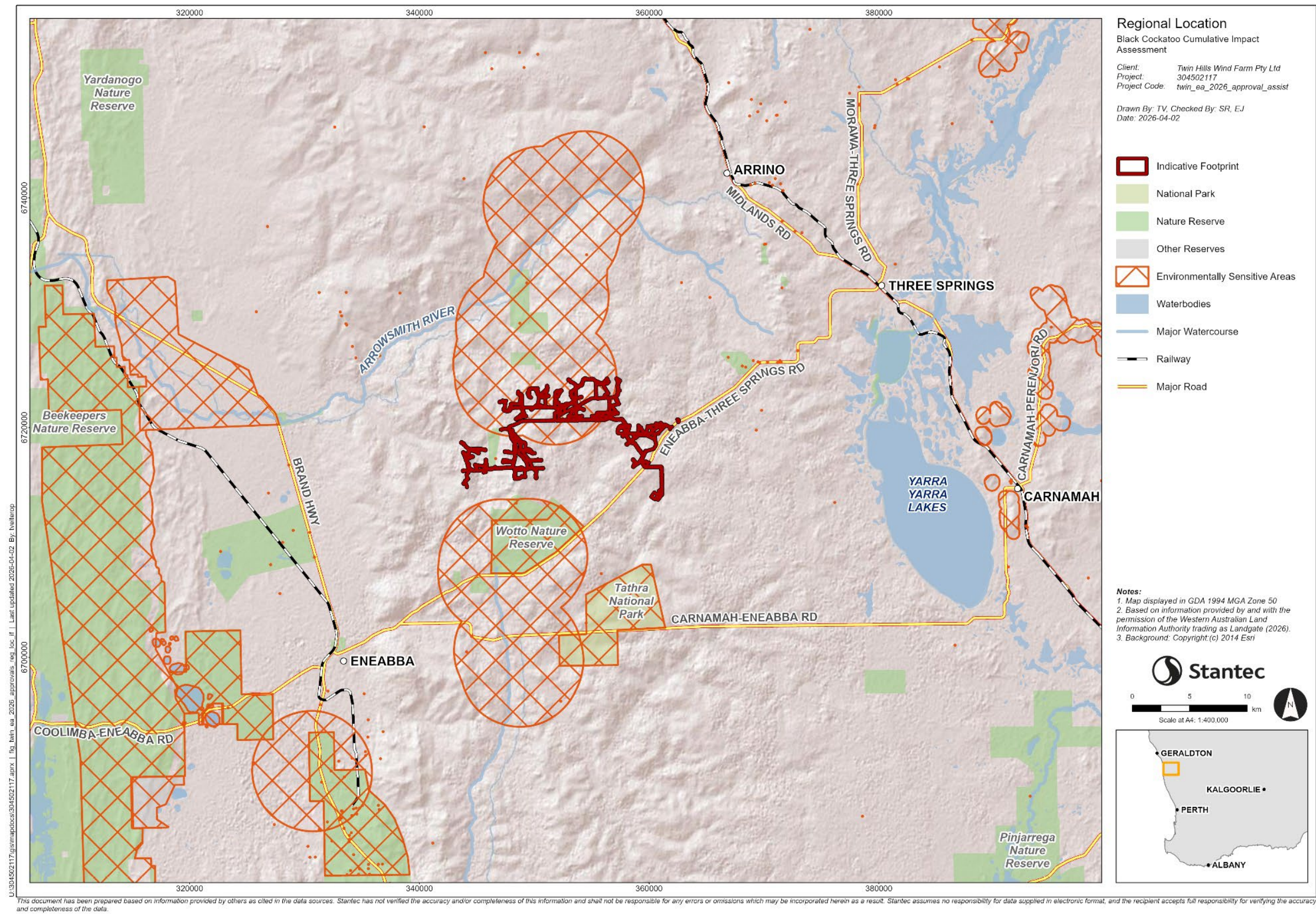


Figure A 12 : Regional Location (environmental context)

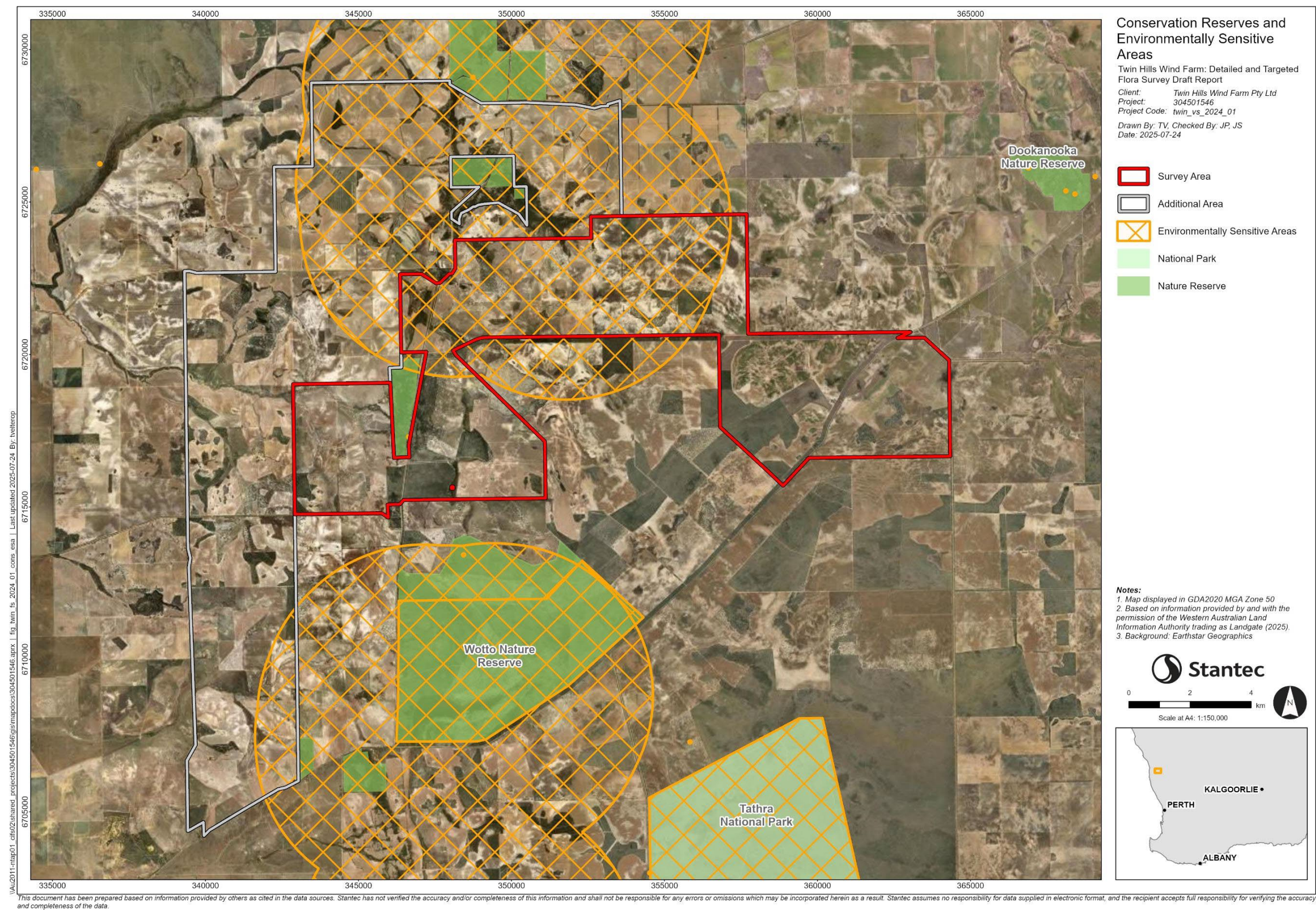


Figure A 13: Conservation reserves and environmentally sensitive areas

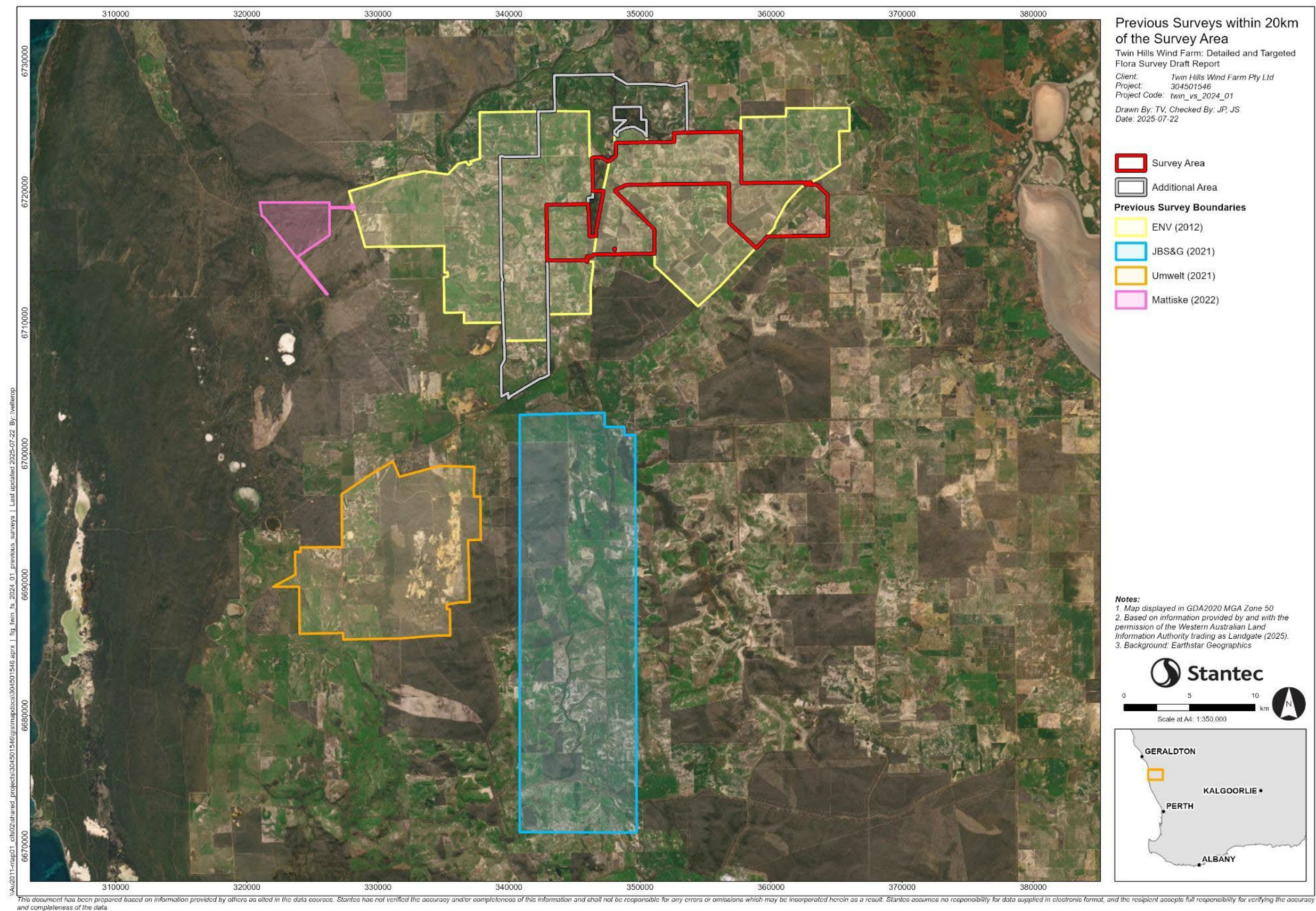


Figure A 14: Previous surveys within 20 km of the Survey Area

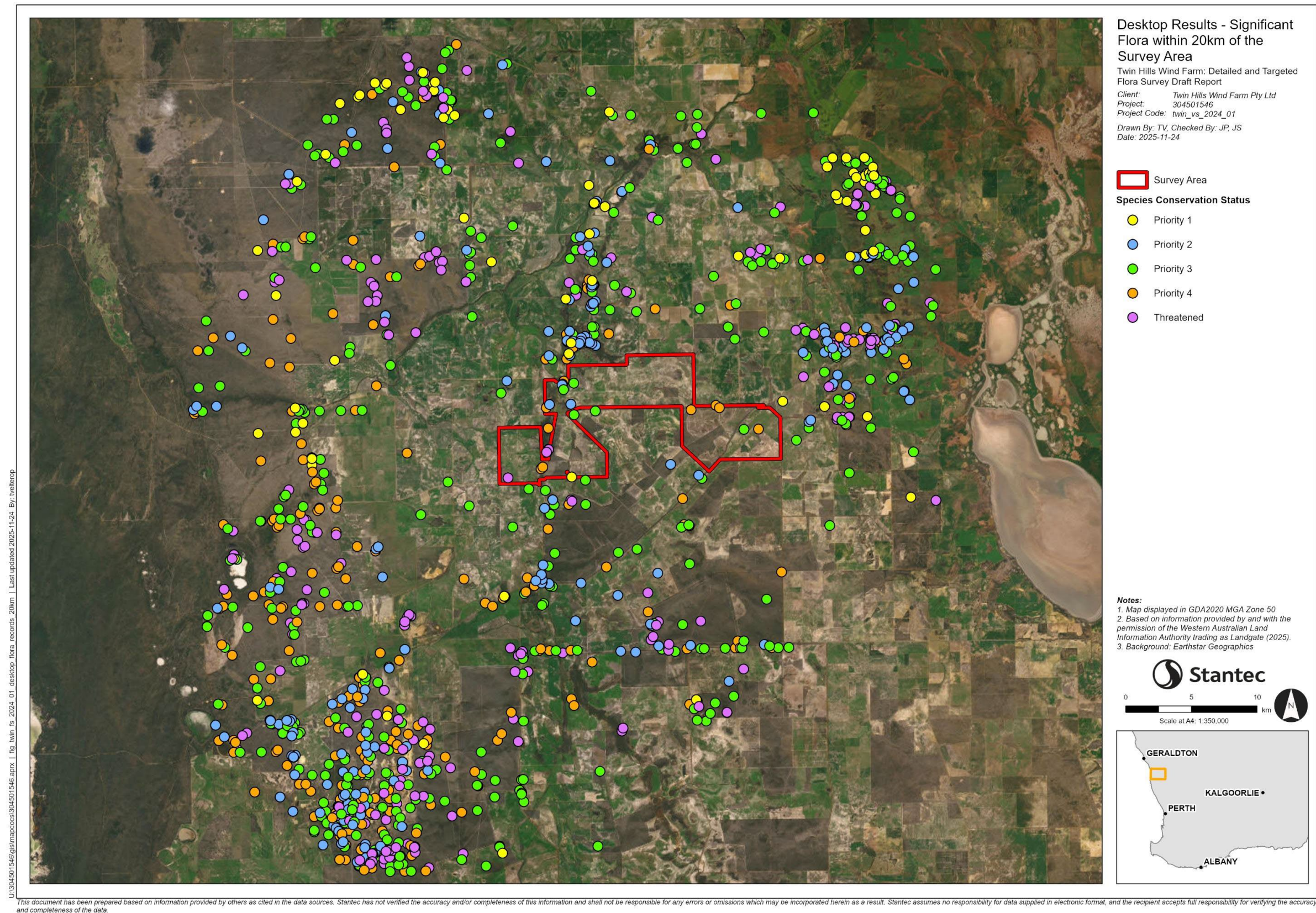
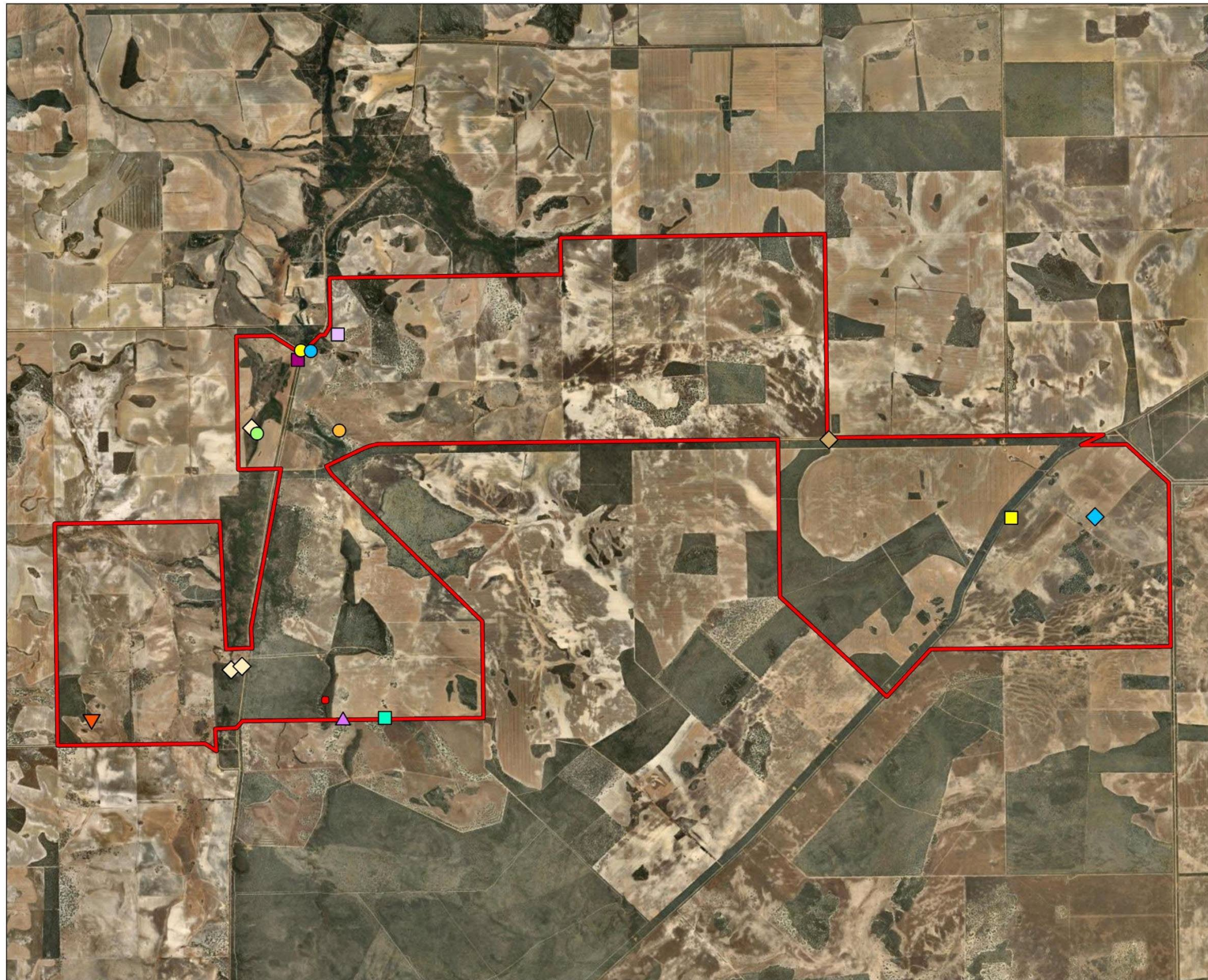


Figure A 15: Desktop results – Significant flora within 20 km of the Survey Area

U:\304501546\gis\mapdocs\304501546.aprx | fig. twin_is_2024_01 desktop flora records survey area | Last updated 2025-11-24 By: tvellerop



Desktop Results - Significant Flora within the Survey Area

Twin Hills Wind Farm: Detailed and Targeted Flora Survey Draft Report

Client: Twin Hills Wind Farm Pty Ltd

Project: 304501546

Project Code: twin_vs_2024_01

Drawn By: TV, Checked By: JP, JS

Date: 2025-11-24

Survey Area

Species Records

Priority 1

Verticordia luteola var. *rosea*

Priority 2

Homalocalyx chapmanii

Micromyrtus uniovulum

Millotia jacksonii

Stylidium tinkerii

Priority 3

Lechenaultia juncea

Petrophile septemfida

Styphelia hyalina

Verticordia luteola var. *luteola*

Priority 4

Lepidobolus densus

Calytrix chrysantha

Hemiandra sp. *Watheroo* (S. Hancocks 4)

Threatened

Eucalyptus crispata

Notes:

1. Map displayed in GDA2020 MGA Zone 50
2. Based on information provided by and with the permission of the Western Australian Land Information Authority trading as Landgate (2025).
3. Background: Earthstar Geographics



This document has been prepared based on information provided by others as cited in the data sources. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Figure A 16: Desktop results – Significant flora within the Survey Area

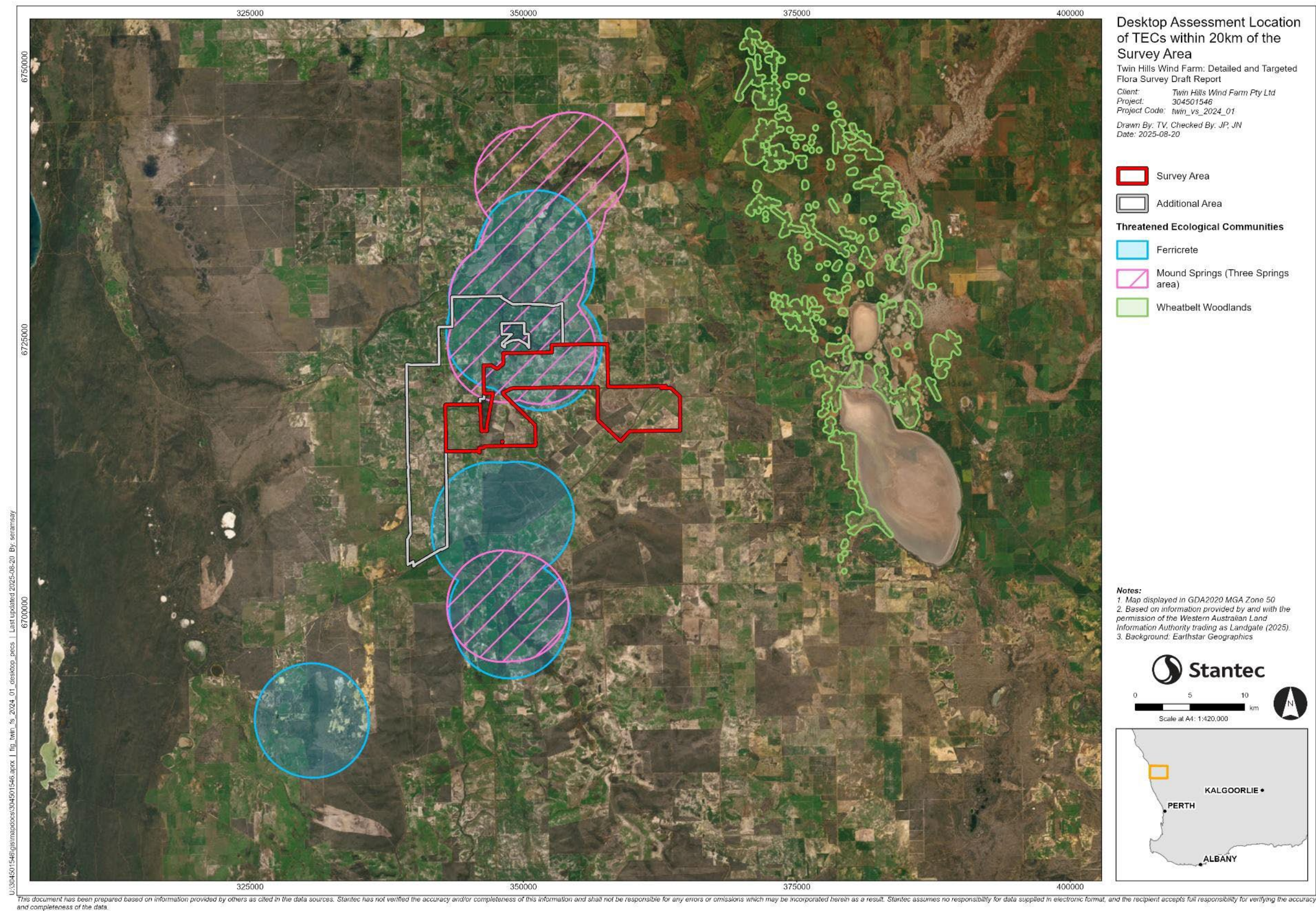


Figure A 17: Desktop assessment of TECs within 20 km of the Survey Area

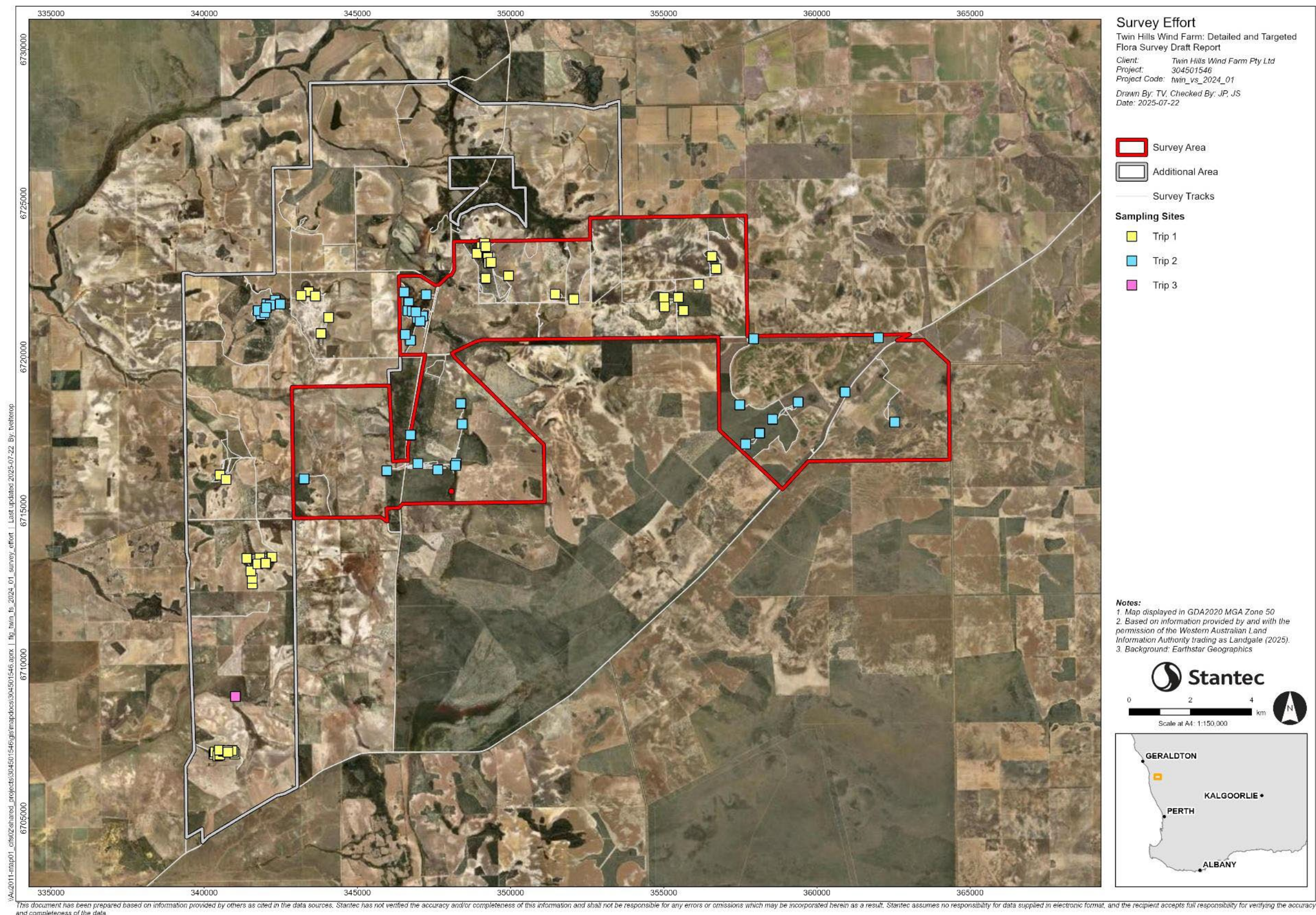


Figure A 18: Flora survey effort

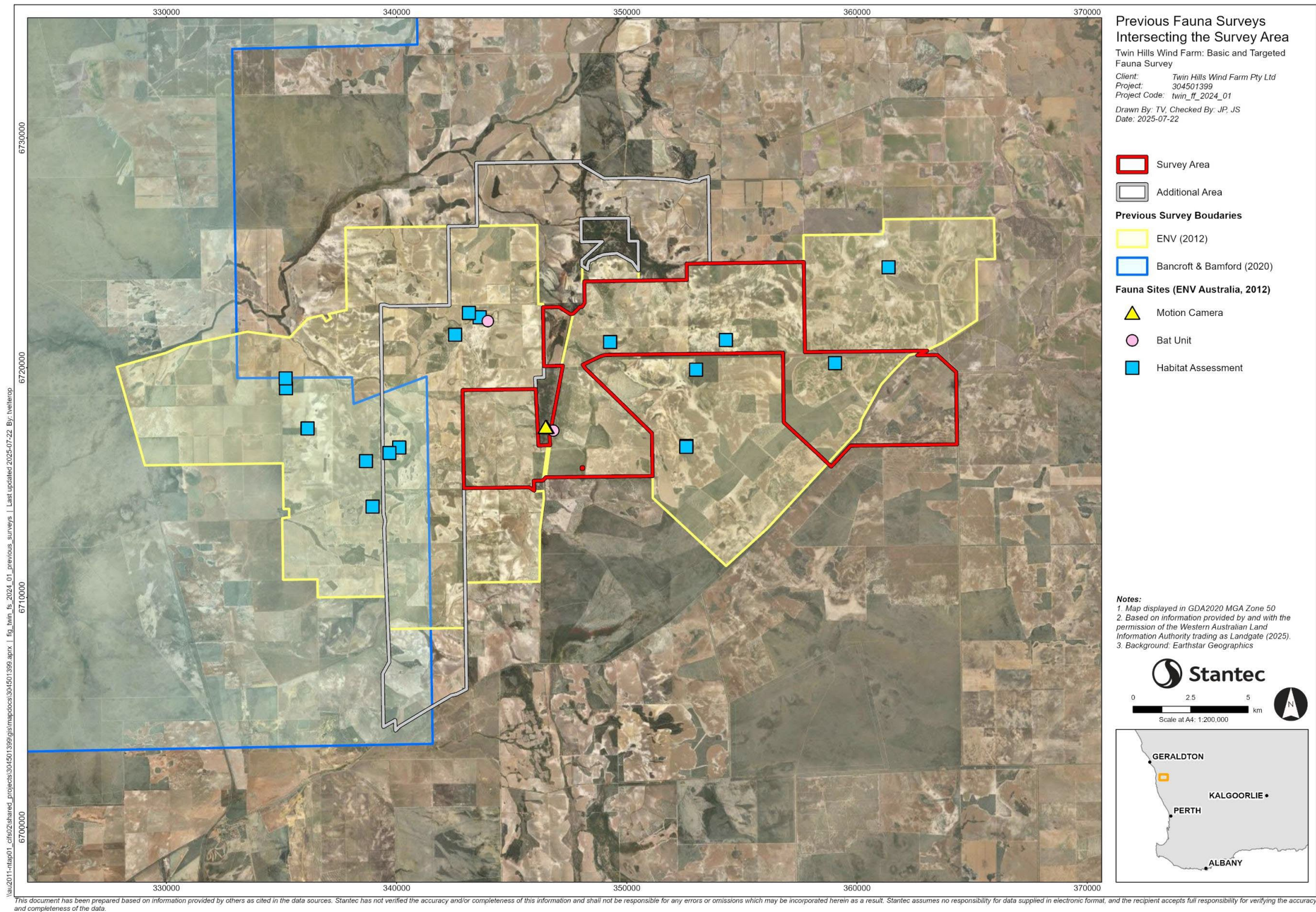


Figure A 19: Previous fauna surveys

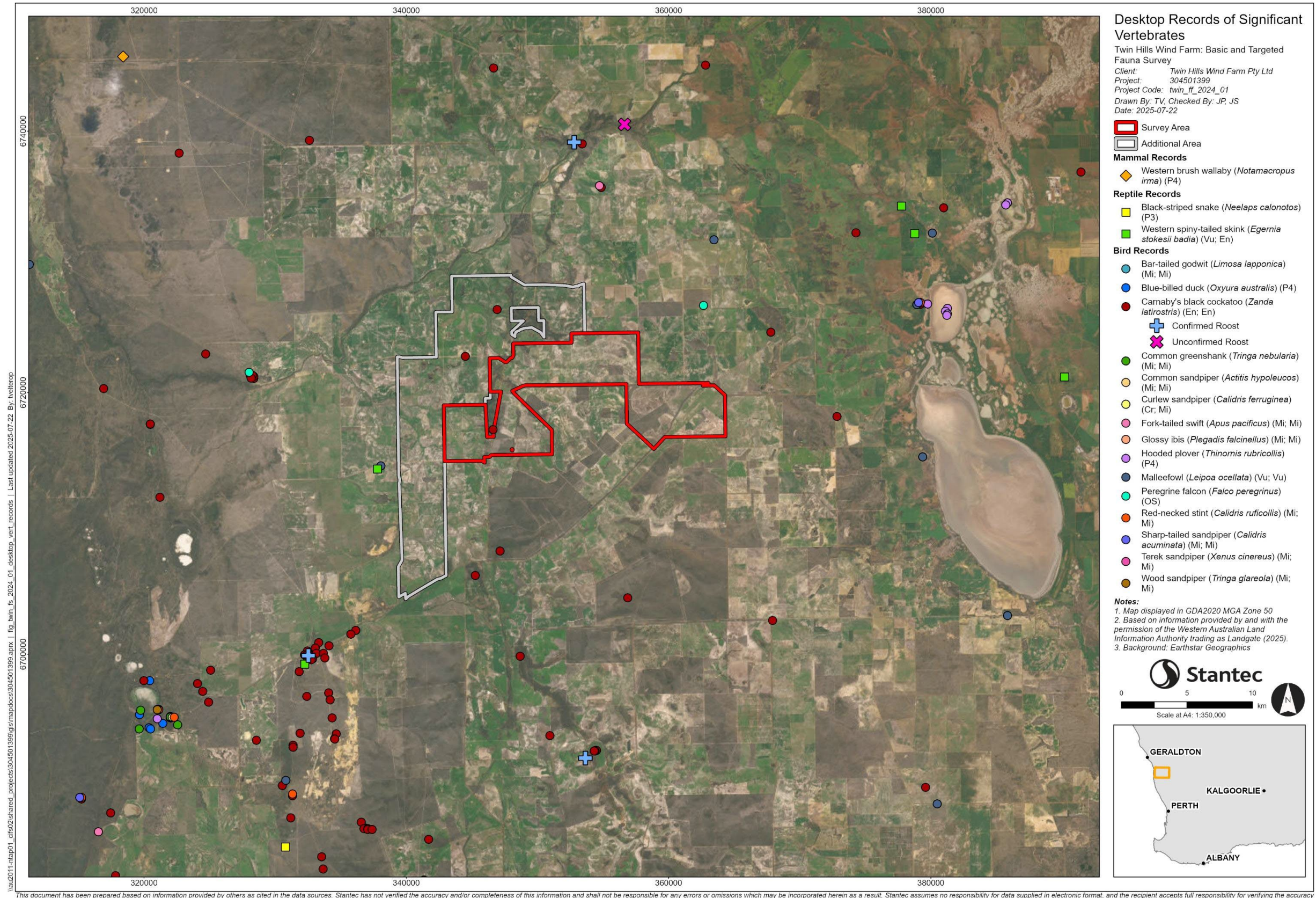


Figure A 20: Desktop records of significant vertebrates

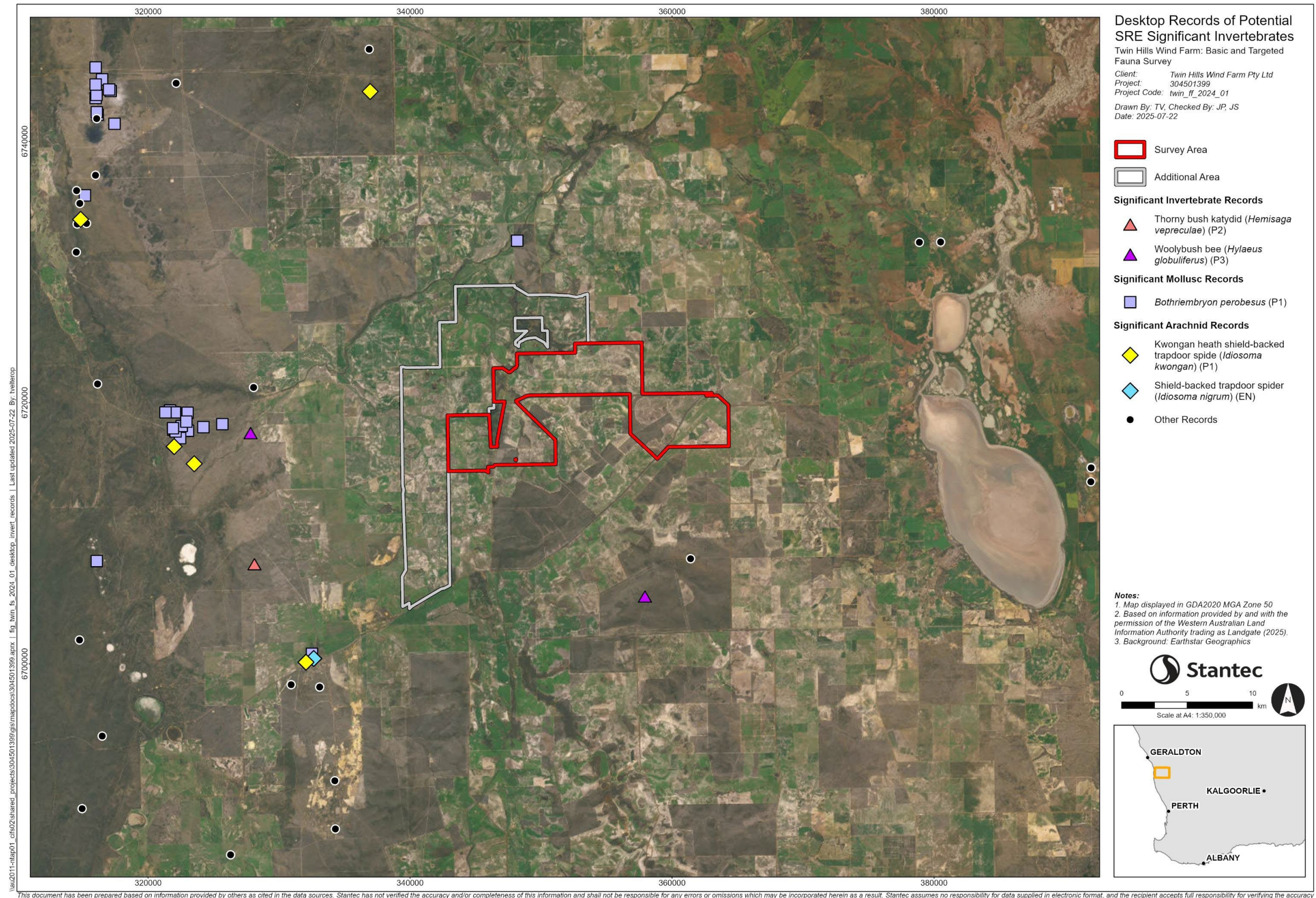


Figure A 21: Desktop records of potential SRE significant invertebrates

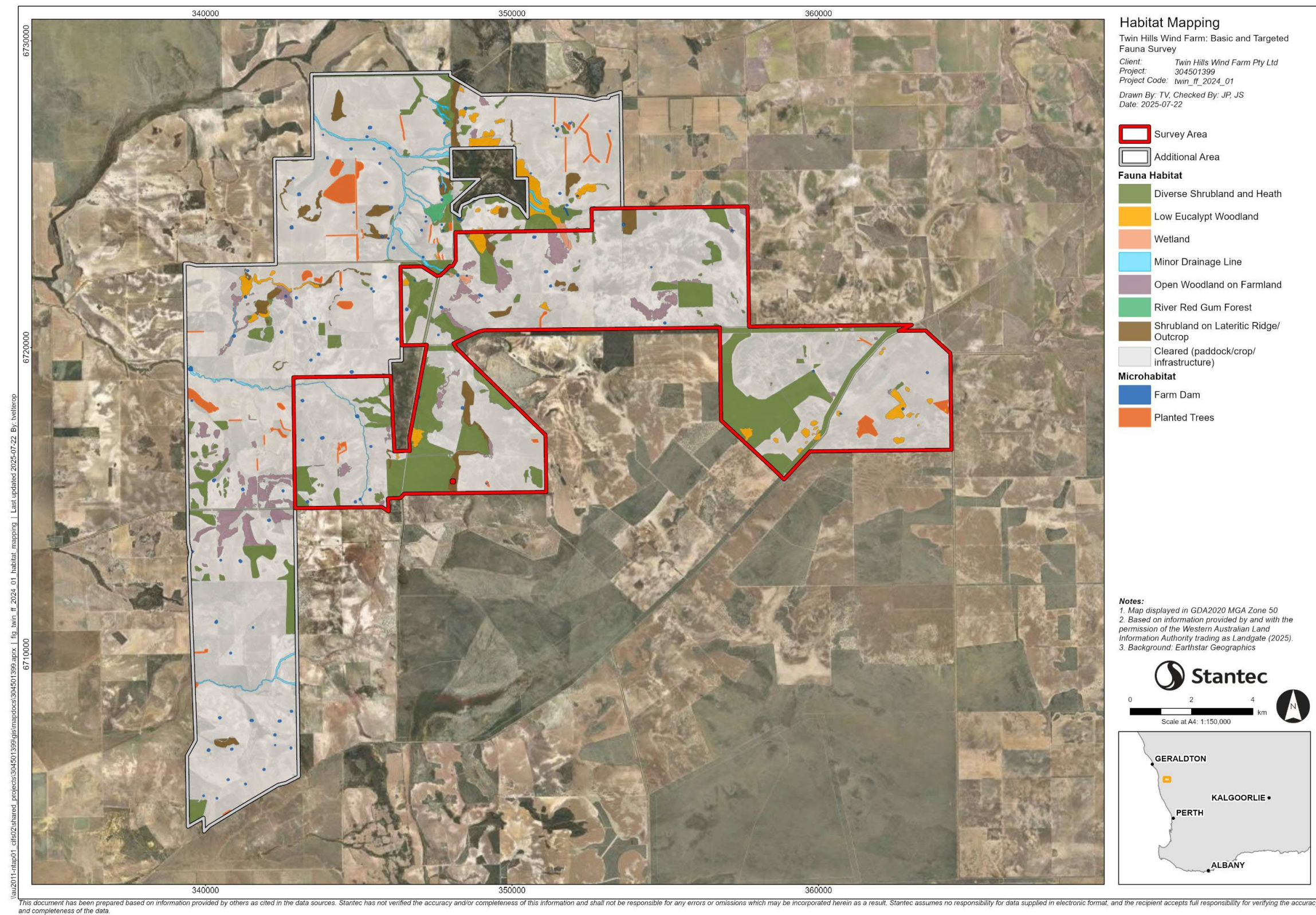


Figure A 22: Habitat mapping

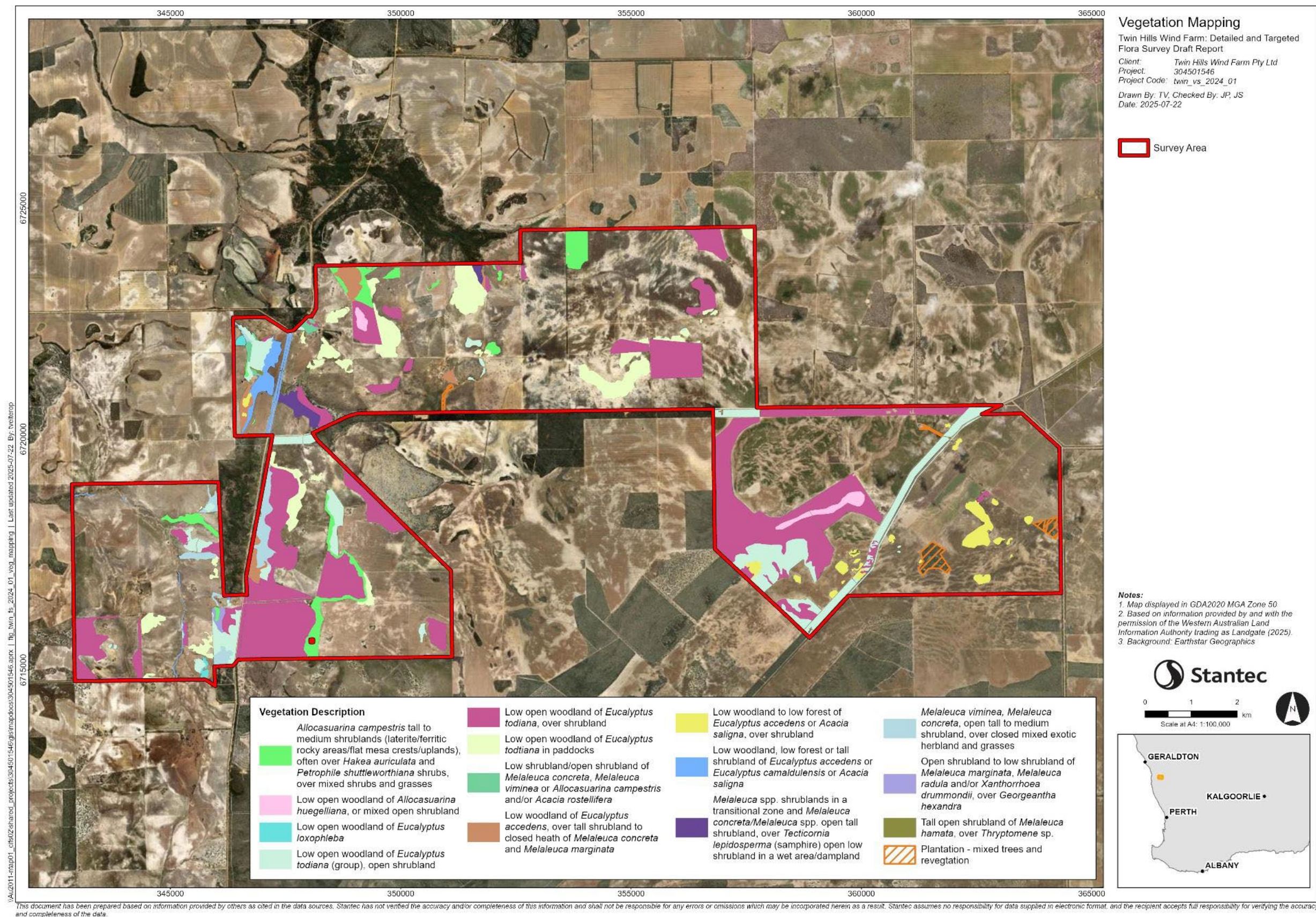


Figure A 23: Vegetation mapping

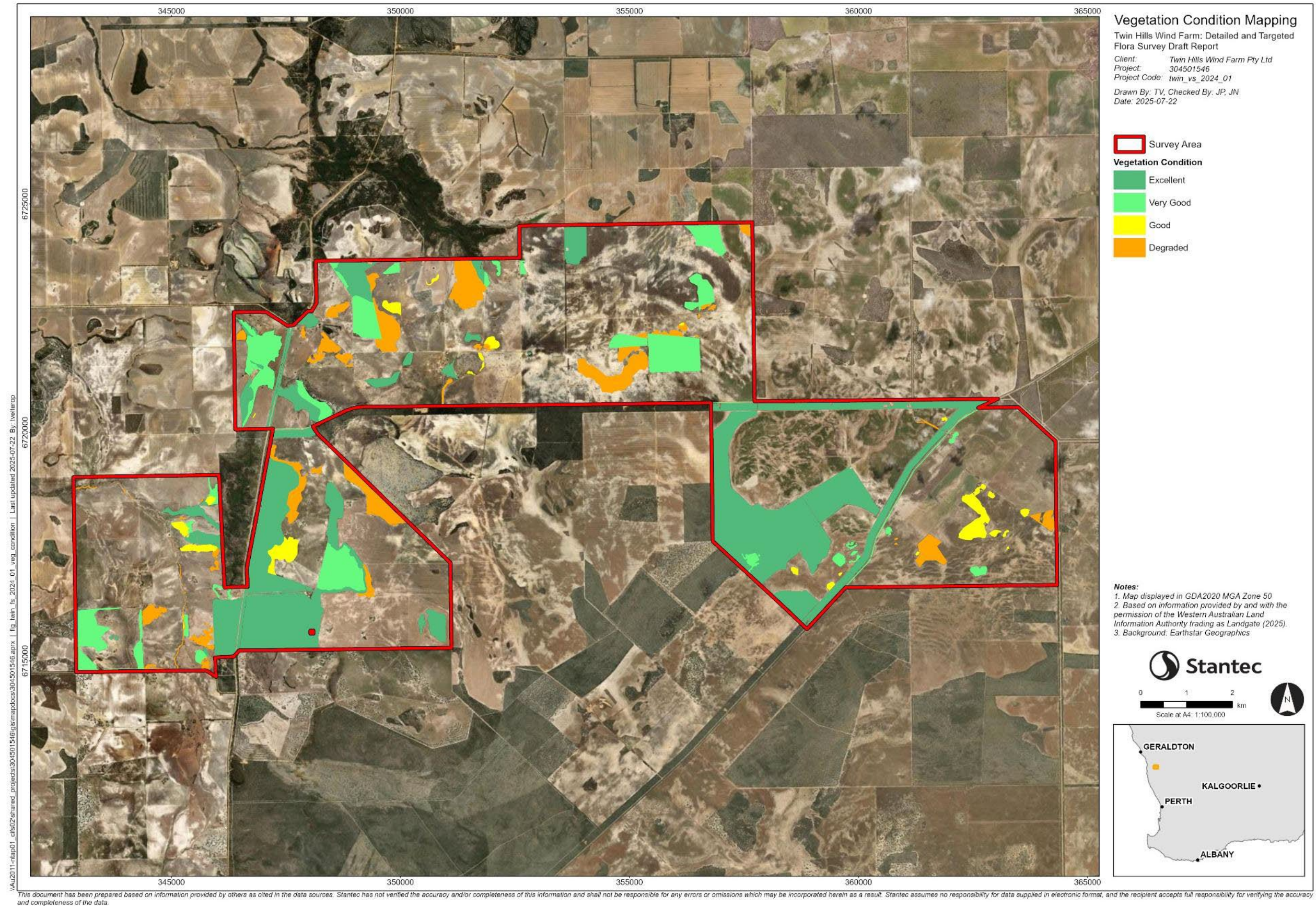


Figure A 24: Vegetation condition mapping

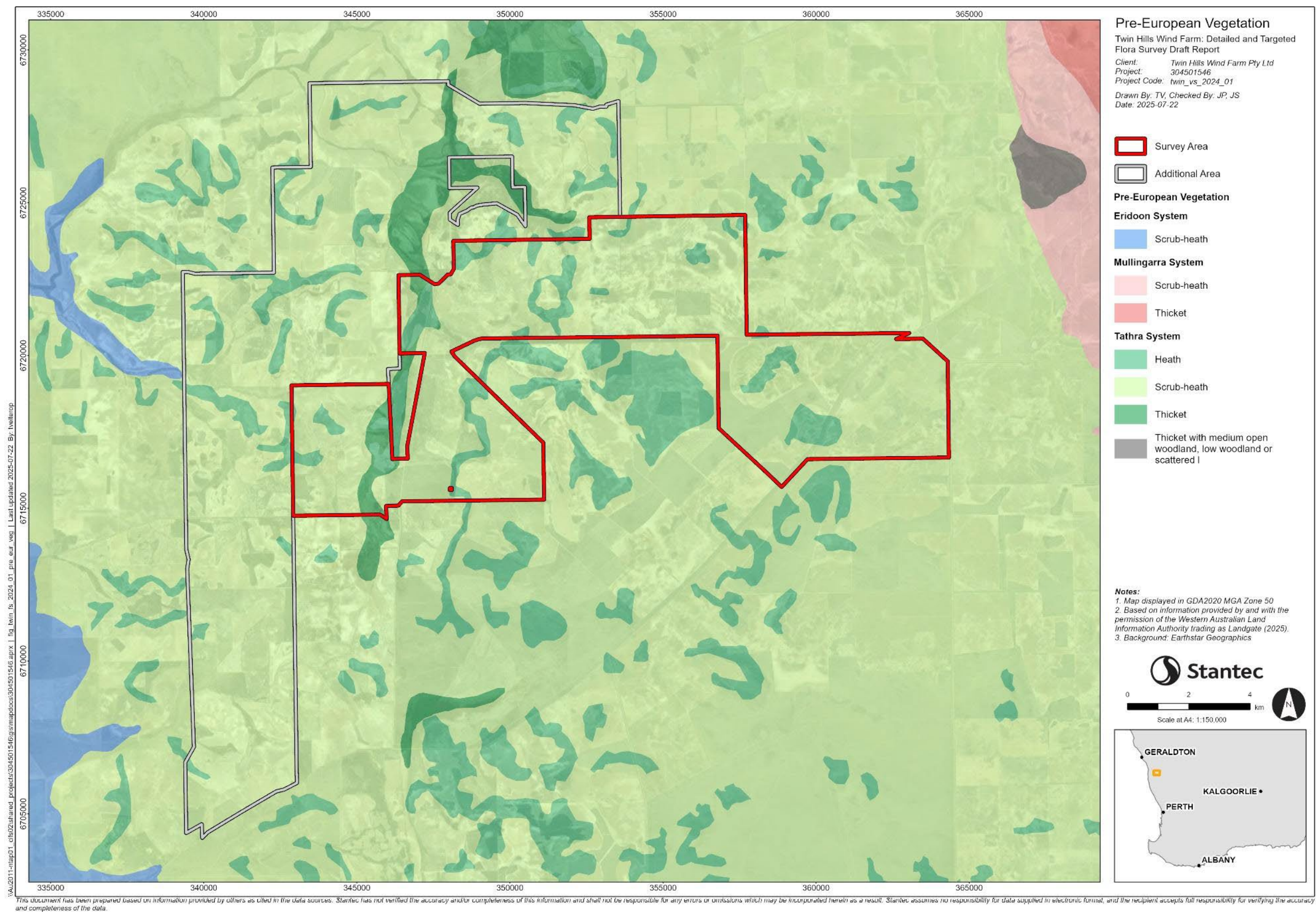


Figure A 25: Pre-European vegetation

Figure

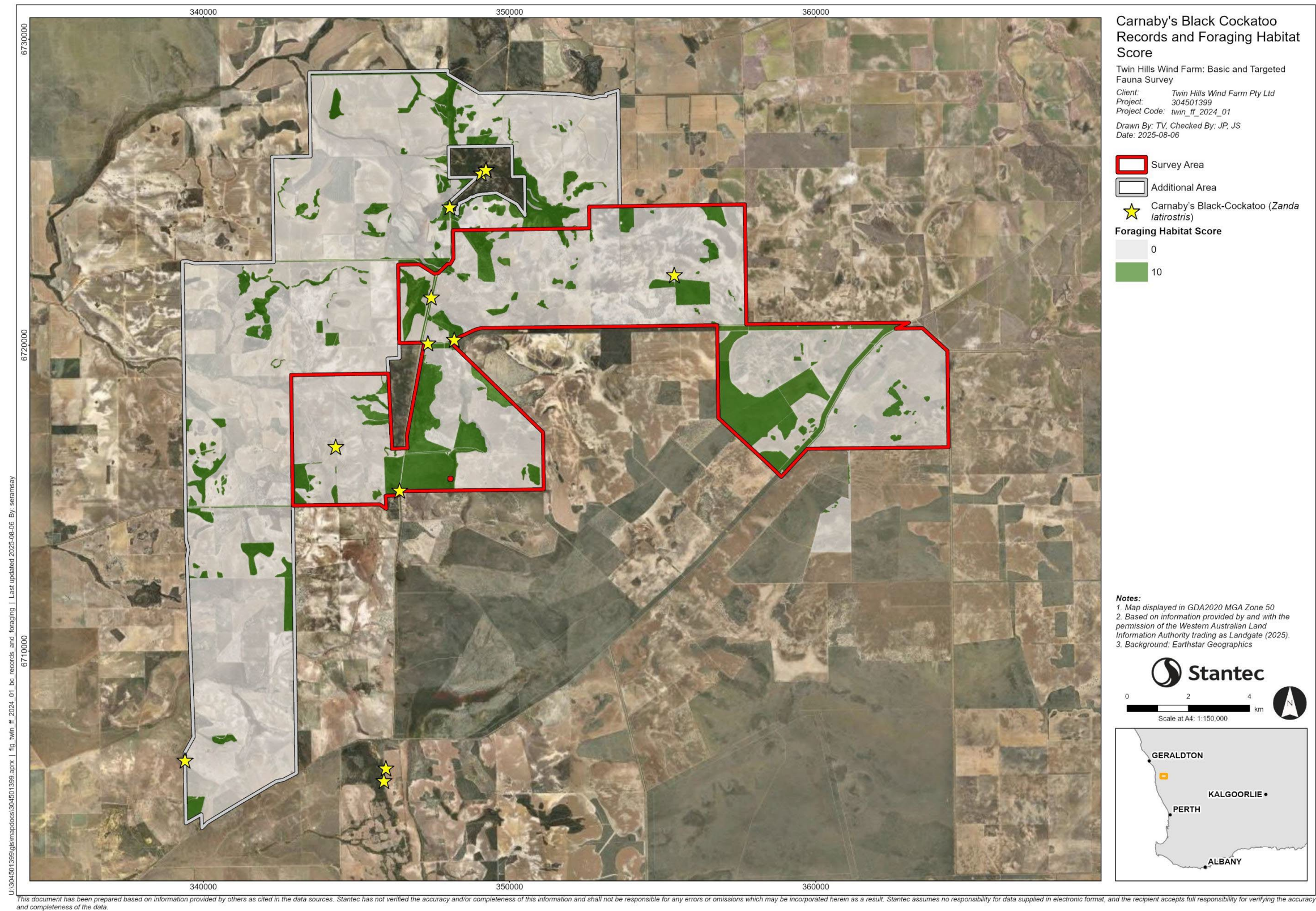


Figure A 26: CBC records and foraging habitat score

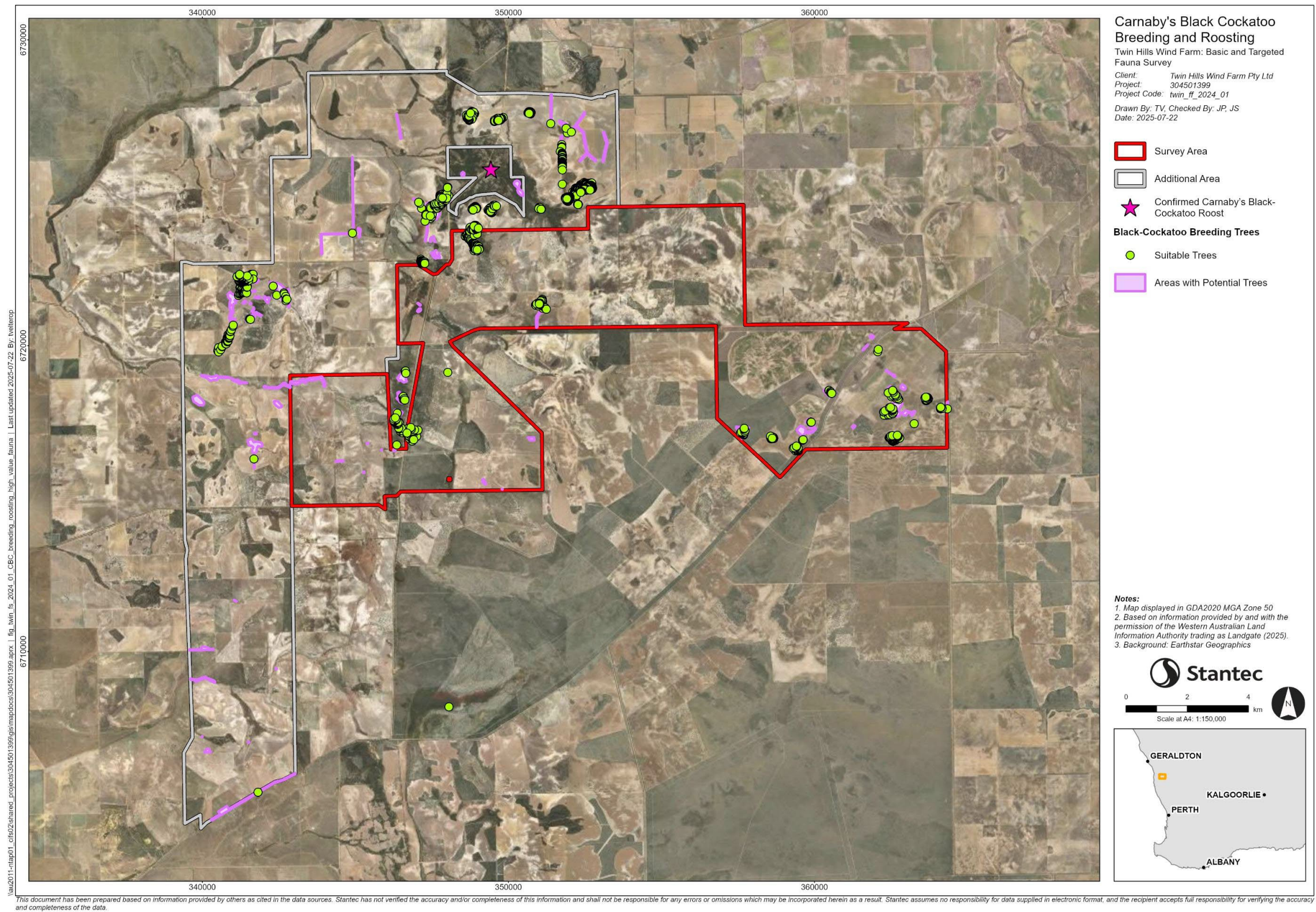


Figure A 27: CBC breeding and roosting

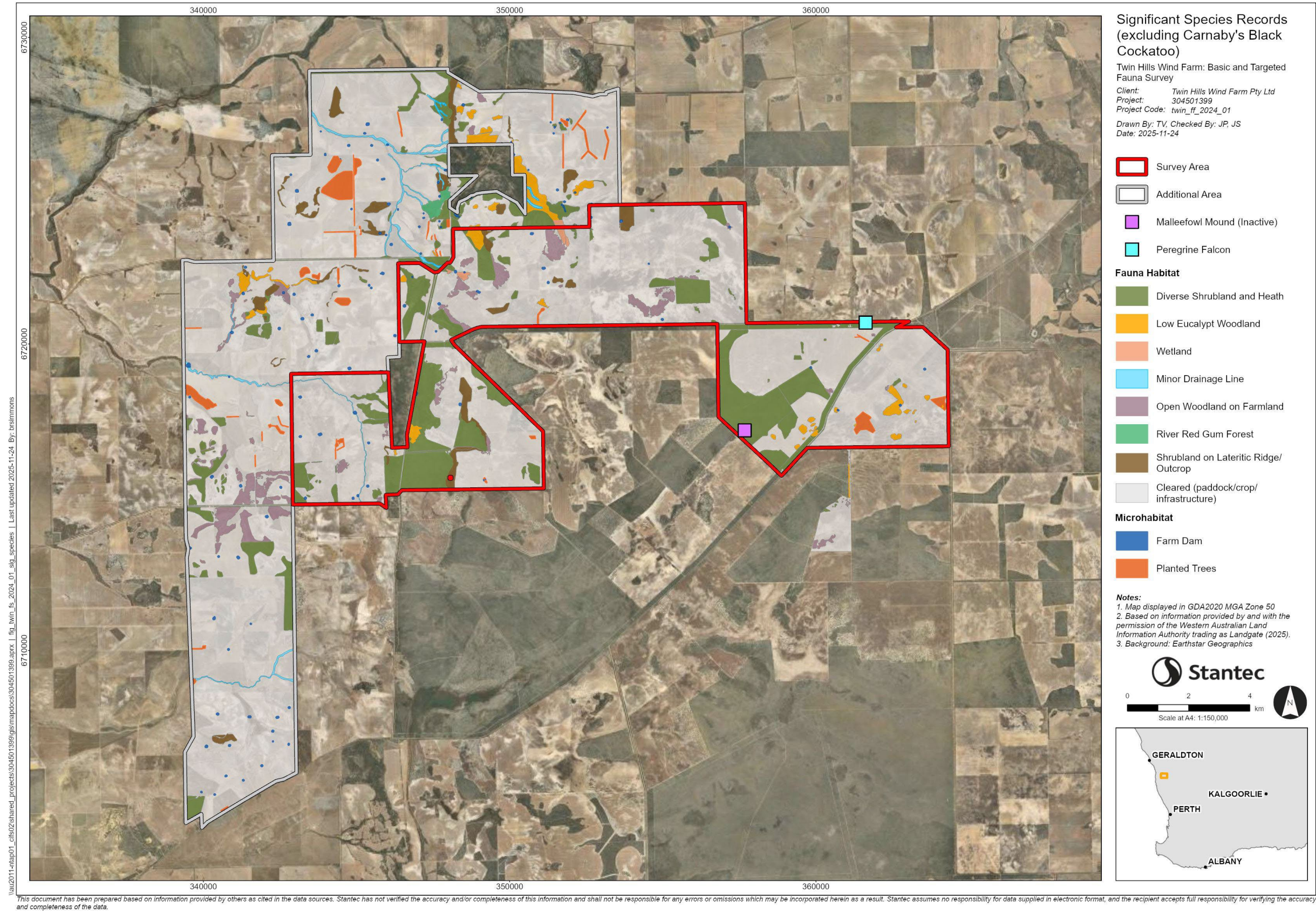


Figure A 28: Significant species records (excluding CBC)

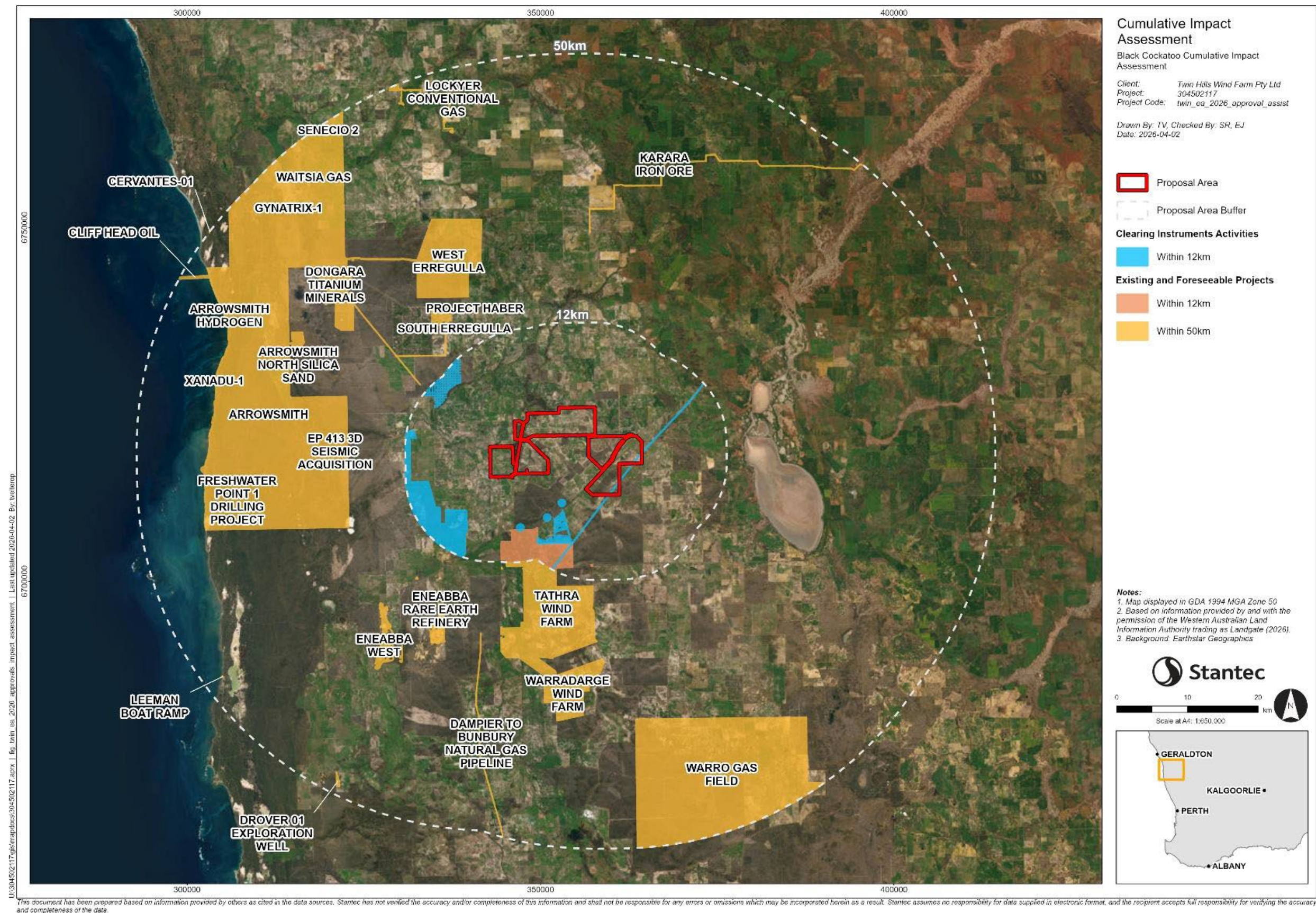


Figure A 29: Cumulative impact assessment

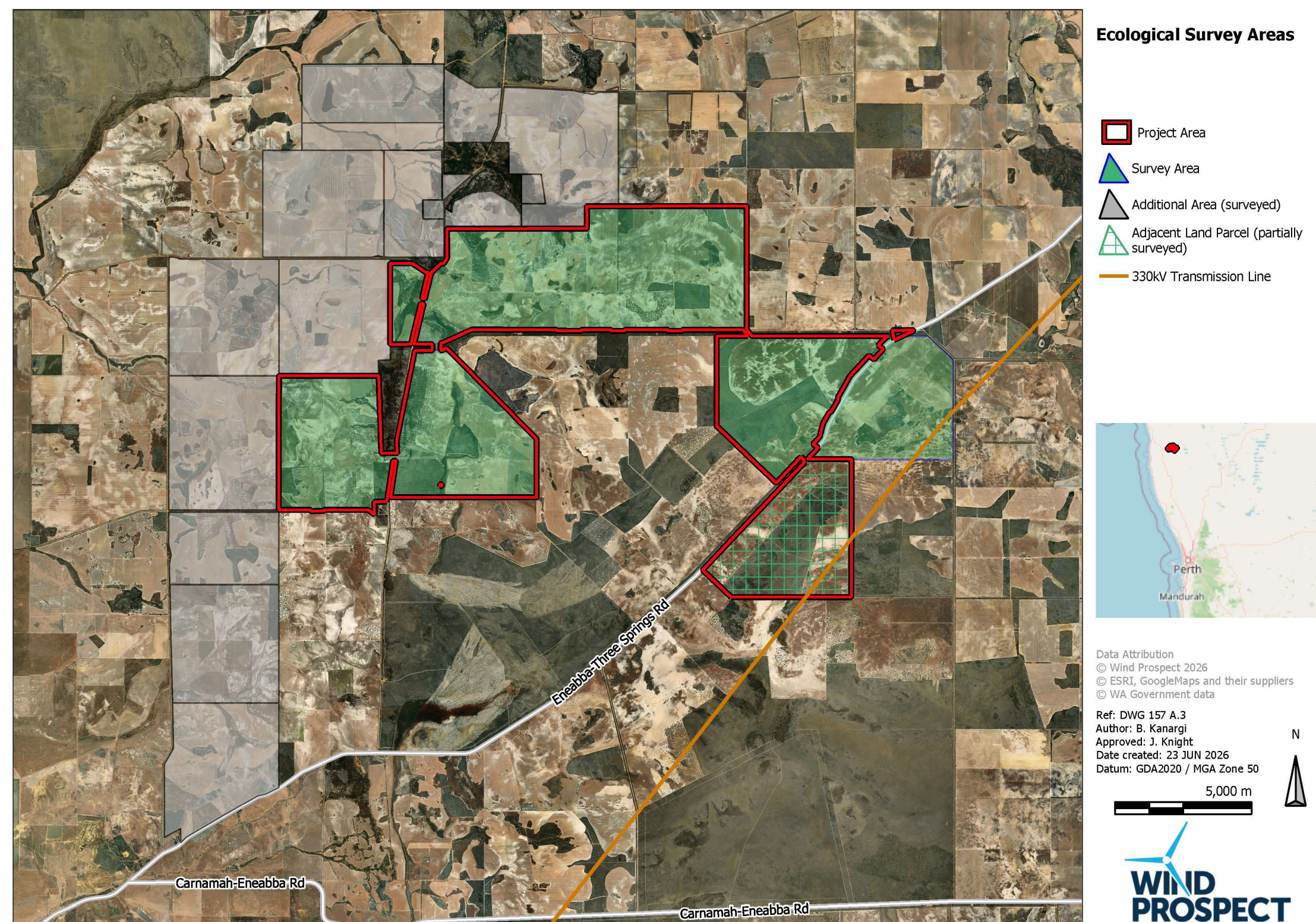


Figure A 30: Survey Area



Appendix B – Legislative context

Table B-1: Other decision-making authority approvals

Decision-making authority	Legislation or Agreement regulating the activity	Proposal element	Approval required/amended
Regional Development Assessment Panel (RDAP), Shire of Three Springs	Planning and Development Act 2005; P&D (Development Assessment Panels) Regulations 2011; P&D (Local Planning Schemes) Regulations 2015	All elements of the Project	Development Approval
Department of Water and Environmental Regulation (DWER)	Environmental Protection Act 1986, Part V Division 2; Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Clearing of native vegetation	Native Vegetation Clearing Permit(s)
	Rights in Water and Irrigation Act 1914, ss 11, 17, 21A	Water access for construction	26D licence to construct a bore and/or 5C licence to take water, if required
Department of Planning, Lands and Heritage (DPLH)	Aboriginal Heritage Act 1972; Aboriginal Heritage Regulations 1974	Ground disturbance potentially affecting Aboriginal sites	s16 / s18 authorisation or consent, or Reg 7 / Reg 10 authorisation, if required
DCCEEW (Commonwealth)	Environment Protection and Biodiversity Conservation Act 1999	Action as a whole (MNES)	Referral decided "Not a Controlled Action – Particular Manner" (EPBC 2025/10407); no further approval required provided the particular manners are met

Table B-2: Other statutory decision-making processes which can mitigate potential impacts on the environment

Environmental impact	How is the impact regulated by other decision-making process(es)?	Limits of the decision-making process(es)	Likely environmental outcome, and consistency with EPA objective	Conditions, enforcement and review	Stakeholder engagement
Flora and Vegetation					
Clearing of native vegetation (up to 17.14 ha)	Part V Division 2 of the EP Act — Native Vegetation Clearing Permit assessed by DWER against the ten clearing principles	Permit-specific; assesses significant flora, biodiversity, significant fauna habitat and conservation areas; time-limited	Clearing limited to the permitted extent, with offsets applied as a permit condition; consistent with the EPA objective for Flora and Vegetation	NVCP conditions enforceable under the EP Act; compliance reporting; review on renewal/amendment	DWER publishes NVCP applications for public comment
Terrestrial Fauna					
Loss of Carnaby's Black-Cockatoo and Western Spiny-tailed Skink habitat; bird/bat collision risk	Part V NVCP (habitat clearing); EPBC Act particular manners (MNES); Biodiversity Conservation Act 2016 (taking of fauna, if applicable)	EPBC particular manners cap clearing at 14.97 ha CBC foraging habitat, two potential breeding trees and 5.10 ha WSTS habitat, and set turbine operating requirements	Residual impacts managed to below significant levels; consistent with the EPA objective for Terrestrial Fauna	EPBC particular manners are legally binding; NVCP conditions; BC Act licensing conditions where relevant	DWER and DCCEEW referral/assessment processes

Social Surroundings (other environmental factor)					
Disturbance to Aboriginal heritage; operational noise	Aboriginal Heritage Act 1972 (heritage); EP (Noise) Regulations 1997 and the planning framework (noise and amenity)	AH Act consents constrain impacts to authorised areas; noise assessed against the applicable criteria at the DA stage	Heritage impacts avoided or authorised and managed; noise within applicable limits; consistent with the EPA objective for Social Surroundings	AH Act authorisations; DA conditions; noise compliance at commissioning	YSRC consultation; DA public process

Table A2-3: Consideration of the Object and principles of the EP Act

Principle	Consideration
1. The precautionary principle	Multi-year baseline surveys (detailed flora, basic and targeted fauna, and eight quarterly bird and bat utilisation surveys) informed the assessment. Species were conservatively screened in where occurrence was "likely," conservative mitigation was adopted (60 m minimum blade tip height above observed CBC flight heights, 2 km roost setback, 500 m setback from Wedge-tailed Eagle nests), and the BBMP provides monitoring, adaptive-management triggers and a commitment to supplementary survey should the footprint be materially revised.
2. The principle of intergenerational equity	The Project displaces fossil-fuel generation and contributes to reduced greenhouse gas emissions for the benefit of future generations. Native vegetation clearing has been avoided and minimised (approximately 97% of the Footprint lies over cleared agricultural land, and less than 1% of the vegetation within the Project Area would be cleared), and temporary disturbance areas would be rehabilitated.
3. Principles relating to improved valuation, pricing, and incentive mechanisms	Residual native vegetation clearing would be offset as a condition of the NVCP in accordance with the WA Environmental Offsets Policy, internalising the cost of residual impacts. The Proponent bears the costs of mitigation, rehabilitation and ongoing environmental management.
4. The principle of the conservation of biological diversity and ecological integrity	The layout was designed to avoid higher-value vegetation and habitat and to use predominantly cleared land. No TECs or PECs would be impacted; the assessed vegetation system associations retain above the 30% threshold post-impact; and impacts to CBC foraging and breeding habitat and WSTS habitat have been minimised and would be offset.
5. The principle of waste minimisation	Construction and operational waste would be managed under the CEMP, and turbine components and infrastructure would be removed and recycled where practicable at decommissioning. Waste generation is limited.
6. Description of how the Object of the EP Act has been considered	The Project has been referred and assessed under Part IV of the EP Act. Impacts have been avoided and minimised through the mitigation hierarchy, residual impacts are not considered significant, and the assessment is consistent with the Object of protecting the environment, having regard to the principles above.

Appendix C – Environmental factors or matters

The EPA's environmental factors were each considered to determine their relevance to the Project. The key environmental factors - Flora and Vegetation and Terrestrial Fauna, and the other environmental factor assessed - Social Surroundings - are assessed in Sections 4, 5 and 6 of this ERD respectively. The remaining environmental factors were considered and determined not to be key environmental factors for the Project. The determination and rationale for each factor are set out in the following table.

Consideration of EPA environmental factors

Theme	Factor	Assessment
Sea	Benthic communities and habitats	Not a Key Environmental Factor The Project Area is entirely onshore, with its closest point being approximately 40 km from the nearest coastline.
	Coastal processes	Not a Key Environmental Factor The Project Area is entirely onshore, with its closest point being approximately 40 km from the nearest coastline.
	Marine environmental quality	Not a Key Environmental Factor The Project Area is entirely onshore, with its closest point being approximately 40 km from the nearest coastline.
	Marine fauna	Not a Key Environmental Factor The Project Area is entirely onshore, with its closest point being approximately 40 km from the nearest coastline.
Land	Flora and Vegetation	Key Environmental Factor Native vegetation would need to be cleared for the Project.
	Landforms	Not a Key Environmental Factor No significant landforms are proposed to be impacted by the Project.

Theme	Factor	Assessment
	Subterranean Fauna	Not a Key Environmental Factor Ground disturbance would be limited to a maximum of 543.6 ha within the total Project Area of 9,912.25 ha. It is assumed that wind turbine foundations would require excavations approximately 7 m below the surface. Some groundwater extraction and dewatering may be required to cross small surface waterways and redirect flows around critical infrastructure. The above potential impacts are considered as minor and are not expected to result in significant impacts to Subterranean Fauna.
	Terrestrial Environmental Quality	Not a Key Environmental Factor Approximately 97% of the Proposed Development Footprint lies over cleared agricultural land. The native vegetation that falls within the Proposed Development Footprint is less than 1% of that within the Project Area. Other potential impacts to Terrestrial Environmental Quality listed in the respective Environmental Factor Guideline are not relevant to the Project.
	Terrestrial Fauna	Key Environmental Factor Two BC Act-listed species were confirmed, and five BC Act-listed species were deemed as likely in the Project Area. 17.14 ha of native vegetation that may be used as habitat for these species would need to be cleared. Additionally, there is the potential for interactions with wind turbines for bird species.

Theme	Factor	Assessment
Water	Inland Waters	Not a Key Environmental Factor The Project Area does not intersect with any Proclaimed Surface Water Areas. The Project Area spans across the Arrowsmith River and Moore-Hill River catchments, does not intersect the Arrowsmith River or any other major watercourses, but does intercept smaller unnamed tributaries. The nearest Protection Zones for Public Drinking Water Source Areas is approximately 15 km to the southwest of the Project Area. There are no Aquatic or Subterranean GDEs present in the Project Area, based on mapping by the Bureau of Meteorology. Results from the DCCEEW Protected Matters Search Tool (PMST) have indicated that there are no wetlands of international importance located downstream of the Project Area, and that the closest wetland of international importance is over 300 km from the Project Area. Some minor groundwater extraction and dewatering may be required to cross small surface waterways and redirect flows around critical infrastructure. Most of the Project infrastructure is located outside of 1% Annual Exceedance Probability flood areas.
	Air Quality	Not a Key Environmental Factor Some dust would be generated during construction and transportation activities, but not enough to significantly impact Air Quality.
	Greenhouse Gas Emissions	Not a Key Environmental Factor Greenhouse gas emissions from the Project would be less than 100,000 tonnes CO₂e per year for its entire life cycle

Theme	Factor	Assessment
People	Social Surroundings	Other Environmental Factor Aboriginal heritage sites may occur within the Project Area. The Project would generate noise from wind turbines and other proposed infrastructure during operation. Wind turbines installed for the Project may impact visual amenity.
	Human Health	Not a Key Environmental Factor The Project would not require mining, processing, storage of, transport of, or the use of radioactive minerals, ores, or materials that would impact Human Health.

Appendix D – Bird and Bat Management Plan

Appendix E – Basic and Targeted Fauna Survey Report

Appendix F – Detailed and Targeted Flora Survey Report

Appendix G – Stakeholder Engagement Plan

Appendix H – Bird and Bat Utilisation Survey Report



Appendix I – Orchid Memorandum

Appendix J – Carnaby’s Cockatoo *Calyptorhynchus latirostris* in the Eneabba Region

Appendix K – Vegetation Impact Memorandum

Appendix L – Aboriginal Desktop Heritage Assessment

Appendix M – Detailed Acoustic Assessment and Background Noise Monitoring report

Appendix N – Visual Impact Assessment

Appendix O – Shadow Flicker Assessment

Appendix P – EMI Assessment

Appendix Q1 – Hydrology Technical Report

Appendix Q2 – Water Management Report

Appendix R – Carnaby’s Black Cockatoo Cumulative Impact Assessment

Appendix S – Traffic Impact Statement and Route Survey

Appendix T – Aviation Impact Assessment

Appendix U – Holistic impact assessment

A holistic assessment of potential impacts from the Project on Environmental Factors is presented in the following table.

Holistic assessment of potential impacts from the Project

Environmental Factors					
Potential impact	Terrestrial Fauna	Flora and Vegetation	Social Surroundings	Greenhouse Gas Emissions	Air Quality
Clearing vegetation and construction activities.	Loss of individuals. Fragmentation, or modification of habitat from clearing, dust, or introduction of weeds.	Loss of vegetation. Reduction in quality of vegetation from dust or introduction of weeds.	Noise emissions. Dust emissions.	Release of carbon from cleared organic matter. CO ₂ emissions from running construction machinery.	CO ₂ emissions from running construction machinery.
Operating plant.	Loss of individuals due to collisions with wind turbines or fire events.	Loss from fire events.	Noise emissions. Changes to visual amenity from wind turbines.	Release of carbon from burnt organic matter during fire events. CO ₂ emissions from running auxiliary equipment (e.g. back-up generators).	Smoke from burnt organic matter during fire events. CO ₂ emissions from running auxiliary equipment (e.g. back-up generators).
Operation of vehicles.	Loss of individuals due to collisions with vehicles.	Reduction in vegetation condition due to dust generation.	Temporary traffic impacts during construction Noise emissions.	CO ₂ emissions from vehicles.	CO ₂ emissions from vehicles.

Environmental Factors

Decommissioning activities	Loss of individuals from clearing, vehicle collisions, and disturbance during removal of infrastructure.	Temporary disturbance to vegetation condition from vehicle movements and machinery. Opportunity for vegetation rehabilitation of temporary clearing areas.	Temporary noise and traffic impacts during removal of infrastructure.	Release of carbon from any vegetation re-cleared for access during decommissioning. CO ₂ emissions from running decommissioning machinery.	CO ₂ emissions from running decommissioning machinery.
----------------------------	--	--	---	---	---

As shown in , the environmental factors most subject to interactive and connected impacts from the Project are Terrestrial Fauna, Flora and Vegetation, and Social Surroundings.

Flora and Vegetation / Terrestrial Fauna: The primary holistic interaction is between clearing of native vegetation and impacts to fauna that depend on that vegetation for foraging, roosting, breeding and movement. The most ecologically significant expression of this interaction is the relationship between vegetation clearing and Carnaby's Black-Cockatoo habitat. As discussed in Sections 3 and 4, the Proposed Development Footprint intersects 14.97 ha of CBC foraging habitat with a score of 10 and two potential breeding trees, representing less than 1% of those values within the Project Area. No suitable breeding trees, no confirmed roosting habitat, and no Threatened or Priority flora species occur within the Footprint. The interactive impact of vegetation clearing on CBC habitat quality and connectivity is therefore not considered to elevate the combined significance of residual impacts beyond what is assessed for either factor individually.

Flora and Vegetation / Social Surroundings: Dust generated from vehicle movements and construction activities has the potential to temporarily reduce vegetation condition adjacent to access tracks and work areas. This impact is confined to the construction phase and is managed through speed limits on unsealed tracks and dust suppression measures in the CEMP. This interaction does not create a residual impact considered significant for either factor.

Terrestrial Fauna / Social Surroundings: Lighting associated with the substation and maintenance yard has the potential to attract or disorient nocturnal fauna. Vehicle movements during construction and operation have the potential to cause fauna-vehicle collisions. Directive lighting, light hoods and motion-activated security lighting committed to in Section 4.4 minimise light spill beyond fenced areas. Speed limits on unsealed tracks reduce fauna-vehicle collision risk. These measures reduce the interactive impact between these two factors to below significant levels.

As shown in , potential impacts from the Project may also interact with the Greenhouse Gas Emissions and Air Quality Environmental Factors. The mitigation measures discussed in Sections 3.4 and 4.4 would serve to reduce CO₂ emissions 1) from clearing activities by minimising the amount of clearing required to construct the Project, and 2) from fire events by implementing appropriate procedures and plans. CO₂ emissions from operating auxiliary equipment and vehicles for the Project are anticipated to not be significant. The Project would serve to reduce overall CO₂ emissions from power generating assets in WA over its 30-year operational life.

Overall, the potential holistic impacts from the Project are not considered to be greater than potential impacts on any single Environmental Factor. No combination of interactive impacts gives rise to a residual impact that would be considered significant, and the Project can therefore be implemented in a manner that is consistent with the EPA objectives for each relevant Environmental Factor.