Environmental Review Document

Hamersley Residential Development and Conservation

Project No: EP24-129(08)

EPA Assessment No: 2251

Prepared for BAI Communications
December 2025

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		Claire Rogers	CSR		
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Invitation to Make a Submission

The Environmental Protection Authority (WA) (EPA) invites people to make a submission on the environmental review for this proposal.

Digital 4 Pty Ltd (the proponent) propose the residential development and conservation of Lot 802 Erindale Road, and Lot 1 and Lot 803 Wanneroo Road, Hamersley, referred to as 'the proposal'. The proposal is located approximately eleven kilometres (km) north of the Perth Central Business District (CBD). The EPA has determined that the proposal is to be assessed under Part IV of the *Environmental Protection Act 1986* (EP Act). The decision to assess the proposal was made on 24 June 2020 including the requirement for assessment on referral information with additional information required to assist with the EPA's assessment process.

Due to the extended history of the proposal and to appropriately address the latest EPA requirements, this document has been prepared as an Environmental Review Document (ERD). This ERD has been prepared by in consultation with the EPA, decision-making authorities and interested agencies in accordance with the EPA's Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual.

The ERD is available for a public review period of 2 weeks from **3 December 2025**, closing on **17 December 2025**.

Information on the proposal from the public may assist the EPA to prepare an assessment report in which it will make recommendations on the proposal to the Minister for Environment.

Why write a submission?

The proponent seeks information that will inform the EPA's consideration of the likely effect of the proposed development, if implemented, on the environment. This may include relevant new information that is not within the ERD, such as alternative courses of action or approaches.

In preparing its assessment for the Minister for Environment, the EPA will consider information in submissions, the proponent's responses and other relevant information.

Submissions will be treated as public documents unless provided and received in confidence, subject to the requirements of the *Freedom of Information Act 1992* (WA).

Why not join a group?

It may be worthwhile joining a group or other groups interested in making a submission on similar issues. Joint submissions may help to reduce workload for an individual or group. If you join a small group (up to 10 people) please indicate the names of the participants. If your group is larger, please indicate how many people your submission represents.

Developing a submission

You may agree or disagree with, or comment on information in the ERD. When making comments on specific elements of the ERD:

- Clearly state your point of view and give reasons for your conclusions
- Reference the source of your information, where applicable
- Suggest alternatives to improve outcomes to the environment.

What to include in your submission

Include the following in your submission to make it easier for the EPA to consider your submission:

- Your contact details – name and address
- Date of your submission
- Whether you want your contact details to be confidential
- Summary of your submission, if your submission is long
- List points so that issues raised are clear, preferably by environmental factor
- Refer each point to the page, section, and if possible, the paragraph of the ERD
- Attach any reference material, if applicable. Make sure your information is accurate.

The closing date for submission is: **17 December 2025**

The EPA prefers submissions to be made electronically via the EPA's Consultation Hub at https://consultation.epa.wa.gov.au

Alternatively, submissions may be:

- **Posted to:** The Chairman, Environmental Protection Authority Locked Bag 10, Joondalup DC WA 6919; or
- **Delivered to:** Environmental Protection Authority Prime House, 8 Davidson Terrace, Joondalup, WA 6919.

If you have any questions on how to make a submission, please email info.epa@dwer.wa.gov.au or phone EPA Services – Department of Water and Environmental Regulation on 6364 7000.

Assessment Information Checklist

The proposal was originally referred to the Environmental Protection Authority (EPA) in April 2020 under Section 38 of the *Environmental Protection Act 1986* (EP Act) with the referral, referral supporting documentation and assessment documentation previously prepared by Strategen JBS&G on behalf of the proponent.

There have been various requests for information from the EPA to support the referral decision and assessment process since the original referral in April 2020. Due to the extended history of the project and to appropriately address the latest EPA requirements, this document has been prepared as an Environmental Review Document (ERD) and **Table A1** below provides referencing of the assessment information required by the EPA in the Notice Requiring Information for Assessment (July 2020) (**Appendix A**) and Additional Assessment Information (May 2022), that has been addressed within this ERD.

Table A 1: Assessment Information Checklist

Task ID No.	Notice Requiring Information (July 2020)	Strategen JBS&G (2021) Supporting Documentation report section	ERD (this report) section
Environmental factor: Flora and Vegetation			
1	Identify, quantify and assess the values and significance of flora and vegetation, including the communities and condition, within the proposal area and the immediate adjacent area (within the context of the proposal) in accordance with EPA guidance. Please describe these values in a local and regional context.	Appendix H Section 4.2.3	**Section 5**
2	Outline and justify the proposed application of the mitigation hierarchy in the proposal. Detail actions undertaken to avoid, minimise and mitigate proposal impacts. Include management and/or monitoring plans to be implemented to demonstrate that residual impacts are not greater than predicted. Management and/or monitoring plans are to be presented in accordance with EPA instructions.	Section 4.2.6.2 Section 4.2.6.3 Section 6	**Section 5.4** **Section 5.5** **Appendix H**
3	Provide a summary of residual impacts of the proposal.	Section 6.1	**Section 5.6**
4	Identify management and mitigation measures for the proposal which demonstrate that the EPA's objective can be met.	Appendix I (CEMP)	**Section 5.5** **Appendix H**
Environmental factor: Terrestrial Fauna			
5	Identify, quantify and assess the values and significance of fauna, fauna habitat and habitat connectivity within the proposal area and the immediate adjacent area (within the context of the proposal) and describe these values in a local and regional context in accordance with EPA guidance.	Appendix K Appendix J Appendix H Section 4.3.3	**Section 6** **Appendix H**
6	Describe and assess the potential impacts as a result of the proposal (including fragmentation) on fauna and significant fauna, including short-range endemic (SRE) invertebrate fauna. Estimate the number of significant species that are likely to be impacted, in the context of the existing population, as a result of direct and indirect impacts to fauna habitat.	Appendix H Section 4.3.4 Section 4.3.6	**Section 6.3.4**

Table A 1: Assessment Information Checklist (continued)

Task No.	Notice Requiring Information (July 2020)	Strategen JBS&G (2021) Supporting Documentation report section	ERD (this report) section
Environmental factor: Terrestrial Fauna (continued)			
7	Outline and justify the proposed application of the mitigation hierarchy in the proposal. Detail actions undertaken to avoid, minimise and mitigate proposal impacts. Include management and/or monitoring plans to be implemented to demonstrate that residual impacts are not greater than predicted. Management and/or monitoring plans are to be presented in accordance with EPA instructions.	Section 4.3.6 Section 6	**Section 6.5** **Appendix H**
8	Consult with DBCA when dealing with matters related to management actions to ameliorate impacts to fauna.	Appendix I (CEMP)	**Appendix H**
9	Provide a summary of residual impacts of the proposal.	Section 6.1	**Section 6.6**
10	Identify management and mitigation measures for the proposal which demonstrate that the EPA's objective can be met.	Appendix I (CEMP)	**Section 6.5**
Environmental factor: Greenhouse Gas Emissions			
11	Estimate the expected Scope 1 (direct) and Scope 2 (indirect) net greenhouse gas emissions (i.e. quantity of carbon dioxide equivalent (CO2-e)) on an annual basis and over the life of the proposal inclusive of changes to land use (clearing of vegetation). Detail the methods used to estimate the net greenhouse emissions.	Section 5.1	**Section 7.3**
12	Describe the considered and proposed mitigations that demonstrate all reasonable and practicable measures have been applied at each step of the mitigation hierarchy (avoid, reduce and/or offset) regarding the effect on greenhouse gas emissions.	Section 5.1	**Section 7.4**
13	Where scope 1 emissions are estimated to exceed 100,000 tonnes per year, develop a Greenhouse Gas Management Plan in accordance with the EPA's Environmental Factor Guideline: Greenhouse Gas Emissions and demonstrate how the EPA's objective for this factor can be met.	Section 5.1	**Section 7.3.3**
Other matters to be addressed: Human Health			
14	Provide a risk assessment of radiation exposure to future residents from radio frequency radiation emitting from the broadcasting transmitters on Lot 803.	Section 5.2	**Section 8**
Environmental Offsets			
15	Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (2014).	Section 6.1	**Section 9** **Appendix L**
16	Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines. Spatial data defining the area of significant residual impacts for each environmental value should also be provided (e.g. vegetation type, vegetation condition, specific fauna species habitat).	Section 6.2 Appendix G	**Section 9** **Appendix L**

Executive Summary

Digital 4 Pty Ltd (the proponent) propose the residential development and conservation of Lot 802 Erindale Road, and Lot 1 and Lot 803 Wanneroo Road, Hamersley (herein referred to as 'the proposal') within the City of Stirling, Western Australia, approximately 12 km north of the Perth Central Business District (CBD). Digital 4 Pty Ltd is a wholly owned subsidiary of BAI Communications Pty Ltd (BAI Communications), who are the landowners of Lot 802 Erindale Road, and Lot 1 and Lot 803 Wanneroo Road, Hamersley. The proposal and associated development envelope is 33.21 ha. The residential area will involve the construction of access roads, residential housing lots and associated utilities and civil infrastructure as well as public open space. The conservation area (within Lot 1 and Lot 803) will be managed for conservation purposes including retention, protection and restoration efforts and no construction is proposed.

The development envelope is zoned 'Urban' under the Metropolitan Region Scheme (MRS) and zoned 'Public use – Commonwealth' under the City of Stirling Local Planning Scheme No. 3 (LPS No. 3). A scheme amendment under LPS No. 3 will need to be progressed with the Western Australian Planning Commission (WAPC) and the City of Stirling to rezone the development envelope from 'Public use – Commonwealth' to 'Development Zone' and align the LPS No. 3 zoning with the MRS zoning.

The development envelope is appropriately zoned 'Urban' under the MRS and located within a designated 'Urban Corridor' and 'High Frequency Public Transport' area. As such the proposal supports infill objectives under the Central Sub-regional Planning Framework, optimising existing infrastructure and contributing to a more compact, sustainable city. Additionally, according to Bush Forever (Government of WA 2000) and *State Planning Policy 2.8 - Bushland policy for the Perth Metropolitan Region* (SPP 2.8) (Government of WA 2010), the native vegetation is considered locally significant and there is no Government policy which recommends that it should be conserved in the MRS as Parks and Recreation. Similarly the City of Stirling's Local Biodiversity Strategy (CoS 2010) does not identify the native vegetation as locally or regionally significant or recommend that it should be conserved. For these reasons there are planning, environmental and sustainability grounds for residential development of the whole site, which has been seriously contemplated by the proponent.

The proposal was originally referred to the Environmental Protection Authority (EPA) in April 2020 under Section 38 of the EP Act and decision was made the proposal requires assessment and approval; using the assessment on referral information (ARI) process. There has been several rounds of comments on referral information, which is a significant package of documents. To assist the public and EPA all these documents have been integrated into this Environmental Review Document (ERD). The ERD responds to all prior comments, includes the findings of additional ecological investigations and address the three environmental factors identified by the EPA, that is flora and vegetation, terrestrial fauna and greenhouse gas emissions.

The proposal's residential development area supports three (3) priority ecological communities (PEC) and two (2) priority flora species. A total of approximately 60% of the development envelope is proposed for conservation purposes. The proposal will avoid 16.37 ha of native vegetation comprising seven vegetation types, of which 14.74 ha is representative of the 'Karrakatta complex -

central and south' including one (1) threatened ecological community (TEC), two (2) PECs and two (2) priority flora species. The following residual impacts to flora and vegetation are anticipated as a result of the proposal once mitigation measures have been applied:

- Up to 12.29 ha of native vegetation ranging from 'completely degraded' to 'very good' condition associated with vegetation units BMpXp, BpGvJxXp, EmBaXp and EmBHh, of which up to 7.88 ha is representative of the 'Karrakatta – Central and South' vegetation complex
- 12.29 ha of 'Banksia woodlands of the Swan Coastal Plain' PEC
- 0.88 ha of SCP 21c 'low lying *Banksia attenuata* woodlands of shrublands' PEC
- 3.63 ha of 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' PEC
- 80 *Acacia benthamii* (P2) individuals
- 1,559 *Jacksonia sericea* (P4) individuals.

The residual impacts to Banksia Woodlands PEC is anticipated to be a significant impact.

The development envelope comprises suitable habitat for Carnaby's black cockatoo (CBC), forest red-tailed black cockatoo (FRTBC), quenda and Swan Coastal Plain (SCP) shield-back trapdoor spider (trapdoor spider) and potentially suitable habitat for the black striped snake. The following residual impacts to terrestrial fauna habitat are anticipated as a result of the proposal once mitigation measures have been applied:

- The permanent loss of up to 12.29 ha of banksia woodland habitat suitable for conservation significant CBC, FRTBC, quenda and trapdoor spider and potentially suitable for black-striped snake
- The permanent loss of up to 12.30 ha of potential foraging resources for CBC
- The permanent loss of 7.45 ha of potential foraging resources for FRTBC
- 41 potential nesting trees.

The proposal is likely to have significant residual impacts to CBC and FRTBC, which will be acceptably mitigated through the implementation of the Conservation Area Management Plan (CAMP) and Construction Environment Management Plan (CEMP), and residual impacts addressed through the implementation of an Offset Strategy.

Table ES1 summarises the key environmental values within the proposal's development envelope, the potential impacts, proposed mitigation, residual impacts and predicted environmental outcomes of the proposal in relation to each key environmental factor.

Table ES: 1: Summary of key environmental values, potential impacts, proposed mitigation and proposed environmental outcomes

Potential Risks	Key environmental values and proposed mitigation	Residual Impacts	Proposed environmental outcomes
Key Environmental Factor: Flora and Vegetation			
Unapproved clearing of flora and vegetation Direct impact through the loss of flora, vegetation and fauna habitat and potentially indirect impact through increased edge effects and fragmentation due to clearing activities. Spread or introduction of weeds or pathogens Indirect and direct impact through reduced extent or quality of flora, vegetation and fauna habitat in the conservation area due to clearing activities. Habitat fragmentation Indirect and direct impact through reduced extent or quality of flora, vegetation and fauna habitat through increased edge effects and fragmentation due to construction activities. Bushfire Direct and indirect impact to remaining flora and vegetation through increased fire risk due to construction activities.	The residential development area comprises 12.29 ha of eight native vegetation units with banksia woodland type vegetation ranging from 'completely degraded' to 'excellent' condition and is representative of the 'Karrakatta complex -central and south' vegetation complex, which is well represented in the locality and region relevant to the proposal. The residential development area comprises 3 PECs and 2 priority flora species. The proposal will avoid 16.37 ha of native vegetation comprising seven vegetation types representing the 'Karrakatta complex -central and south' including 1 TEC, 2 PEC and 2 priority flora species. The proposal will be subject to the CAMP and associated rehabilitation works and long-term protection of the conservation area. The CAMP determines the risks to the successful implementation of the CAMP and the achievement of environmental outcomes. Clearing activities within the development envelope will be managed in accordance with a CEMP which will include the following management measures: • Defining the clearing area before any clearing commences • Appropriate construction management protocols such hygiene and dust controls • Construction management controls to reduce the risk of bushfire and impacts on surrounding vegetation • Establishment of an Asset protection zone (APZ) to create a buffer from construction work to the retained conservation area. Due to the increased presence of people and ignition sources there is potential for increased fire risk, which could affect flora and vegetation in adjacent reserves. This risk will be mitigated through implementation of the CEMP, including the following management measures: • Limiting the types of machinery used in different weather conditions, limiting where different types of machinery can be used, specifying the time of year that certain activities can be undertaken, provision of suitable water supplies to extinguish any ignitions, amongst other considerations.	The following residual impact is anticipated as a result of the proposal once mitigation measures have been applied: • The permanent loss of up to 12.29 ha of native vegetation representing the 'Karrakatta – Central and South' vegetation complex • 12.29 ha of Banksia Woodlands PEC • 0.88 ha of SCP 21c 'low lying *Banksia attenuata* woodlands of shrublands' PEC • 3.63 ha of 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' PEC • 80 *Acacia benthamii* (P2) individuals • 1,559 *Jacksonia sericea* (P4) individuals. The residual impacts to Banksia Woodlands PEC is anticipated to be a significant impact and subject to an Offset Strategy.	Impacts on conservation significant flora and vegetation and indirect impacts will be acceptably mitigated through the implementation of the CAMP, CEMP and Offset Strategy.

Table ES: 2: Summary of key environmental values, potential impacts, proposed mitigation and proposed environmental outcomes (continued)

Potential Risks	Key environmental values and proposed mitigation	Residual Impacts	Proposed environmental outcomes
Key Environmental Factor: Terrestrial Fauna			
<u>Fauna interactions</u> Direct impact to fauna through injury or mortality due to clearing of vegetation within the residential development area. <u>Unapproved clearing of flora and vegetation</u> Direct impact through the loss of flora, vegetation and fauna habitat and potentially indirect impact through increased edge effects and fragmentation due to clearing activities. <u>Spread or introduction of weeds or pathogens</u> Indirect and direct impact through reduced extent or quality of flora, vegetation and fauna habitat in the conservation area due to clearing activities. <u>Habitat fragmentation</u> Indirect and direct impact through reduced extent or quality of flora, vegetation and fauna habitat through increased edge effects and fragmentation due to construction activities.	The residential development area comprises 12.29 ha including of native fauna habitat types. The development envelope comprises suitable habitat for CBC, FRTBC, quenda and trapdoor spider and potentially suitable habitat for the black-striped snake. The habitat is representative of the 'Karrakatta complex -central and south' vegetation complex, which is well represented in the locality and region relevant to the proposal. The proposal will avoid 16.37 ha of native fauna habitat types, of which 14.74 ha representing the 'Karrakatta complex -central and south' including habitat or potential suitable habitat for CBC, FRTBC, quenda and SCP trapdoor spider and potentially suitable habitat for the black striped snake. This area will be subject to the CAMP and associated rehabilitation and restoration works. Clearing activities within the development envelope will be managed in accordance with a CEMP which will include the following management measures: • Implementation of a pre-clearing trapping program and pr-clearing inspections • Defining the clearing area before any clearing commences • Directional clearing toward the retained conservation area • During clearing works, having a suitably qualified and experienced fauna spotter/handler supervising the clearing activities, to actively search for fauna during clearing, relocate any opportunistically identified fauna, and attend to any injured fauna • Establishment of an Asset protection zone (APZ) to create a buffer from construction work to the retained conservation area • Providing training and inductions to construction personnel regarding fauna management • Having a protocol in place to manage any fauna which might be injured, for example taking injured fauna to the nearest wildlife or veterinary clinic.	The following residual impacts are predicted: • The permanent loss of up to 12.29 ha of banksia woodland habitat suitable for conservation significant CBC, FRTBC, quenda and trapdoor spider and potentially suitable for black-striped snake • The permanent loss of up to 12.30 ha of potential foraging resources for CBC • The permanent loss of 7.45 ha of potential foraging resources for FRTBC • 41 potential nesting trees for FRTBC. The residual impacts to CBC and FRTBC are anticipated to be a significant residual impact and subject to an Offset Strategy.	Impacts on conservation significant terrestrial fauna habitat and indirect impacts will be acceptably mitigated through the implementation of the CAMP, CEMP and Offset Strategy.

Table ES: 3: Summary of key environmental values, potential impacts, proposed mitigation and proposed environmental outcomes (continued)

Potential Impacts	Key environmental values and proposed mitigation	Residual Impacts	Proposed environmental outcomes
Key Environmental Factor: Greenhouse Gas Emissions			
<u>Direct emissions - Scope 1</u> Direct significant emissions from the clearing of native vegetation, construction activities and operation of machinery and plant equipment (Scope 1 emissions) during the implementation of the proposal.	A greenhouse gas (GHG) emissions assessment for the proposal found that the total annual Scope 1 emissions will be well below the 100,000 t CO_2-e per year significance threshold defined by the EPA. Notwithstanding, the proposal will incorporate several initiatives to reduce the whole-of-life GHG emissions associated with both its construction including but not limited to the following: • Selection of low carbon materials for construction (e.g., low carbon steel, warm-mix asphalt) • Incorporation of recycled materials into the design • Use of LED lighting • Exploration of options to incorporate solar power battery storage within the development • Solar / electric pool and water heating. No Scope 2 emissions are proposed.	There are no significant residual impacts anticipated as a result of the implementation of the proposal on this EPA factor.	On the basis that the total annual Scope 1 emissions are well below the 100,000 t CO_2-e per year threshold defined by the EPA, no significant impacts associated with GHG emissions are anticipated as a result of the implementation and ongoing operation of the proposal. Therefore, the EPA's objective for Greenhouse Gas Emissions will be met.

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Short Range Endemic Survey Assessment (Bennelongia Environmental Consultants 2023)

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Offset Strategy (Emerge Associates 2025f)

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Conservation Area Management Plan (Emerge Associates 2025c)

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Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
ABS	Australian Bureau of Statistics
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
BoM	Bureau of Meteorology
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DFES	Department of Fire and Emergency Services
DWER	Department of Water and Environment Regulation
DPLH	Department of Planning, Lands and Heritage
EPA	Environmental Protection Authority
WAPC	Western Australian Planning Commission

Table A2: Abbreviations – General terms

General terms	
CAMP	Conservation Area Management Plan
CBC	Carnaby's Black Cockatoo
CEMP	Construction Environmental Management Plan
ERD	Environmental Review Document
ESD	Environmental Scoping Document
FRTBC	Forest red-tailed black cockatoo
GHG	Greenhouse Gas
IBRA	Interim Biogeographic Regionalisation of Australia

Table A2: Abbreviations – General terms (continued)

General terms	
LPS No.3	City of Stirling Local Planning Scheme No. 3
SPP	State Planning Policy
P2	Priority 2
P3	Priority 3
P4	Priority 4
PDWSA	Public Drinking Source Area
PEC	Priority Ecological Community
PMST	Protected Matter Search Tool
POS	Public Open Space
SRE	Short Range Endemic
TEC	Threatened ecological community

Table A3: Abbreviations –Legislation

Legislation	
AH Act	*Aboriginal Heritage Act 1972*
BC Act	*Biodiversity Conservation Act 2016*
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
NTNS Act	*National Transmission Network Sale Act 1998*

Table A4: Abbreviations – units of measurement

Units of measurement	
ha	Hectare
m	Metre
m AHD	m in relation to the Australian height datum
m BGL	Metre below ground level

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1 Introduction

1.1 Proposal content

Digital 4 Pty Ltd (the proponent) propose the residential development and conservation of Lot 802 Erindale Road, and Lot 1 and Lot 803 Wanneroo Road, Hamersley (herein referred to as 'the proposal') within the City of Stirling, Western Australia, approximately 11 km north of the Perth Central Business District (CBD). It is noted that Digital 4 Pty Ltd is a wholly owned subsidiary of BAI Communications Pty Ltd (BAI Communications), who are the landowners of Lot 802 Erindale Road, and Lot 1 and Lot 803 Wanneroo Road, Hamersley.

The proposal includes two components:

- Residential development within Lot 802 Erindale Road and the western portion of Lot 803 Wanneroo Road ('the residential development'); and
- The conservation within Lot 803 and Lot 1 Wanneroo Road ('the conservation area').

The proposal's development envelope is 33.21 ha and is bounded by Erindale Road to the west, Reid Highway to the west, native vegetation to the east, south and a small portion in the north, residential development to the south and north and communications operations infrastructure to the east. The disturbance footprint of the proposal coincides with the residential development area, as shown in **Figure 1**.

The residential development will involve the construction of access roads, residential housing lots and associated utilities and civil infrastructure as well as public open space and an asset protection zone (APZ). Once cleared, construction will include bulk earthworks, construction of utilities and civil infrastructure (i.e. gas, electrical, water and sewer connection, stormwater and drainage, fencing, retaining walls, firebreaks and road, cycle or pedestrian assets), building construction, landscaping and access from the existing Hamersley locality through the proposal as well as public open space. The indicative concept plan is provided in **Appendix B**.

While residential development will be restricted to Lot 802, fuel reduction (i.e. treated as clearing works) associated with the APZ will extend into a portion of Lot 803 and include management and clearing of vegetation for bushfire management purposes as well as creating an interface and buffer to the adjacent conservation area. Clearing associated with the APZ will only be to the extent necessary to comply with current bushfire requirements and standards. The proposal allows for a 22 m APZ along the entire eastern boundary of Lot 802, however, the location of public open space (POS) along the eastern boundary of Lot 802, may result in a reduction to the clearing required for an APZ. The residential development area will retain environmental values (as shown in **Appendix B**) within future Public Open Space (POS) areas and include landscaping with non-native and local native species. Approximately 10% of the residential development area will be open space areas.

However, for the purposes of the impact assessment, it is assumed that construction associated with implementation of the proposal will result in the removal of all native vegetation within the residential development area.

The conservation area (within Lot 1 and Lot 803) is the proponent's voluntary commitment to avoidance within the development envelope and will be managed for conservation purposes including retention, protection and restoration efforts and no construction is proposed. A conservation covenant will be applied across the conservation area to ensure the long-term protection of the area and it will ultimately be vested and handed over to a public authority for continued conservation and management. Rehabilitation of completely degraded areas and restoration of degraded and good areas will be undertaken to improve the area and quality of native vegetation and associated flora, vegetation and fauna habitat.

The proponent details are provided in **Table 1**. As mentioned above, Digital 4 Pty Ltd is a wholly owned subsidiary of BAI Communications, who are the landowners of the site.

Table 1: Proponent Details

Proponent: Digital 4 Pty Ltd	
ABN / ACN	79 129 827 363
Address	Level 10, Tower A, 799 Pacific Highway, Chatswood NSW 2067 Australia
Key contact	Peter Lambourne

The key components of the proposal are provided in **Table 2** and **Table 3**. The Proposal Content Document is provided in **Appendix C**.

Table 2: General proposal content description

Item	Detail
Proposal title	Hamersley Residential Development and Conservation
Proponent name	Digital 4 Pty Ltd
Assessment number	2251
Location	Lot 802 Erindale Road and Lot 1 and 803 Wanneroo Road, Hammersley, WA.
Short description	Residential development and conservation at BAI Communication transmission facility at Lot 802 Erindale Road and Lot 1 and 803 Wanneroo Road, Hammersley, WA. Residential development incorporating access roads, residential housing lots and associated utilities and civil infrastructure as well as public open space (within Lot 802 Erindale Road). Additionally, the residential development area will incorporate an Asset Protection Zone (APZ) to reduce bushfire risk (within Lot 803 Wanneroo Road). The conservation area (within Lot 1 and Lot 803) will be managed for conservation purposes including retention, protection and restoration efforts The development envelope including the residential development area and conservation area is shown in **Figure 1.**

Table 3: Proposal content elements

Proposal Element	Location/Description	Maximum extent (ha)
Physical elements		
Residential development	Lot 802 Erindale Road and Lot 803 Wanneroo Road, **Figure 1**.	13.55
Conservation area	Lot 1 and Lot 803 Wanneroo Road, **Figure 1**.	19.66
Construction Elements		
Residential development	Removal of native vegetation, bulk earthworks, civil construction works, construction of homes and associated infrastructure.	13.55
Conservation area	No construction is proposed. All construction associated with the proposal will occur within the residential development area. Progressive rehabilitation of completely degraded areas and restoration of degraded and good areas to improve the area and quality of native vegetation and fauna habitat.	19.66
Operational Elements		
Residential development	Sale of residential land and vesting public land and infrastructure assets to the relevant authority.	13.55
Conservation area	Continued broadcasting operation purposes in parallel to ongoing management to maintain and enhance ecology values. When there is no requirement for broadcast transmission, the site will be decommissioned, and the conservation area will be handed over and vested in a public authority and continue to be managed for conservation purposes.	19.66
Proposal elements with greenhouse gas emissions		
Construction elements:		
Scope 1	The estimated maximum total annual direct emissions, including vegetation clearing and the operation of machinery, plant equipment and power generation is 3,329 tCO2-e	
Operation elements:		
Scope 2	N/A	
Rehabilitation		
In accordance with Conservation Area Management Plan (CAMP), progressive rehabilitation of completely disturbed areas and restoration of degraded areas to improve the area and quality of native vegetation and fauna habitat of the conservation area.		
Commissioning		
N/A		
Decommissioning		
N/A		

Table 3: Proposal content elements (continued)

Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life	120 years
	Construction phase	5 years

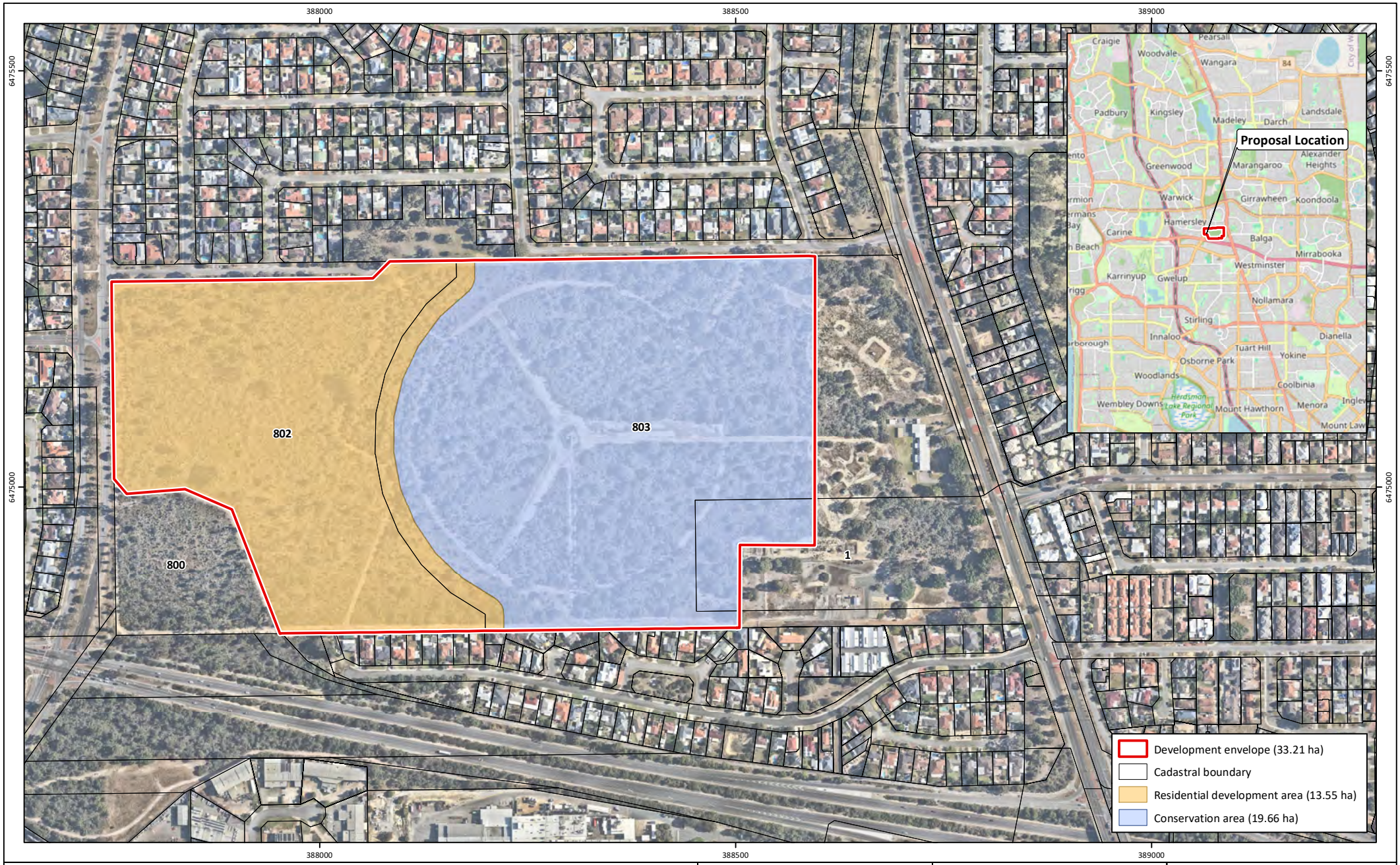

Figure 1: Proposal Location

Project: Environmental Review Document
Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number:
EP24-129(08)--F40
Drawn: CTH
Date: 12/05/2025
Checked: EKB
Approved: AV
Date: 30/05/2025

N

0 100 200
Metres
Scale: 1:6,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

1.2 Proposal alternatives

The proponent could have justified developing the entire development envelope for residential purposes. Western Australia is experiencing a housing crisis, the land is well suited for urban infill development, offering high accessibility via the adjoining regional road network. The Erindale Road frontage is designated as both 'Urban Corridor' and 'High Frequency Public Transport' under the Central Sub-regional Planning Framework. Development of infill sites like this provide opportunities to optimise the use of existing infrastructure and services, reduce greenhouse gas emissions, energy use, vehicle emissions and urban sprawl; contributing to a more sustainable compact city. Residential development of the whole site would be consistent with the 'Urban' zoning in the Metropolitan Region Scheme (MRS).

According to Bush Forever (Government of WA 2000) and *State Planning Policy 2.8 - Bushland policy for the Perth Metropolitan Region* (SPP 2.8) (Government of WA 2010) all the native vegetation within the development envelope is considered locally significant (i.e. removal is generally acceptable) and there is no Government policy which recommends the land should be acquired, conserved and reserved in the MRS as Parks and Recreation. Similarly the City of Stirling's Local Biodiversity Strategy (CoS 2010) does not identify any of native vegetation as regionally significant or recommend that it should be conserved.

For these reasons there are strong planning, environmental and sustainability grounds to support a case that the entire development envelope should be used for residential development. The proponent has seriously contemplated this or to withdraw Part Lot 803 and Part Lot 1 from the proposal and 'land bank' it for future potential telecommunication uses or sell later.

The original proposal referred to the EPA and Commonwealth Minister for the Environment only included the residential area (i.e. Lot 802 and Part Lot 803), retained 3.4 ha of native vegetation and was silent on whether Part Lot 803 and Part Lot 1 (now the conservation area) would be developed in the future or not.

Taking into account the ecology survey findings, to provide conservation certainty and a better balance between development and the environment the proponent has voluntarily amended the proposal provided in this documentation to include Part Lot 803 and Part Lot 1 in the development envelope and propose that it is not developed for residential purposes and instead restored and ultimately transferred free of cost to a public authority and managed for conservation purposes. Additionally, the residential development area open space and asset protection will retain native vegetation and associated environmental values. Overall 60% of the development envelope will be conservation. With proposed offsets this represents a significant 'beyond compliance' positive environmental outcome.

1.3 Local and regional context

1.3.1 Existing land uses

The development envelope and surrounds have been subject to varying degrees of historical disturbance and clearing associated with urban development of surrounding areas. Historical aerial photography available from 1953 (Landgate 2024) and onwards shows that native vegetation within

the development envelope was largely cleared to support to support the installation of the broadcast transmission infrastructure (including masts, towers and antennas) and a Water Corporation Sewer easement. The sewer easement is located across Lot 802, which contributed to the substantial clearing of the affected land in 1975. Regrowth of native vegetation occurred over the preceding years with native vegetation currently present over the majority of the development envelope. Native vegetation in the surrounding areas remained largely intact at the time that the infrastructure was installed but land clearing associated with the progression of urban development in the north, outside the development envelope, resulted in the clearing of native vegetation by 1974.

Part of the vegetation within the residential development area was subject to a bushfire in January 2023 and the vegetation shows signs of regeneration and comprises mostly intact native vegetation. Informal vehicle tracks are present across the development envelope.

The development envelope currently supports broadcast transmission land uses in Lot 803, operated by BAI communications. The operational area supports a single storey administration building and carparking area, both accessible from Wanneroo Road and a 180 m high broadcasting mast and a buried network of copper earth wires and mats that radiate outward from the base of the mast. Operations of the masts, towers and antennas present within the development envelope will continue within the short term but will eventually be decommissioned in the future, although the exact timeframes are unknown. The operational infrastructure occurs within the conservation area and conservation and rehabilitation activities will be undertaken in parallel to operational requirements. The fire breaks and access tracks within the conservation area will be maintained to allow for the continual maintenance of operational infrastructure.

1.3.2 Planning and land zoning

The development envelope is zoned ‘Urban’ under the MRS and zoned ‘Public use – Commonwealth’ under the City of Stirling LPS No. 3. A scheme amendment under LPS No. 3 will need to be initiated to rezone the development envelope from ‘Public use – Commonwealth’ to ‘Development Zone’ and align the LPS No. 3 zoning with the MRS zoning.

The development envelope was previously owned by the Commonwealth of Australia, however as of 1999 the land has been privately owned.

The MRS zoning and LPS No. 3 zoning of the development envelope is shown in **Figure 2** and **Figure 3**.

1.3.3 Surrounding land uses

The development envelope is within an urbanised area, and this is reflected through the land use zonings of the surrounding areas. Surrounding land uses of the development envelope include areas zoned under the MRS as ‘Urban’ to the north, east and a portion to the south, ‘Primary regional roads’ and ‘Industrial’ to the south. Surrounding land uses of the development envelope under LPS No. 3 largely reflect the MRS zoning and is broadly ‘Residential’ to the north, east and west and ‘Industrial’ to the south.

Land uses surrounding the development envelope include:

- Lennox Place, Blisset Way, public open space and residential areas to the north
- The remainder of Lot 803 and Lot 1 Wanneroo Road with buildings for the communication operations immediately east of the development envelope and urban areas beyond that
- Urban areas immediately south of the development envelope with Reid Highway and industrial areas beyond that
- Remnant vegetation within Lot 800 to the south west, under the control of Main Roads Western Australia
- Erindale Road and urban areas to the west.

Land uses surrounding the development envelope is shown in **Figure 2** and **Figure 3**.

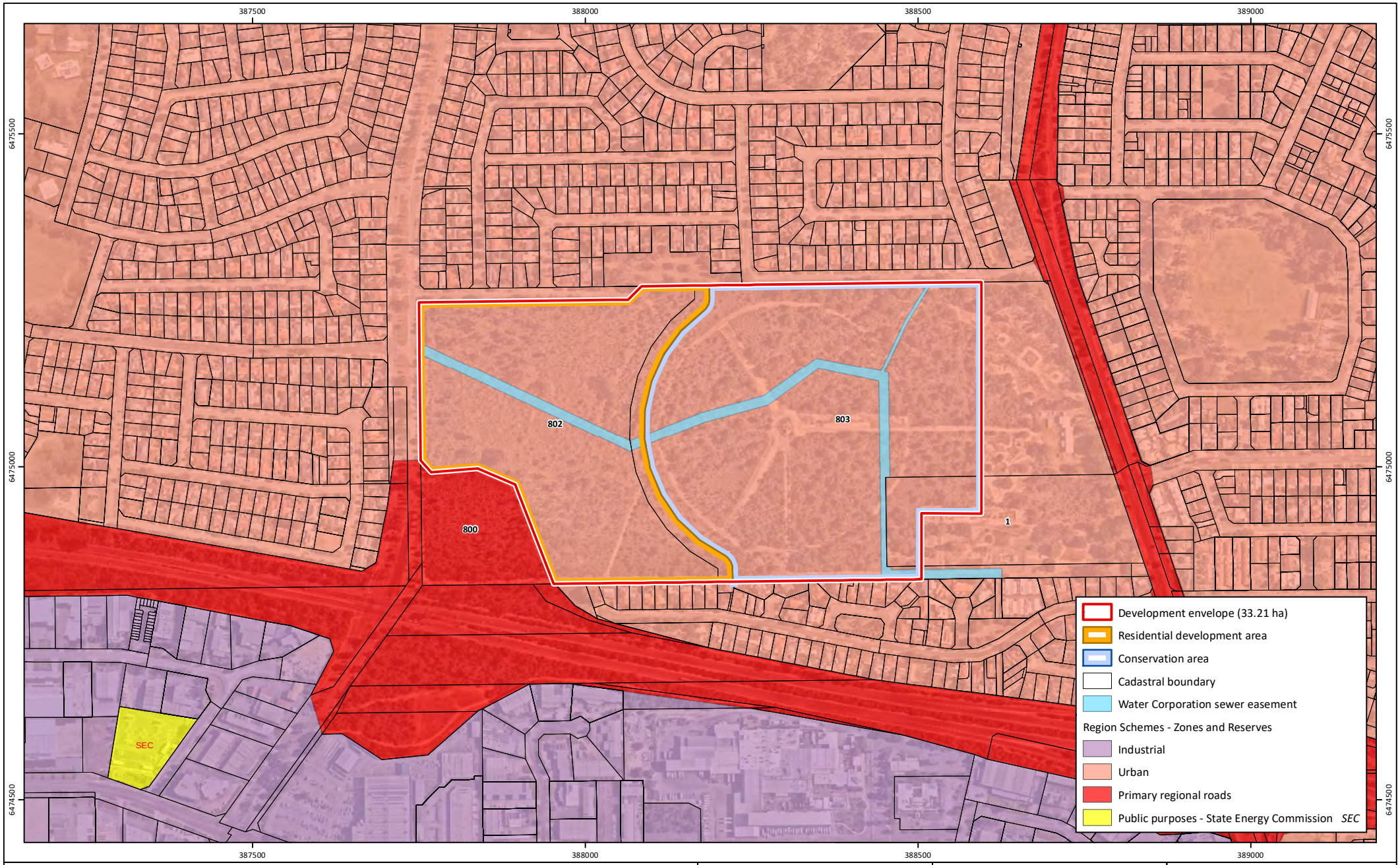

Figure 2: MRS Zoning

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Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number:
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Drawn: CTH
Date: 28/04/2025
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Approved: AV
Date: 30/05/2025

N

0 100 200 300
Metres
Scale: 1:7,500@A4
GDA2020 MGA Zone 50

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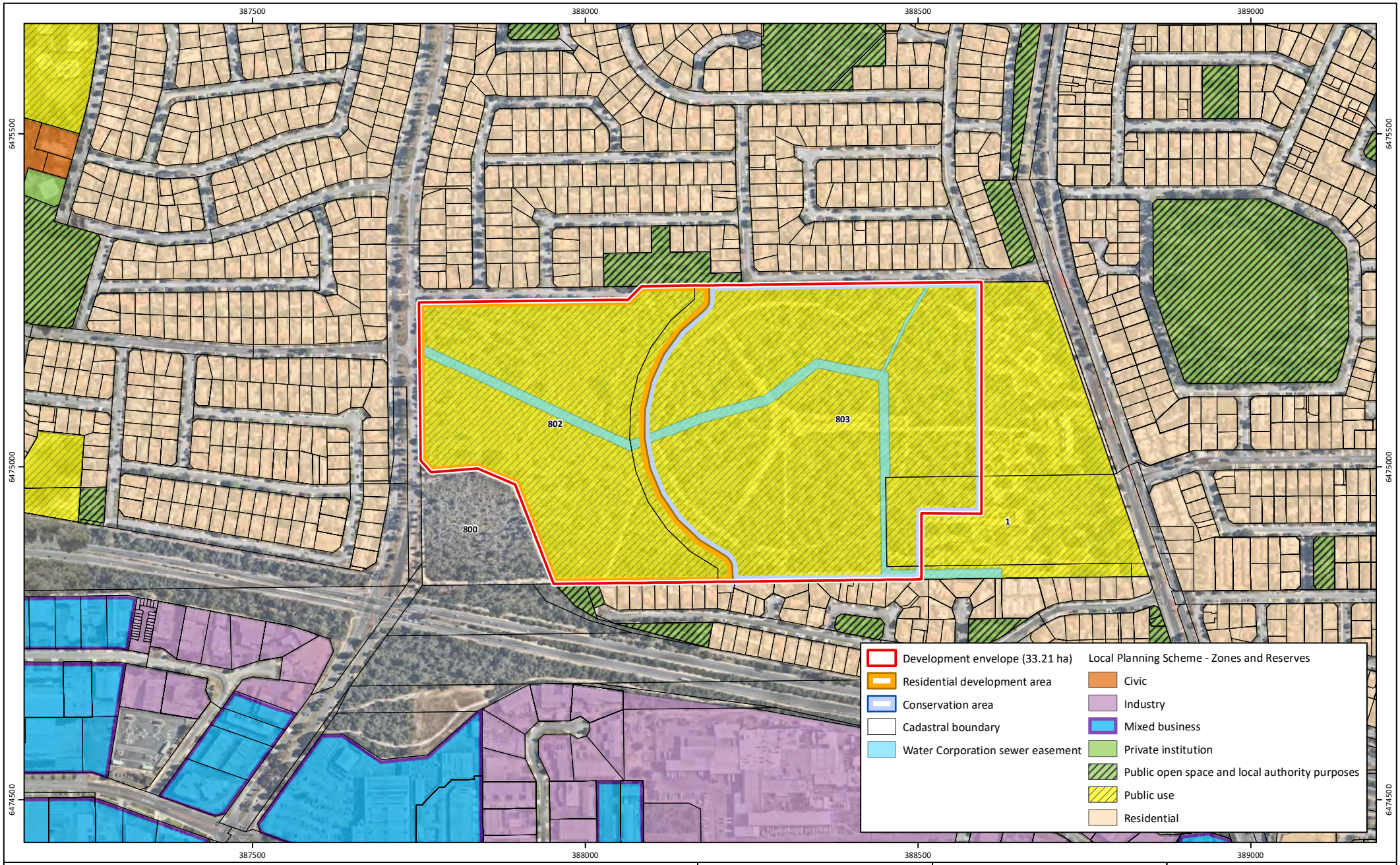

Figure 3: **Local Planning Scheme No. 2 Landuse Zoning**

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Date: 30/05/2025

N

0 100 200 300
Metres
Scale: 1:7,500@A4
GDA2020 MGA Zone 50

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1.3.4 Climate

The Perth metropolitan region of Western Australia experiences a Mediterranean climate of hot dry summers and cool wet winters (BoM 2024). The majority of rainfall within the region occurs between May and September each year, and on average is between 717.4 millimetres (mm) annually. The closest weather station to the development envelope which records rainfall data is located in Perth (Bureau of Meteorology (BoM) station number 9225). Based on weather data collected from 1993 to 2025 at the Perth metropolitan station, the local area experiences an average of 717.4 mm of annual rainfall as detailed in **Table 4**.

Table 4: Median (decile 5) annual rainfall from 1993 to 2025 at Perth Metro (station number 9225)

Perth	Month												Mean year
	J	F	M	A	M	J	J	A	S	O	N	D	
Mean rainfall (mm)	16.4	12.7	20.0	35.1	86.2	127.1	147.0	122.7	79.3	39.5	24.2	9.4	717.4

Temperature data is actively recorded at the Perth metropolitan weather station and the mean maximum temperatures range from 18.5°C in July to 31.7°C in February, while mean minimum temperatures range from 8.1°C in July to 18.4°C in February (BoM 2023).

1.3.5 Geology, landforms and soils

The development envelope occurs on the Swan Coastal Plain, which is the geomorphic unit that characterises much of the Perth metropolitan area. The Swan Coastal Plain is approximately 500 km long and 20 to 30 km wide and is roughly bounded by the Indian Ocean to the west and the Darling Scarp to the east. Broadly, the Swan Coastal Plain consists of two sedimentary belts of different origin: its eastern side comprises the Pinjarra Plain which formed from the deposition of alluvial material washed down from the Darling Scarp and its western side comprises three dune systems that run roughly parallel to the Indian Ocean coastline. These dune systems, referred to as Quindalup, Spearwood and Bassendean associations, represent a succession of coastal deposition and, as a result, they contain soils at different stages of leaching and formation (Kendrick *et al.* 1991).

The development envelope occurs in the Spearwood dune system and broad scale soil mapping places the development envelope within the Karrakatta association (Churchward and McArthur 1980). The Karrakatta association comprises an undulating landscape with deep yellow sands over limestone. The soil type mapped within the development envelope is shown in **Figure 4**.

Finer scale soil landscape mapping by DPIRD (2023b) shows that the development envelope consists of the Sands (S7) mapping unit which is described as: ‘Sand - pale and olive yellow, medium to coarse-grained, sub-angular to sub-rounded quartz, trace of feldspar, moderately sorted, of residual origin.’

The elevation of the development envelope ranges from 19 metres in relation to the Australian height datum (mAHD) in the southern portion to 41 mAHD in the north. Portions in the western and eastern extents drop to 23 mAHD (DoW 2008) as shown in **Figure 4**.

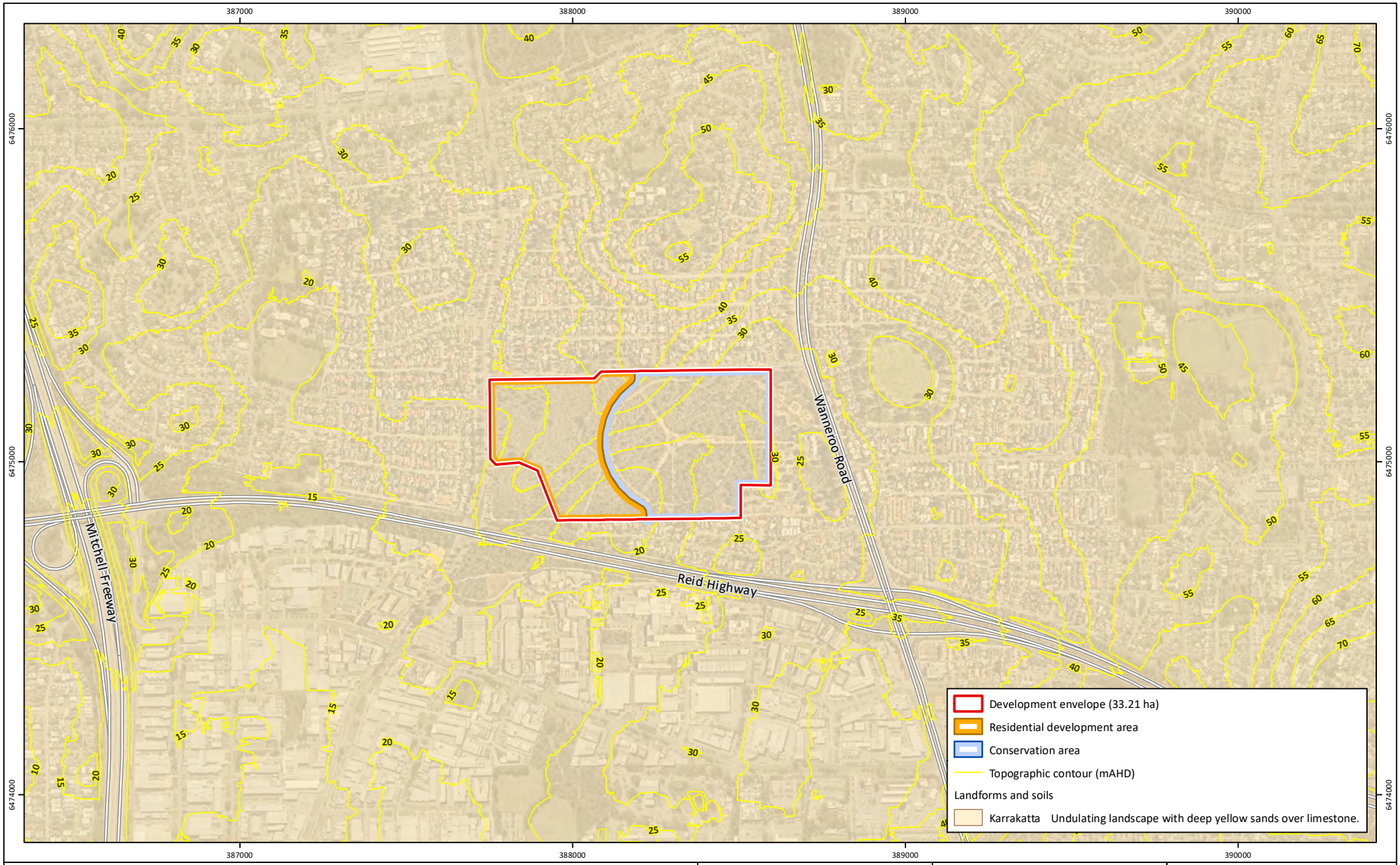

Figure 4: Soils and Topography

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N

0 200 400 600
Metres
Scale: 1:15,000@A4
GDA2020 MGA Zone 50

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1.3.6 Hydrology and hydrogeology

The development envelope is situated within the Gwelup groundwater subarea of the Gwelup groundwater area of the Perth- Superficial Swan Aquifer as indicated by the Department of Water and Environmental Regulation's (DWER) Water Register (2024). DWER's Public Drinking Water Source Area Mapping Tool also indicates that the development envelope is within the Perth Coastal and Gwelup Underground Water Pollution Control Area.

Groundwater levels across the development envelope have been mapped in DWER's Perth Groundwater Map database (2025). Groundwater levels across the development envelope range from 17 mAHD to 12mAHD with the depth to groundwater ranging from 25m below ground level (bgl) to 5mbgl in the south of the development envelope. There is approximately 1m difference between the maximum groundwater depth and the minimum groundwater depth.

Groundwater abstraction may be required for irrigation of POS. There are currently no groundwater licences issued for Lot 802. However, DWER (2017) indicates that groundwater allocation is available for the confined aquifers in the vicinity.

Wetlands are areas of seasonally, intermittently or permanently waterlogged land such as poorly drained soils, ponds, billabongs, lakes, swamps, tidal flats, estuaries, rivers and their tributaries (Wetlands Advisory Committee 1977). Many wetlands provide important habitat and support high levels of biodiversity and endemism.

Wetlands of national or international significance may be afforded special protection under Commonwealth or international agreements. A review of the *Ramsar List of Wetlands of International Importance* (DBCA 2017b) and *A Directory of Important Wetlands in Australia – Western Australia* (DBCA 2018) indicates that no Ramsar or listed 'important wetlands' are located within or near the development envelope.

A review of DBCA's Geomorphic wetland dataset identifies no wetlands within or in close proximity to the Development envelope (DBCA 2024b). The nearest Conservation Category Wetland (CCW) is Little Carine Swamp (UFI: 8189) located approximately 2.3 km northwest of the development envelope (**Figure 5**). A number of constructed earth dams occur within proximity to the development envelope as indicated in DWER's hydrography dataset (DWER 2020) as shown in **Figure 5**.

The development envelope is within the P3 Public Drinking Water Source Area (PDWSA) in the Perth Coastal Gwelup Underground Water Pollution Control Area. P3 areas occur within PDWSA's where land is zoned for urban, commercial or light industrial uses. Within P3 areas, drinking water sources need to co-exist with higher intensity land uses compared to P1 and P2 areas. For urban (residential) developments in P3 areas it is recommended that there is deep sewerage connection and urban water sensitive design practices are implemented.

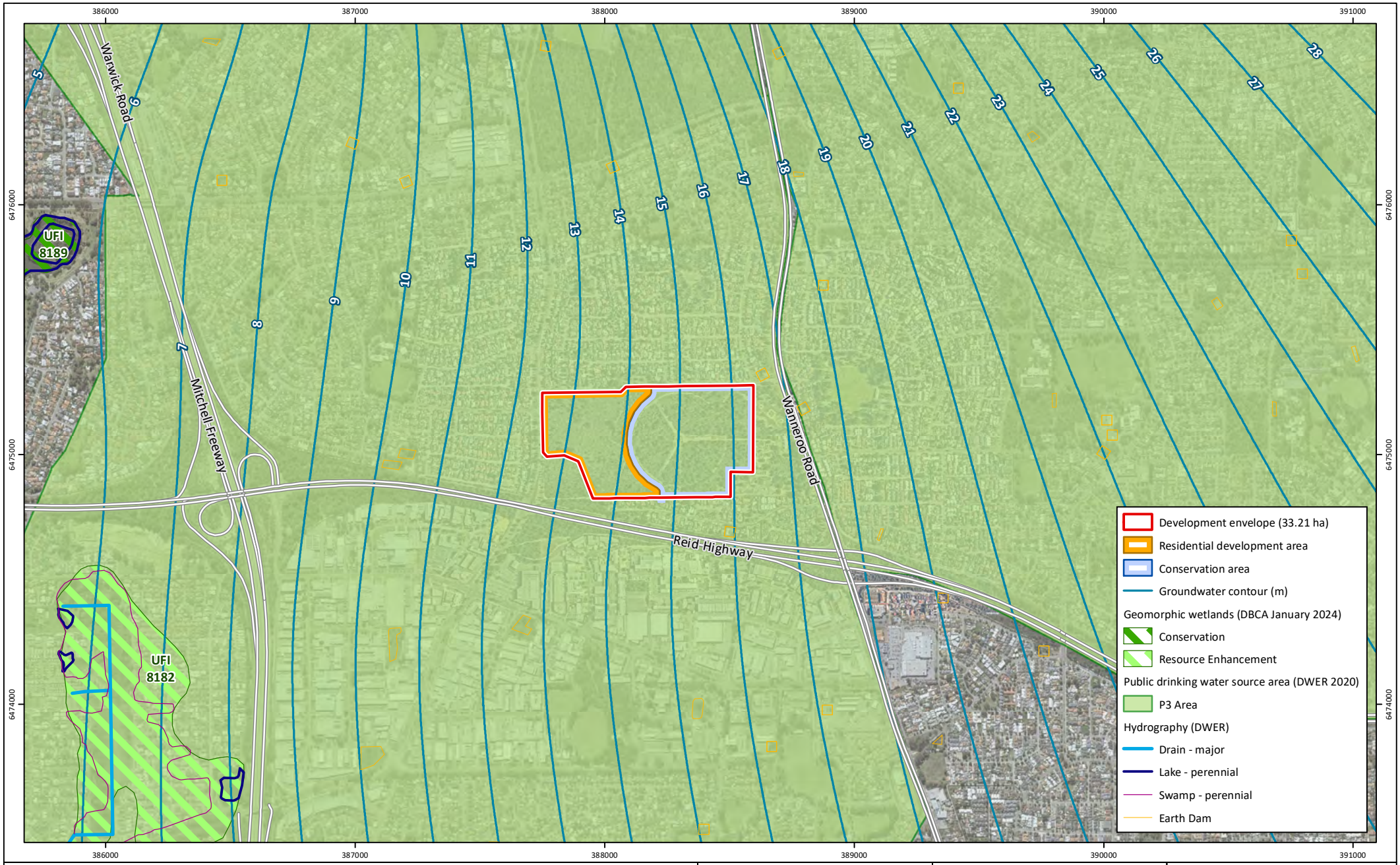

Figure 5: Hydrology

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Hamersley Residential Development and Conservation
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N

0 400 800
Metres
Scale: 1:20,000@A4
GDA2020 MGA Zone 50

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1.3.7 Regional biography

The Interim Biogeographic Regionalisation for Australia (IBRA) divides the Australian continent into 89 geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The 89 bioregions are further defined into 419 sub-regions, which are more localised and homogenous geomorphological units within each bioregion.

The development envelope is within the Swan Coastal Plain IBRA region and within the 'SWA02' or Perth subregion. The Perth subregion is characterised by mainly banksia low woodland on leached sands with melaleuca swamps where ill-drained; and woodland of *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah) and *Corymbia calophylla* (marri) on less leached soils (Beard *et al.* 2013). This subregion is recognised as a biodiversity hotspot and contains a wide variety of endemic flora and vegetation types.

Heddle *et al.* (1980) regional vegetation complex mapping delineates the various vegetation types which would have occurred across the Swan Coastal Plain prior to European settlement. DBCA (DBCA 2021) mapping of vegetation complexes shows the development area as comprising the 'Karrakatta complex - central and south' (shown in **Figure 6**), which is described as comprising an open forest of *Eucalyptus gomphocephala*, *Eucalyptus marginata* and *Corymbia calophylla* which reflects the cooler and wetter conditions in the southern portions of the Spearwood dunes compared to the northern portion (Heddle *et al.* 1980). Statewide vegetation statistics indicate that 23.5% of the pre-European extent of the Karrakatta complex - central and south remained on the Swan Coastal Plain in 2018, with 4.6% protected for conservation purposes (Government of Western Australia 2019).

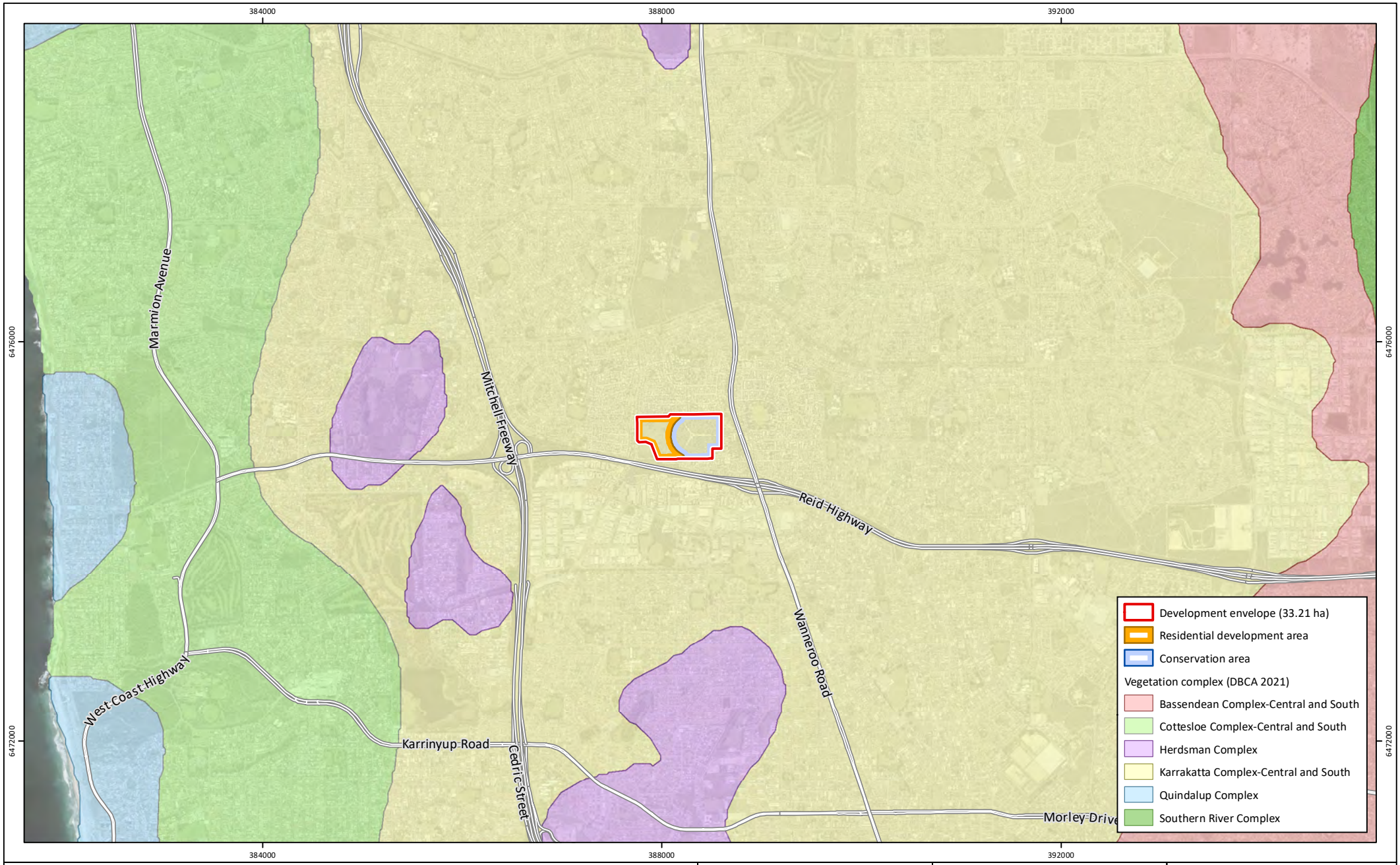

Figure 6: Vegetation Complexes

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Date: 12/05/2025
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Approved: AV
Date: 30/05/2025

N

0 1,000 2,000
Metres
Scale: 1:50,000@A4
GDA2020 MGA Zone 50

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2 Legislative context

2.1 Environmental impact assessment process

Primary environmental approvals will be obtained under Part IV (Environmental Impact Assessment) of the EP Act and for Matters of National Environmental Significance (MNES) under *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2.1.1 Environmental Protection Act 1986

The proposal was originally referred to the EPA in April 2020 under Section 38 of the EP Act (Strategen JBS&G 2020). There have been various requests for information from the EPA to support the referral decision and assessment since the original referral in April 2020.

A summary of the project history relevant to the EP Act is provided below:

- The proponent originally referred the proposal to the EPA on 17 April 2020
- On 8 May 2020, the EPA requested further information to enable a referral decision, and the additional information was provided on the 15 May 2020 (Strategen JBS&G 2020)
- On 24 June 2020 a decision to assess the proposal was made by the EPA and the level of assessment was set at 'Assessment on Referral Information (ARI)' with additional information required under Section 40(2)(a) of the EP Act (2 week public review)
- The request for further information was provided by the EPA to the proponent on 2 July 2020
- On 10 September 2021 the revised assessment documentation was submitted to the EPA to address the further information request (Strategen JBS&G 2021)
- On 9 May 2022 the EPA submitted a Request for Additional Assessment Information
- On 26 September 2025 the EPA submitted a Request for Additional Information
- On 7 November 2025 the revised assessment documentation was resubmitted to the EPA addressing request for additional information (Emerge Associates 2025f).

To assist the public and EPA all the assessment documentation has been integrated into this Environmental Review Document (ERD) and addresses the EPA's request for further information (2 July 2020) and the Additional Assessment Information request (9 May 2022).

2.1.2 Environment Protection and Biodiversity Conservation Act 1999

The proposal was referred (reference) on 18 February 2019 to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC Act (EPBC 2018/8324), and on 3 June 2019 the Minister decided that the proposal is a controlled action and would be assessed through preliminary documentation (PD).

The Minister identified one MNES may be potentially impacted, namely 'listed threatened species and communities' with a total of one ecological community and two fauna species considered relevant to the MNES and the proposal:

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

- Carnaby's black cockatoo (CBC) (*Zanda latirostris*) – Endangered
- Forest red-tailed black cockatoo (FRTBC) (*Calyptorhynchus banksii naso*) – Vulnerable.

On 14 August 2019, DCCEEW provided comments and revisions have occurred between 14 August 2019 and 30 August 2022 to address these comments (Strategen JBS&G 2021).

Concurrently with addressing the EPA assessment requirements, an updated PD report is being prepared to address DCCEEW's most recent comments.

While this is not an accredited assessment, the above individual species associated with the MNES will also be addressed in this ERD (**Section 5**, **Section 6**).

2.2 Other approvals and regulation

Table 5 provides a summary of the key environmental approval and regulations relevant to the proposal. Decision-making authorities (DMA's) relevant to the proposal include DCCEEW and Minister for Planning.

Table 5: Other planning and environmental approvals

Legislation	Type of approval	Decision making authority	Application to proposed scheme amendments
Planning and Development Act 2005 (PD Act) *Planning and Development (Local Planning Schemes) Regulations 2015* *City of Stirling Local Planning Scheme No. 3*	Rezoning approval	• Western Australia Planning Commission (WAPC) • City of Stirling	The development envelope was previously owned by the Commonwealth of Australia; however as of 1999, the land has been privately owned. The development envelope is currently zoned 'Urban' under the MRS and as 'Local Reserve: Public Use' under the City of Stirling's LPS No.3 (**Figure 2**; **Figure 3**). Rezoning to 'Development Zone' under the LPS No. 3 will be required to be resolved. A scheme amendment request was lodged with the City of Stirling in October 2020 and refused on 10 May 2022. Request for Planning Minister intervention was undertaken pursuant to Section 78 of the PD Act and on 31 October 2022 the Minister advised that the Section 78 request was to be deferred until both state and commonwealth environmental assessments are finalised.
	Structure Plan	• WAPC • City of Stirling	The 'development zone' proposed in the scheme amendment requires any future development within the amendment areas to be implemented generally in accordance with a structure plan. The proponent has prepared an indicative Structure Plan which will need to be finalised and approved prior to implementation of future residential development. Prior to its approval, the structure plan will need to address the requirements of LPS No. 3 (including any scheme provisions or environmental conditions inserted as a result of this environmental review process, where applicable).
	Subdivision Application	• WAPC	Subdivision application for individual lots will be required as part of the residential development and sale of future lots. Such applications will need to address the requirements of LPS No. 3 (including any scheme provisions or environmental conditions inserted as a result of this environmental review process, where applicable) and the approved structure plan. Any subdivision approvals would include conditions (including

Legislation	Type of approval	Decision making authority	Application to proposed scheme amendments
			environmental), which would need to be satisfied before subdivided lot titles are issued.

3 Stakeholder Engagement

3.1 Key stakeholders

The proposal and the general strategic planning and development of Hamersley has involved consultation with stakeholders and the community over several years, including:

- DCCEEW
- DBCA
- DPLH
- DWER
- EPA
- Hamersley local residents
- WAPC.

3.2 Stakeholder engagement process

3.2.1 Community consultation

Community consultation undertaken so far has been in relation to:

- The advertising period associated with the proposal's referral under the EPBC Act;
- Voluntary engagement sessions with local residents in the City of Stirling (Hamersley), regarding the proposal, environmental approval processes and future State planning approval processes.

A number of methods have been used to communicate with the community including:

- Development of a website (http://www.hamersleyproject.com.au/)
- Resident letter drops
- Online community survey
- Two voluntary community drop-in sessions (with the second session providing feedback from the first session)
- Development of Frequently Asked Questions (FAQ's), which are now available on the Hamersley project website at http://www.hamersleyproject.com.au/
- Advertisement for community drop-in sessions within the local newspaper, *The Stirling Times.*

Moving forward, there will be formal advertising periods throughout the State planning process (i.e. rezoning and structure plan) which will provide an opportunity for the community to submit further feedback on the proposal, including land use and development design.

3.2.2 Regulatory consultation

Engagement with regulators (the details of which is provided in **Section 3.3.2** below) has included the following:

- Meetings with the EPA and EPA Services

- Engagement with the City of Stirling, including:
  - Proponent's project team/ Officer level meetings
  - Site walkover with City of Stirling Officers and proponent's project team
- Regular contact with the DCCEEW during the EPBC referral and assessment process, including:
  - One meeting in Canberra
  - Teleconference and telephone discussions
  - Email communication
- Department of Planning, Lands and Heritage/WAPC, including:
  - Meeting with the proponent and WAPC Chair.

3.3 Stakeholder consultation outcomes

3.3.1 Community consultation

Appendix D resents the proposal's Community Consultation Report, which was prepared following voluntary community engagement sessions.

3.3.2 Agency consultation

A summary of agency consultation undertaken to date, is provided in **Table 6**.

Table 6: Summary of agency consultation

Agency	Method of consultation	Date	Feedback/ outcomes
City of Stirling: City Staff JBS&G	Meeting at City	20 September 2018	Preliminary meeting regarding proposed rezoning
DPLH JBS&G	Meeting at DPLH	23 August 2018	Preliminary discussion regarding proposed rezoning, discussion of application of subdivision to create site
City of Stirling: City Staff JBS&G	Meeting at City	26 October 2018	Second meeting with City staff, with landowner in attendance. Discussion of broad constraints, environmental work undertaken, the site's potential role in providing housing, potential early engagement, future program.
City of Stirling: City Staff JBS&G	Meeting at City	15 November 2018	Third meeting with expanded City staff. Discussion provided a landowner update, overview of environmental assessment completed, overview of traffic assessment, recap on opportunities & constraints. Meeting was updated on separate engagement with City Mayor & Councillors
WAPC, DPLH: Chairman (WAPC) Deputy Director General (DPLH) JBS&G	Meeting at DPLH	12 March 2019	Preliminary meeting to provide an overview of the project, the proposed consultation process and timing for rezoning submission.

Table 6: Summary of agency consultation (continued)

Agency	Method of consultation	Date	Feedback/ outcomes
City of Stirling: Manager City Planning (Tentative) Manager Parks and Sustainability Manager Engineering Design Coordinator City Planning A/Coordinator Project Management Landscape Architecture, Parks and Sustainability Senior Environmental/ Conservation Officer JBS&G	Site walkover and meeting	13 March 2019	This site walkover and meeting provided pre-lodgement (LPS rezoning) consultation with City of Stirling. Key matters discussed included: • Environmental attributes of the site • State (EP Act) and Commonwealth (EPBC Act) environmental approvals processes • City of Stirling raised the potential to zone an area of conservation within the site • During this meeting the proponent outlined the potential for inclusion of Scheme provisions to address environmental/ conservation objectives.
EPA: EPA Chairman Manager EIA Environmental Planning Branch, EPA Services JBS&G	Meeting	17 May 2019	Briefed EPA on the site history, investigations to date and key environmental characteristics of the site. EPA noted that attributes they would be focussed on, include: • Good/ Very Good condition vegetation • Significant Black Cockatoo habitat trees • Black Cockatoo foraging habitat • Ecological linkages • Priority 2 species Acacia benthamii.
City of Stirling: City staff JBS&G	Meeting at City	30 July 2019	Fifth meeting to discuss environmental considerations and landowner's engagement with the EPA, pre-lodgement community engagement (first drop-in session) outcomes, traffic matters. Outline of next steps prior to rezoning lodgement.
City of Stirling: City staff JBS&G	Meeting	23 August 2019	Meeting was held to discuss comments from Council meeting, on the proposal. Matters discussed included: • Outcomes of community consultation (key themes being traffic, environment, building heights and dwelling types) • Roundabout/ site access. Council's key environmental objectives for future applications (ecological linkages, Local Natural Area) EPBC process/ status for the Federally Listed species; EPA will likely assess the proposal and environmental significance. Council acknowledged process by the state via the EPA (Section 48) City of Stirling acknowledge that as a responsible planning authority they need to consider are zoning for a site where the owner advises the zoning no longer relevant.
EPA: Executive Director – EPA Services JBS&G	Meeting	25 October 2019	To discuss the opportunity for use of Section 38 of EP Act to assess the environmental impacts of the proposal, as opposed to Section 48, which is typically used for rezoning. EPA were generally supportive of pursuing Section 38 process.

Table 6: Summary of agency consultation (continued)

Agency	Method of consultation	Date	Feedback/ outcomes
City of Stirling: City Councillors City staff JBS&G	Meeting at City	4 November 2019	Landowner update provided on progress to date including partnering with Cedar Woods, progression of environmental report updates.
EPA: EPA Chairman Manager EIA Environmental Planning Branch, EPA Services JBS&G	Meeting	6 November 2019	Meeting was to confirm the use of Section 38 of EP Act to assess the environmental impacts of the proposal. Key discussion points included: • The importance of Stakeholder consultation • Assessment and approvals process • Potential offsets.
EPA: EPA Chair EPA officer JBS&G	Meeting	24 March 2021	To discuss a change to the proposal under Section 43a of the EP Act, including the relocation and expansion of the proposed conservation area.
City of Stirling: City councillors City staff JBS&G	Meeting at City	5 August 2021	To provide an update on the proposal, progress with the environmental approvals and present an assessment against the City of Stirling Local Biodiversity Strategy.
EPA: Manager EIA Environmental Planning Branch, EPA Services Emerge Associates	Meeting	16 May 2024	To provide an update on the proposal and change in proposals environmental consultant. Discussed outstanding requirements to be addressed and agreed documentation as ERD (especially considering change of proposal since first referred).
City of Stirling: City staff Emerge Associates	Meeting at City	27 May 2025	To provide an update on the proposal, progress with the environmental approvals and discuss restoration approach.

4 Object and Principles of the Environmental Protection Act 1986

The object of the EP Act is *"to protect the environment of the State, having regard to the following principles"*. **Table 7** outlines how the principles of the EP Act have been considered.

Table 7: Object and Principles of the EP Act

Principle	Consideration
1. The **precautionary principle** Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by: • careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and • assessment of the risk-weighted consequences of various options.	Environmental investigations and studies have been undertaken in accordance with the Notice Requiring Information for Assessment, to provide a credible and reliable understanding of baseline environmental conditions, potential impact prediction and the effectiveness of measures to avoid, mitigate and manage potential impacts. These matters are described under each preliminary environmental factor and provide a reliable and credible basis for the EPA to provide advice to the Minister for the Environment.
2. The principle of **intergenerational equity** The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.	Environmental values within the development envelope are currently located on private land , which are not accessible to the public, nor are these environmental values currently managed for conservation purposes. Implementation of the proposed scheme amendments will enable environmental values identified for retention to be brought into public ownership, ensuring their long-term viability for the benefit of future generations. Environmental impacts will be managed such that the risks of adverse impacts are minimised and the quality of the environment is maintained or enhanced in the long-term.

Table 7: Object and Principles of the EP Act (continued)

Principle	Consideration
3.The principle of the **conservation of biological diversity** and ecological integrity Conservation of biological diversity and ecological integrity should be a fundamental decision.	As outlined above, a range of detailed site-specific investigations have been undertaken to determine the existing biological diversity and ecological integrity of the proposal's development envelope and surrounding area. The conservation of biological diversity and ecological integrity was a fundamental consideration in the assessment of the proposed development. Taking into account the ecology survey findings, to provide conservation certainty and a better balance between development and the environment the proponent has amended the proposal provided in this documentation to include Part Lot 803 and Part Lot 1 in the development envelope and propose that it is not developed for residential purposes and instead restored and ultimately transferred to a public authority and managed for conservation purposes. As outlined in **Section 1.2** the proponent considered developing the entire development area but have instead chosen to include the conservation area as a part of the proposal. To ensure the future protection of the environmental values in the area the proponent will put a conservation covenant over the area to restrict future development within the conservation area. Extensive impact avoidance measures are proposed, which will facilitate the future retention and conservation of significant environmental values within the site that support high biological diversity and ecological integrity.
4. Principles relating to **improved valuation, pricing and incentive mechanisms** • Environmental factors should be included in the valuation of assets and services • The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement • The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste • Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solution and responses to environmental problems.	The extent to which improved valuation, pricing and incentive mechanisms take into account environmental externalities and apply to the proposal and any associated goods and services is largely a matter for Government to develop policy and regulation (e.g. landfill levy). The proponent will comply with Government policy and regulation appliable to this principle.
5. The principle of **waste minimisation** All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	Future implementation of the residential development across the proposal will take all reasonable and practical measures to minimise the generation of waste and its discharge into the environment. Waste will be minimised by adopting the hierarchy of waste controls: avoid, minimise, reuse, recycle and safe disposal.

4.1 Environmental factors and objectives

As outlined in the request for additional information received from the EPA on the 2nd of July 2020 (**Appendix A**), the EPA identified the following other environmental factors and matters relevant to the proposal:

- Flora and Vegetation (**Section 5**)
- Terrestrial Fauna (**Section 6**)
- Greenhouse Gas Emissions (**Section 7**)
- Human Health (**Section 8**)
- Environmental offsets (**Section 9**).

As such, these have been further considered in the following sections of this ERD.

No other environmental factors or matters have been identified by the EPA to be relevant to the proposal. As such none have been further considered within this ERD.

5 Flora and Vegetation

5.1 EPA Objective

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

5.2 Relevant policy and guidance

The relevant policy and guidance for Flora and Vegetation is summarised in **Table 8.**

Table 8: Relevant policy and guidance for the Flora and Vegetation environmental factor

EPA and other State or Commonwealth policy and guidance (if relevant)	Explain how the policy and guidance has been considered
EPA policy and guidance	
Environmental Factor Guideline - Flora and vegetation (EPA 2016b)	Consulted in the consideration of potential impacts to flora and vegetation as a result of the proposal.
Technical Guidance: Flora and vegetation surveys for environmental impact assessment (EPA 2016d)	The flora and vegetation assessments conducted over the development envelope of the proposal utilise the survey methodologies outlined in the EPA Technical Guidance.
Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA) (EPA 2021a)	These instructions are to assist proponents in preparing and submitting online IBSA data packages, as part of the assessment process under the EP Act. Refer to **Section 5.3.1.1** for IBSA references relevant to the proposal.
Instructions on how to prepare (EP Act) Part IV Environmental Management Plans (EPA 2020a)	Any required environmental management plans will be prepared in accordance with the instructions.
Other policy and guidance	
Western Australian Environmental Offsets Policy (Government of WA 2011)	The Western Australia Government's Environmental Offset Policy seeks to protect and conserve environmental and key biodiversity values for present and future generations. The policy ensures that economic and social development may occur, whilst concurrently supporting long-term environmental and conservation values.
EPBC Act and approved conservation advice on any relevant MNES	**Section 5.3.1.1** outlines the survey methodology utilised for assessing potential occurring EPBC Act listed threatened ecological communities within the development envelope of the proposal, based on criteria provided in the guidelines.
Department of Agriculture, Water and the Environment (now DCCEEW) survey guidelines for Australia's threatened species: Various Guidelines for surveying for species listed as threatened under the EPBC Act	The flora and vegetation assessments conducted over the development envelope of the proposal refer to the guidelines and methodologies for surveying conservation significant flora and threatened ecological communities. • Banksia attenuata woodlands over species rich dense shrublands (Swan Coastal Plain community type 20a – Gibson et al. 1994) - Interim Recovery Plan No. 359 (DPaW 2016) • Approved Conservation Advice for the Banksia Woodlands of the Swan Coastal Plain ecological community DoEE (2016) • Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community DoEE (2019).

5.3 Receiving environment

5.3.1 Studies and investigations

To inform the proposal, a range of studies and investigations relating to flora and vegetation across the proposal's development envelope and surrounds have been undertaken in accordance with **Table A 1** (Task ID 1 to 4).

A total of six historic flora and vegetation surveys have been undertaken by several consultants across the development envelope from as early as 2001 until 2023 and were used to inform the proposal's original referral and subsequent assessment reports. The historic surveys that were undertaken have occurred over varying portions of the development envelope, predominantly prior to the fire that occurred on 1 January 2023 and with varying methodologies. A summary of the historic surveys and the associated survey areas are detailed in **Table 9** below.

Table 9: Summary of historic surveys undertaken within the development envelope

Investigation/Study	Author	Survey date/s	Spatial coverage
Flora and Vegetation Survey Lot 803 Erindale Road 2024	Anders Environmental Consulting (2024)	2023	Lot 803
Flora and Vegetation Survey Spring 2022 Lot 802 Erindale Rd, Hamersley WA	JBS&G (2023)	2022	Lot 802
Flora, vegetation and black cockatoo habitat assessment Part Lot 808 Erindale Rd, Hamersley WA	Strategen-JBS&G (2021)	2017	Lot 803 and Lot 1 Erindale Road
Flora, vegetation and fauna survey Lot 802 Erindale Rd, Hamersley WA	Strategen (2019)	2017	Lot 802
Lot 101 and 102 Erindale Road Hamersley - Spring Flora and Vegetation Assessment, Version 1	Cardno (2008)	2008	Lots 802 (previously Lot 101 and including area to the south-west of the development envelope) and 803 (previously Lot 102)
Rare Flora and Threatened Ecological Community Search, Bowman Bishaw Gorham.	Weston on behalf of BBG (results reported in Cardno 2008, report not obtained) (Weston 2001)	2001	Unknown

Considering the differences in previous survey report findings and data, as well as the differing spatial extent and age of surveys, Emerge Associates (2025e) undertook a detailed flora and vegetation survey across multiple days between September and November 2024 to collect updated data, consider historic survey results and address outstanding EPA comments. As such, this ERD has been informed by the most recent survey information (Emerge Associates 2025e) to address outstanding EPA comments and variations in environmental values recorded in historic survey reports, which was likely a result of different survey methodologies, different survey area and timing of historic survey reports.

Table 10 below outlines the studies and investigations (Emerge Associates 2025b, e) that have informed the current baseline conditions of the development envelope related to flora and vegetation, as well as the environmental impact assessment, detailed within this ERD (**Section 5.3.1.1** to **Section 5.7**). It is noted that previous reports may be referred to for specific matters and to address variations in survey results where necessary, but these will be clearly denoted.

Table 10: Flora and vegetation studies and investigations relevant to the proposal

Investigation/Study	Author	Survey date/s	Scope	Spatial coverage
Lot 802 Erindale Road, Lot 1 and Lot 803 Wanneroo Road, Hamersley Detailed Flora and Vegetation Assessment **Appendix E**	(Emerge Associates 2025e)	26 and 30 September, 7, 8 and 10 October and 7 November, 2024	A 'detailed' flora and vegetation assessment was undertaken for the proposal and immediate surrounds in accordance with the EPA's *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016h).	Full extent of Lot 802, Lot 803 and Lot 1 (**Figure 7**).
Black Cockatoo and Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community Habitat Quality Score Assessment - Lot 802 Erindale Road, Lot 1 and Lot 803 Wanneroo Road, Hamersley **Appendix F**	(Emerge Associates 2025b)	14 May 2025	To assess the habitat quality score of Banksia Woodlands TEC/PEC and black cockatoos in accordance with the scoring tools provided by DCCEEW.	Full extent of Lot 802 and Part Lot 803 and Part Lot 1, as per the development envelope.

5.3.1.1 Survey methodology

Emerge Associates (2025e) undertook the Detailed Flora and Vegetation Assessment across six sampling days between September and November 2024, including during the spring flowering period (months of September, October and November). The assessment report is provided in **Appendix E**.

The development envelope was traversed on foot and the composition and condition of vegetation was recorded. Detailed sampling of vegetation was undertaken using non-permanent 10 m x 10 m quadrats. A total of 26 quadrats were surveyed across the development envelope, the position of which was recorded with a hand-held GPS unit. Quadrat sampling locations and survey effort is provided in **Figure 7.**

The data recorded within each sample included:

- Site details (site name, site number, observers, date, location)
- Environmental information (slope, aspect, bare-ground, rock outcropping, soil type and colour, litter layer, topographical position, time since last fire event)
- Biological information (species, plant specimens, vegetation structure, vegetation condition, foliage projective cover', and disturbance).

As part of the Detailed Flora and Vegetation Assessment, Emerge Associates (2025e) conducted a desktop search for threatened and priority flora that may occur or have been recorded within a 10 km radius of the development envelope using the Protected Matters Search Tool (DCCEEW 2025). DBCA's Threatened and priority flora database (reference no. 11-1024FL) and WA herbarium database (DBCA 2023b) were also searched for threatened and priority flora occurring or potentially occurring within the 10 km radius. Data base search radiuses were based on DBCA recommendations.

Vegetation condition was assigned at each quadrat and changes in vegetation condition were also noted and mapped across the survey area. The condition of the vegetation was assessed using methods from Keighery (1994). Additional plant taxa not observed within sample areas were recorded opportunistically. All plant specimens collected were dried, pressed and then named in accordance with the requirements of the Western Australian Herbarium.

Areas of suitable habitat for threatened and priority flora species with potential to occur in the site were identified and searched. Multiple surveys were undertaken of some patches of vegetation to ensure the full suite of potential species and variation in flowering time was accounted for. In addition, vegetation supporting previous records of threatened and/or priority flora (from DBCA search results and historic survey reports) was surveyed again to confirm the presence of the species and number of individuals.

The locations of TECs and/or PECs within the site according to the DBCA database and previous surveys were reviewed during the site visits. Vegetation units were assessed against TEC and PEC diagnostic characteristics and, if available, size and/or vegetation condition thresholds (DBCA 2023a). TECs and PECs were confirmed as absent from the site where no significant limitation was identified that could have affected their detection.

The identified vegetation units were compared to the regional 'floristic community type' (FCT) dataset A floristic survey of the southern Swan Coastal Plain (Gibson et al. 1994) and the more recent Weed and Native Flora Data for the Swan Coastal Plain (Keighery et al. 2012). Each sample was compared to Gibson et al. (1994) and Keighery et al. (2012) separately to limit the influence of spatial correlation when assigning an FCT. FCT analysis was not undertaken for samples located within disturbed vegetation with low native species diversity as the vegetation was considered unlikely to currently represent an FCT.

Further details regarding survey and sampling procedures, including survey effort are outlined in Detailed Flora and Vegetation Assessment (Emerge Associates 2025e) and the Black Cockatoo and Banksia Woodlands TEC Habitat Quality Score Assessment (Emerge Associates 2025b), provided in **Appendix E** and **Appendix F.**

5.3.1.2 Index of biodiversity surveys for assessments submission

The IBSA program provides industry, regulators and the community with an index of land-based biodiversity surveys conducted in Western Australia (Government of WA 2023). Partnered with DWER, the EPA and the Department of Mines, Industry Regulation and Safety, IBSA assists in providing better environmental outcomes by maximising the availability of biodiversity data.

As part of the flora and vegetation assessment undertaken by Emerge Associates, the survey report and associated data packages have been submitted via IBSA Submissions as summarised in **Table 11**.

Table 11: Flora and vegetation surveys ISBA submission

Survey report submitted	IBSA submission number	IBSA number
Detailed Flora and Vegetation Assessment - Lot 802 Erindale Road, Lot 1 and Lot 803 Wanneroo Road, Hamersley (Emerge Associates 2025e)	IBSASUB-20250718-0F8E7A85	IBSA-2025-0353

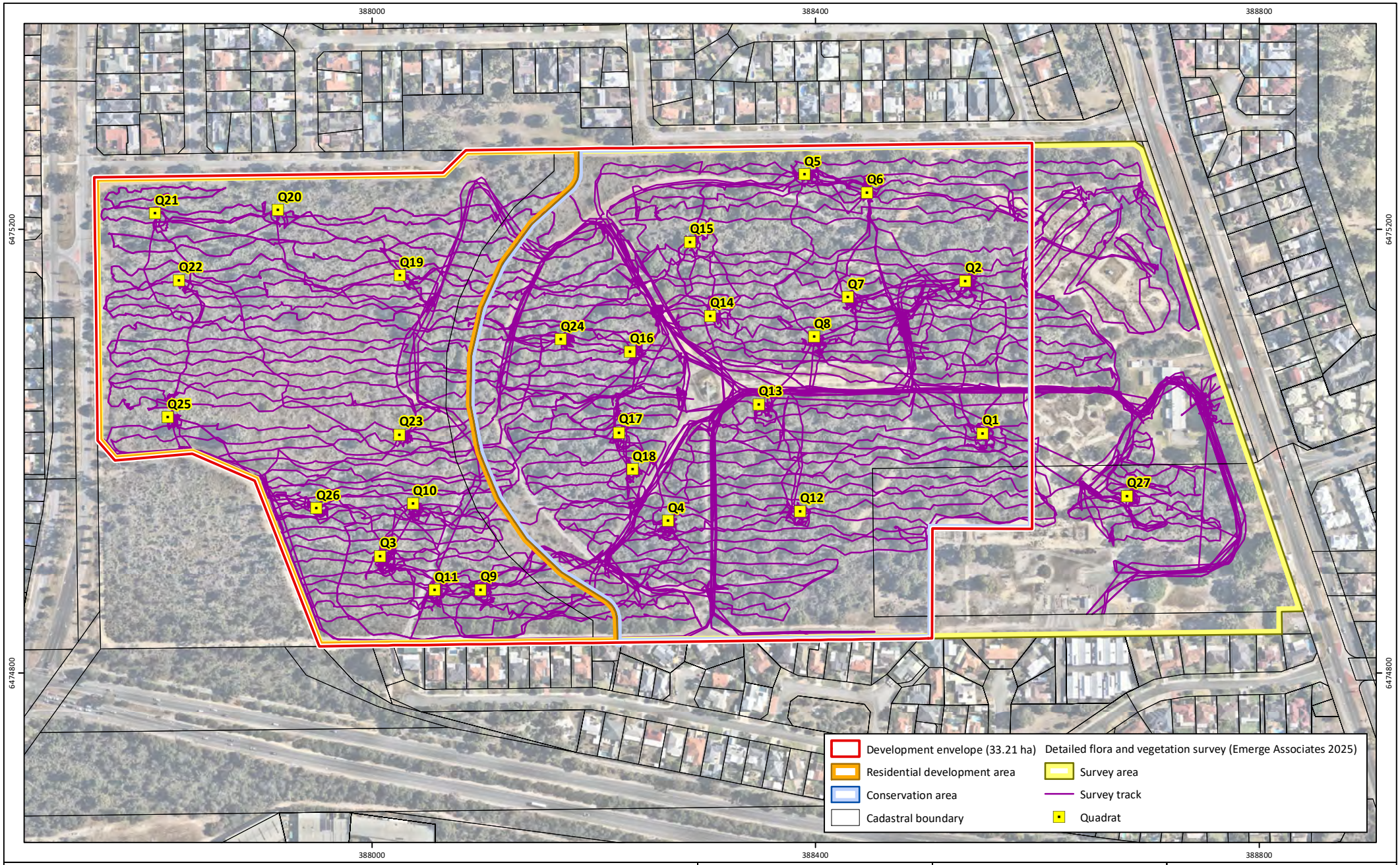

Figure 7: Flora and Vegetation Survey Area and Survey Effort

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Hamersley Residential Development and Conservation
Client: BAI Communications

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Approved: AV
Date: 24/06/2025

N

0 50 100 150
Metres
Scale: 1:4,500@A4
GDA2020 MGA Zone 50

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5.3.2 Vegetation

As discussed in **Section 1.3.7**, the development envelope is within the Swan Coastal Plain IBRA region and within the 'SWA02' or Perth subregion and the Karrakatta complex - central and south vegetation complex. Statewide vegetation statistics indicate that 23.5% of the pre-European extent of the Karrakatta complex - central and south remained on the Swan Coastal Plain in 2018, with 4.6% protected for conservation purposes (Government of Western Australia 2019).

Vegetation is typically considered to represent an intact occurrence of its overarching vegetation complex when it is in 'good' or better condition. Vegetation in some portions of the development envelope (22.63 ha) has been assessed to be in 'good', 'very good', and 'excellent' condition, therefore, this indicates that these areas of remnant native vegetation within the development envelope, in particular where there is an abundance of *Eucalyptus gomphocephala* and *Eucalyptus marginata* is consistent with the 'Karrakatta complex - central and south' vegetation complex.

The 'Karrakatta complex - central and south' within the broader Perth region is shown in **Figure 8.**

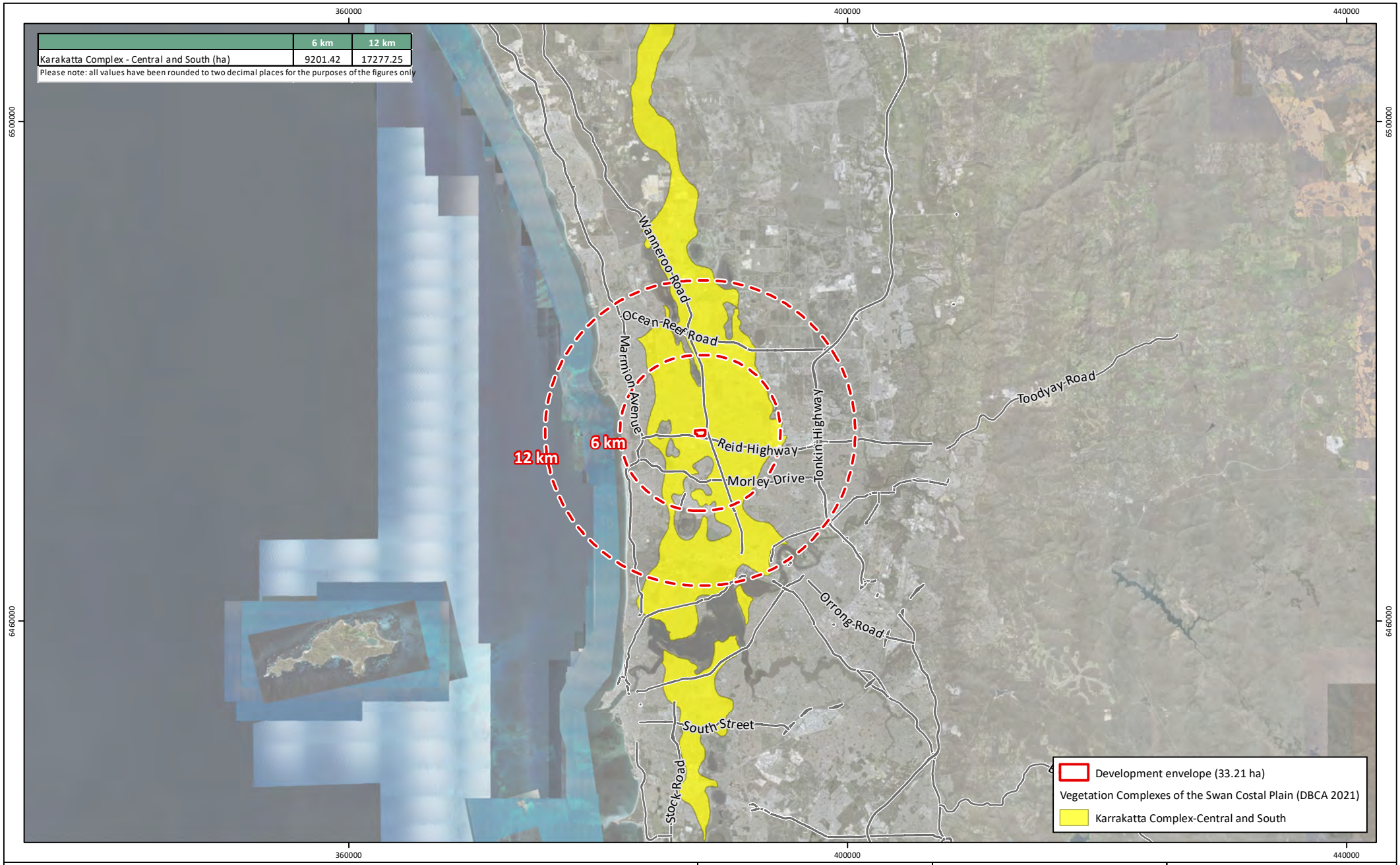
There are no DBCA vested or managed lands or waters within the development envelope. The nearest DBCA vested or managed area is the Errina Road Nature Reserve, located approximately 4 km northeast of the development envelope and the Marmion Marine Park located approximately 6 km to the west.

The vegetation within the development envelope and immediate surrounds contributes to a mapped ecological linkage, which suggests the vegetation contributes to the local and regional movement network for fauna species, as further discussed in **Section 6.3.5** in relation to fauna species.

There are currently no conservation reserves or Bush Forever sites within the development envelope that protect existing environmental or conservation assets, such as remnant native vegetation or threatened species and ecological communities.

The following Bush Forever sites occur within 6 km of the development envelope (**Figure 9**):

- Bush Forever Site 202: Warwick Open Space Conservation Area, approximately 1 km north of the development envelope
- Bush Forever Site 203 Carine Swamps approximately 2 km west of the development envelope
- Bush Forever Site 204: Star Swamp Reserve approximately 4 km west of the development envelope
- Bush Forever Site 212: Lake Gwelup Reserve approximately 3 km south-west of the development envelope
- Bush Forever Site 385: Reid Highway Bushland, approximately 3.3 km east of the development envelope
- Bush Forever Site 328: Decourcey Way Bushland, approximately 4.5 km north of the development envelope.



	6 km	12 km
Karakatta Complex - Central and South (ha)	9201.42	17277.25

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 8: **Karrakatta Complex – Central and South Perth Region**

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N

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Metres
Scale: 1:400,000@A4
GDA2020 MGA Zone 50

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Figure 9: **Bush Forever Sites**

Project:	Environmental Review Document Hamersley Residential Development and Conservation
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Plan Number:
EP24-129(08)--F45a

Drawn:	CTH
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Approved:	AV
Date:	24/06/2025

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Metres

Scale: 1:50,000@A4

GDA2020 MGA Zone 50

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5.3.2.1 Vegetation units

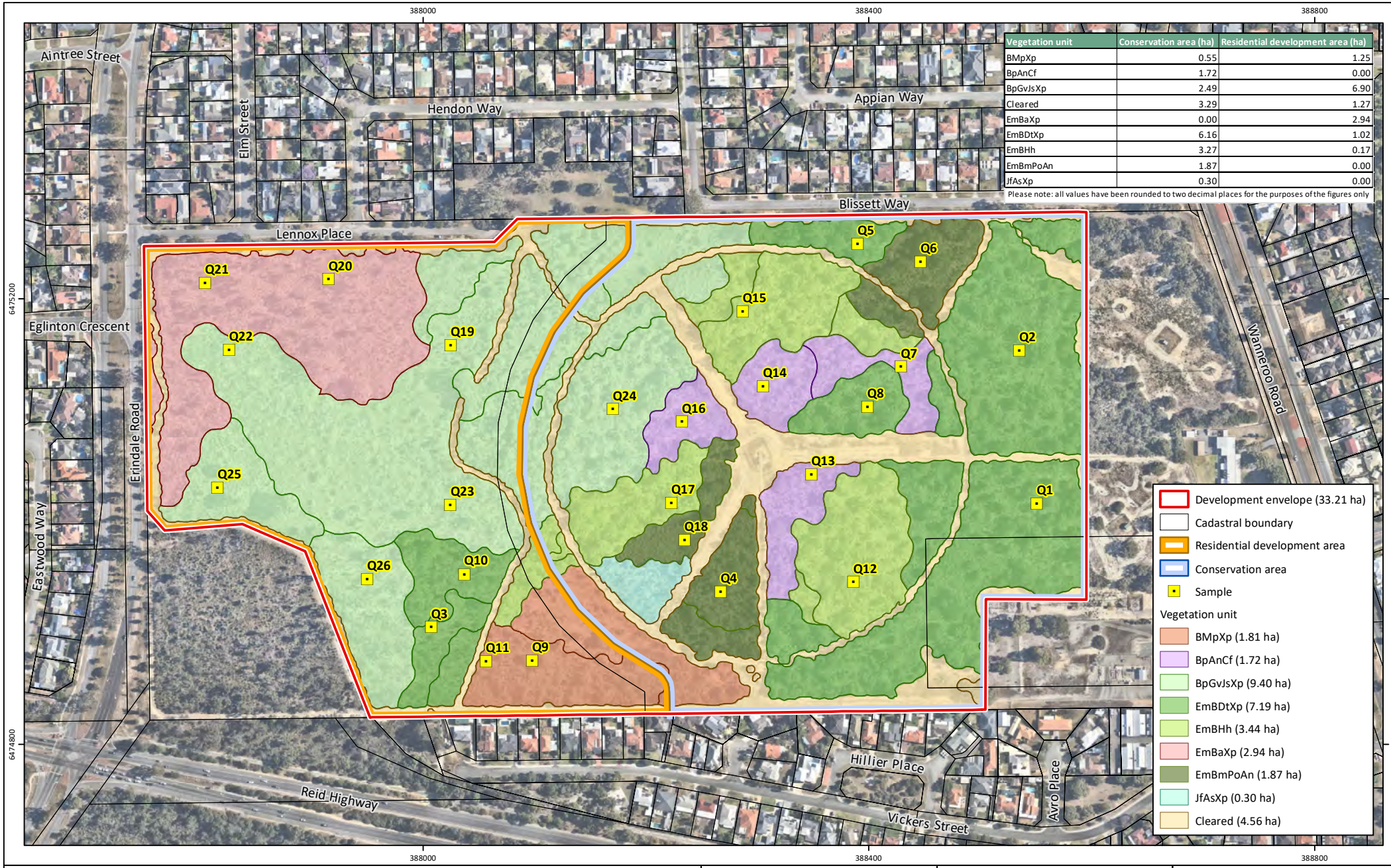
Eight native vegetation units were identified within the development envelope as well as areas of disturbed non-native vegetation (Emerge Associates 2025e). A summary of the extent and description of each vegetation unit within the development envelope is outlined in **Table 12** and shown in **Figure 10**. Photographic representations of the vegetation unit is provided in **Appendix E.**

Table 12: Description and extent of vegetation units within the development envelope

Vegetation unit	Description	Total area (ha)		
		Development Envelope	Conservation area	Residential Development area
BMpXp	Low open woodland of *Banksia menziesii, Banksia ilicifolia* and scattered *Melaleuca preissiana* and *Eucalyptus marginata* over shrubland of *Calytrix fraseri, Bossiaea eriocarpa, Eremaea pauciflora* var. *pauciflora* and *Xanthorrhoea preissii* over forbland of *Alexgeorgea nitens, Conostylis aculeata, Drosera drummondii, *Ursinia anthemoides* and *Pentameris airoides* subsp. *Airoides* and sedgeland of *Schoenus subfascicularis*	1.81	0.55	1.25
BpGvJsXp	Low woodland of *Banksia prionotes* over open shrubland to shrubland of *Grevillea vestita, Jacksonia sericea* (P4), *Xanthorrhoea preissii* over forbland of *Conostylis aculeata*, *Desmocladus flexuosus, Lomandra hermaphrodita, Trachymene pilosa, Ammothryon grandiflorum, *Pelargonium capitatum* and *Ursinia anthemoides* with grassland of *Austrostipa compressa* and *Ehrharta calycina*	9.40	2.49	6.90
BpAnCf	Low woodland of *Banksia prionotes over low shrubland of Calytrix fraseri, Daviesia nudiflora, Gastrolobium capitatum, Gompholobium tomentosum, Stirlingia latifolia* and *Xanthorrhoea preissii over forbland of Austrostipa hemipogon, Trachymene pilosa, Thysanotus manglesianus, *Ursinia anthemoides*	1.72	1.72	0.00
EmBaXp	Woodland of *Eucalyptus marginata* and *Banksia attenuata* over shrubland of *Hibbertia huegelii, Hibbertia hypericoides, Stirlingia latifolia* and *Xanthorrhoea preissii* over forbland of *Austrostipa compressa*, *Kennedia prostrata, Patersonia occidentalis, Trachymene pilosa, *Ehrharta calycina* and *Ursinia anthemoides* and open sedgeland of *Mesomelaena pseudostygia* and *Morelotia octandra*	2.94	0.00	2.94
EmBDtXp	Open woodland of *Eucalyptus marginata, Banksia attenuata* and *B. menziesii* over shrubland of *Daviesia triflora, Gompholobium tomentosum, Stirlingia latifolia, Xanthorrhoea preissii* over forbland of *Alexgeorgea nitens, Burchardia congesta, Desmocladus flexuosus, Drosera erythrorhiza, Haemodorum laxum, Phyllangium paradoxum* and *Wahlenbergia preissii* and open sedgeland of *Mesomelaena pseudostygia* and *Morelotia octandra*	7.19	6.16	1.02

Table 12: Description and extent of vegetation units within the development envelope (continued)

Vegetation unit	Description	Total area (ha)		
		Development envelope	Conservation area	Residential development area
EmBmPoAn	Low open woodland of *Banksia menziesii* and *Eucalyptus marginata* over open shrubland of *Xanthorrhoea preissii* and over low shrubland of *Daviesia triflora*, *Daviesia nudiflora*, *Eremaea pauciflora*, *Monotaxis grandiflora, Stirlingia latifolia*, *Gastrolobium capitatum* and *Hibbertia huegelii* over forbland of *Alexgeorgea nitens*, *Patersonia occidentalis, Scaevola repens, Stylidium androsaceum, Ptilotus manglesii* and *Lomandra* spp. and open sedgeland of *Mesomelaena pseudostygia and Morelotia octandra*	1.87	1.87	0.00
EmBHh	Low woodland of *Eucalyptus marginata, Banksia attenuata, Banksia menziesii* and *Banksia prionotes* over shrubland of *Daviesia triflora, Hibbertia hypericoides, Stirlingia latifolia* and *Xanthorrhoea preissii* over forbland of *Alexgeorgea nitens, Burchardia congesta, Caesia micrantha, Conostylis setigera, Corynotheca micrantha, Drosera erythrorhiza, Scaevola canescens* and *Microlaena stipoides* and open sedgeland of *Mesomelaena pseudostygia and Morelotia octandra*	3.44	3.27	0.17
JfAsXp	Tall shrubland of *Jacksonia furcellata* and *Acacia saligna* over shrubland *Xanthorrhoea preissii* and *Macrozamia fraseri* over grassland of **Ehrharta calycina*	0.30	0.30	0.00
Cleared	Disturbed areas and cleared tracks with limited native species	4.56	3.29	1.27



Vegetation unit	Conservation area (ha)	Residential development area (ha)
BMpXp	0.55	1.25
BpAnCf	1.72	0.00
BpGvJsXp	2.49	6.90
Cleared	3.29	1.27
EmBaXp	0.00	2.94
EmBDtXp	6.16	1.02
EmBHh	3.27	0.17
EmBmPoAn	1.87	0.00
JfAsXp	0.30	0.00

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 10: Vegetation Units

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Date: 30/05/2025

N

0 50 100 150
Metres
Scale: 1:4,500@A4
GDA2020 MGA Zone 50

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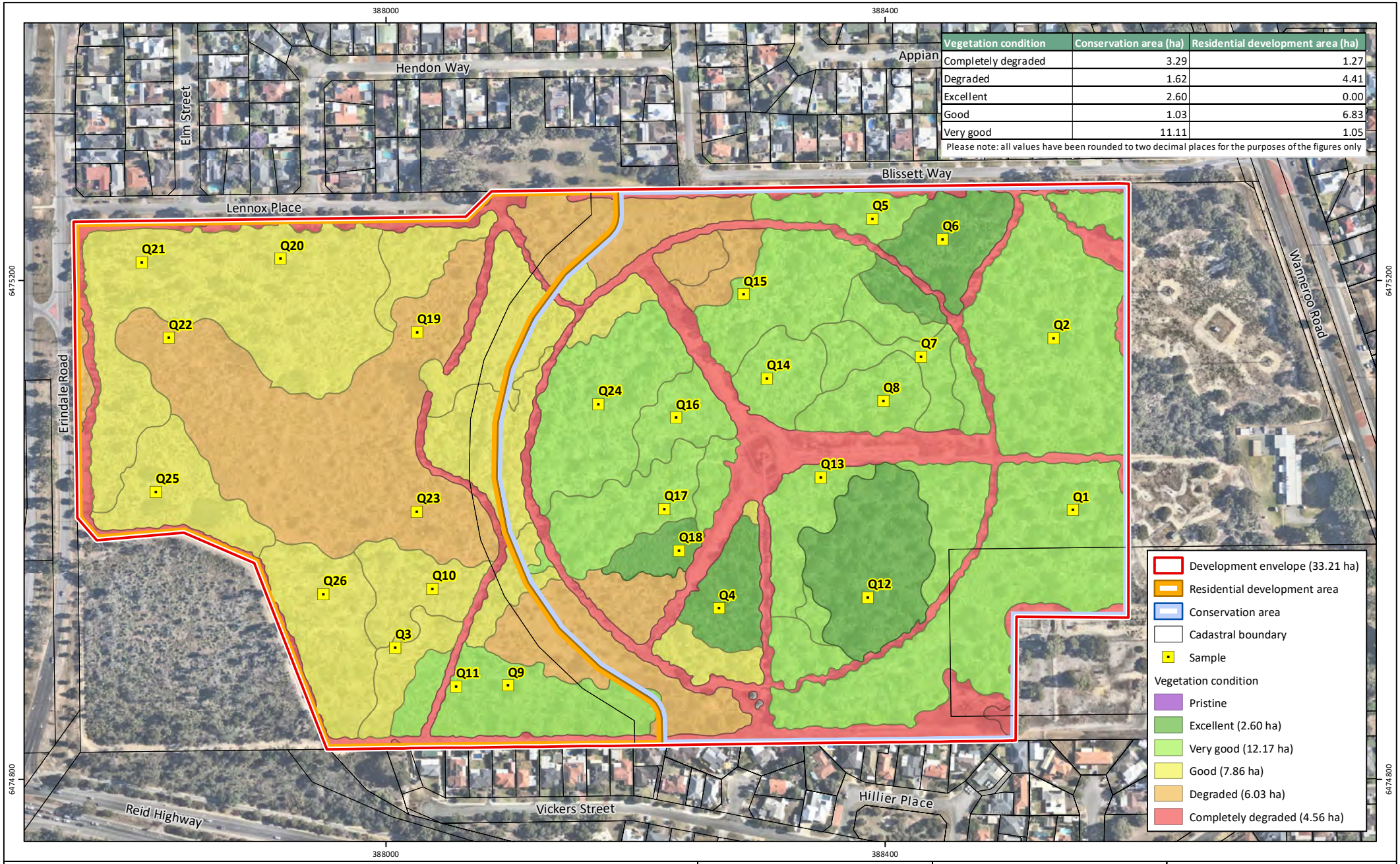
5.3.2.2 Vegetation condition

The vegetation across the development envelope generally comprises high cover of native species compared to a lower cover of weeds and weeds were mostly present in vegetation adjacent to access tracks. However, the historical bush fire event likely altered the vegetation structure and it has regrown into a shrubland/woodland of varying height. Tall dead *Banksia prionotes* branches which extend above the current vegetation occur across the development envelope and indicate the vegetation structure was previously different, and was likely to be taller and denser prior to the fire. These are considered natural variations in vegetation condition resultant from natural biotic factors.

Emerge Associates assessed vegetation condition within the development envelope ranged from 'Degraded' to 'Excellent' condition as shown in **Figure 11**, and detailed in **Table 13**. Cleared areas within the development envelope, including bare ground and tracks were identified to be in 'Completely Degraded' condition.

Table 13: Extent of vegetation condition categories within the development envelope

Condition Category (EPA 2016d)	Total area (ha)		
	Residential development area	Conservation area	Development envelope
Pristine	0	0	0
Excellent	0	2.60	2.60
Very Good	1.05	11.11	12.17
Good	6.83	1.03	7.86
Degraded	4.41	1.62	6.03
Completely Degraded	1.27	3.29	4.56



Vegetation condition	Conservation area (ha)	Residential development area (ha)
Completely degraded	3.29	1.27
Degraded	1.62	4.41
Excellent	2.60	0.00
Good	1.03	6.83
Very good	11.11	1.05

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 11: Vegetation Condition

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0 50 100 150
Metres
Scale: 1:4,000@A4
GDA2020 MGA Zone 50

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Differences in vegetation condition recorded in Emerge Associates (2025e) and the previous survey report by JBS&G (2023) were identified and are likely due to the occurrence of the fire, resulting in altered vegetation structure and recruitment of weeds. The previous report by JBS&G (2023), covered a different survey area (only covered lot 802) and used a different methodology, including the use of intermediate condition categories (ie. Very Good – Excellent), which in addition to the fire, may have influenced differences in vegetation condition mapping between survey results. Vegetation condition mapped by JBS&G (2023) is provided below in **Plate 1.**

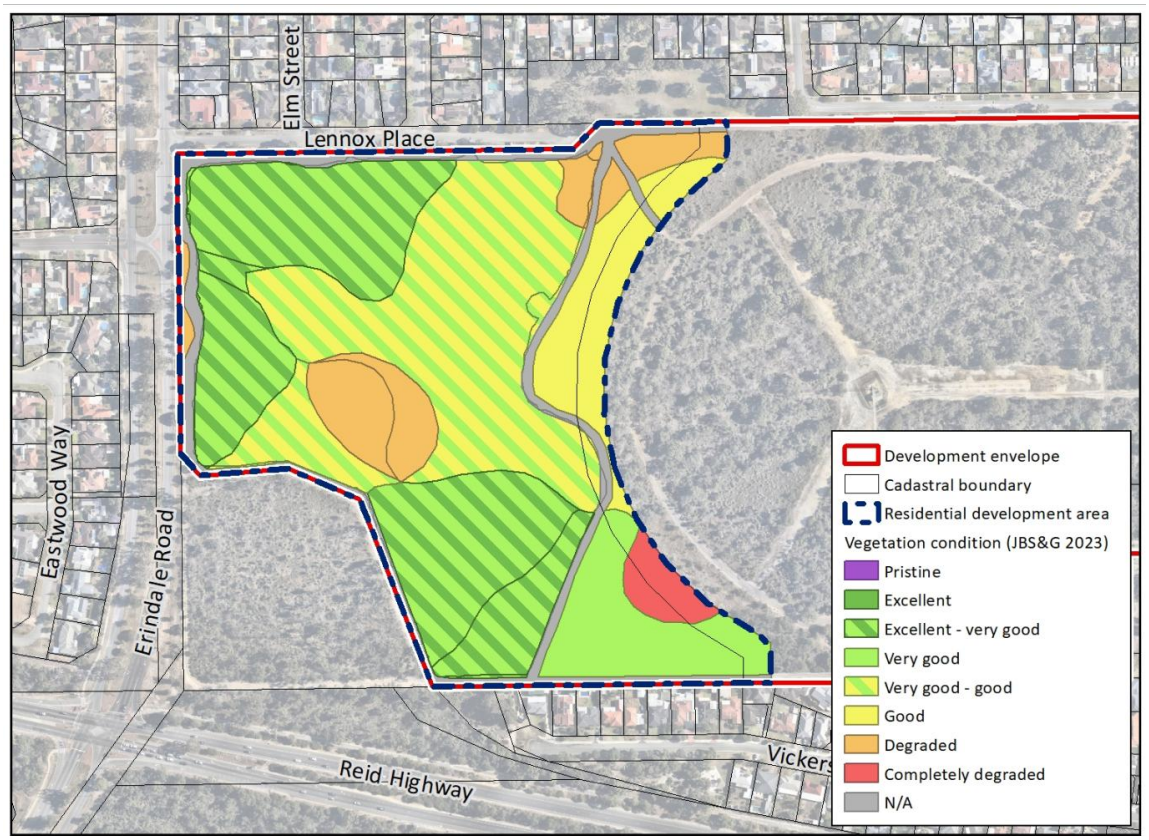

Plate 1: Vegetation Condition (JBS&G 2023)

A comparative analysis of the vegetation condition recorded pre-fire and post-fire has been undertaken for the residential development area to understand if the vegetation condition is likely to improve as the vegetation matures to appropriately inform impact assessment. It is acknowledged that vegetation condition assessments are somewhat subjective and may vary depending on survey personnel and interpretation of condition criteria. To address this, the analysis compared vegetation condition extent recorded by JBS&G both within and outside the fire-affected area, alongside the current condition assessments within and outside the burn scar. This comparison allows for consideration of potential subjectivity, while also accounting for other factors that may influence condition differences, including disturbance history.

Table 14 below shows the extent of each vegetation condition category recorded by JBS&G (2023) and Emerge Associates (2025e). It was determined that changes in vegetation condition are most likely attributed to fire disturbance.

Table 14: Extent of each vegetation condition category recorded by JBS&G (2023) and Emerge Associates (2025e) within and external to the fire scar

Vegetation Condition	Emerge Associates (2025e)		JBS&G (2023)	
	Within fire scar (ha)	External fire scar (ha)	Within fire scar (ha)	External fire scar (ha)
Excellent	0.00	0.00	0.00	0.00
Excellent - Very Good	0.00	0.00	4.46	0.03
Very Good	0.17	0.88	0.00	1.11
Very Good - Good	0.00	0.00	3.99	0.07
Good	5.63	1.19	0.00	1.02
Degraded	3.50	0.90	0.85	0.37
Completely Degraded	0.07	1.19	0.00	0.29

Emerge Associates (2025e) noted recruitment and natural regeneration of native species, especially *Banksia spp.,* and that vegetation condition is likely to improve as the vegetation continues to regrow post fire disturbance. It is anticipated that once vegetation further regenerates post-fire, vegetation currently classified as 'good' and 'degraded' condition within the 2023 burn footprint is likely to improve by one condition category as the vegetation continues to mature (i.e. 'good' improving to 'very good' and 'degraded' improving to 'good'), provided further disturbance is minimised. The improvement in condition category would be due to improved vegetation structure due to maturation of native resprouting plants and those germinated from seed. Based on this, a visualisation of the indicative future vegetation condition post regeneration is provided in **Plate 2** below.

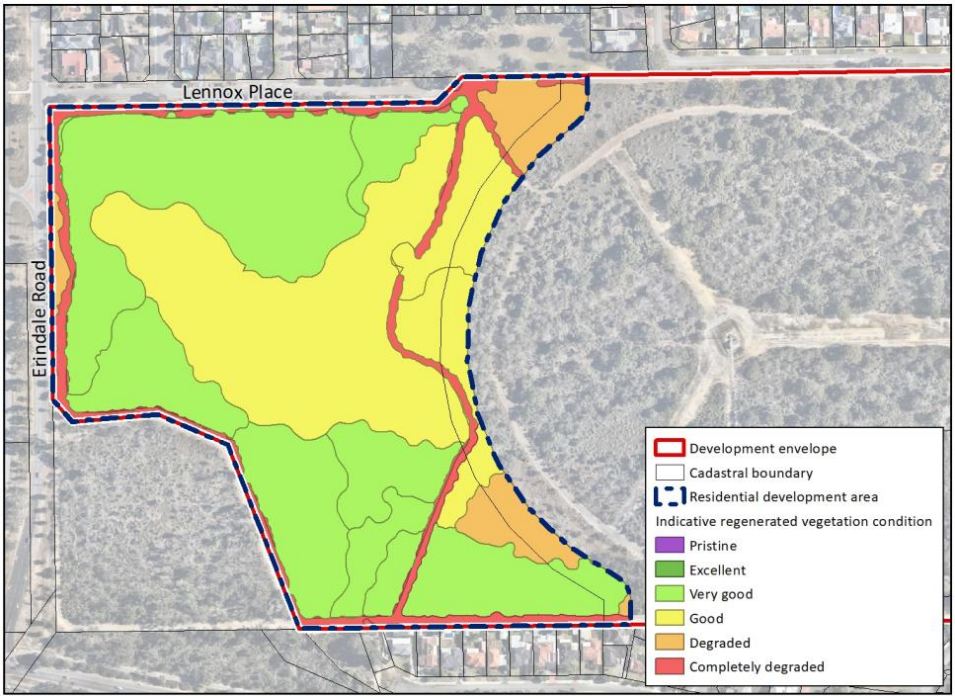

Plate 2: Indicative regenerated vegetation condition – derived from JBS&G (2023) and Emerge Associates (2025e)

5.3.2.3 Threatened and Priority Ecological Communities

Database searches identified eight TECs and eight PECs within 10 km radius of the development envelope (Emerge Associates 2025e) (**Figure 12**). These TEC/PECs occur within the broader area and are not restricted to the Karrakatta vegetation complex, indicating that the broader Karrakatta vegetation complex does not represent vegetation critical for the occurrence of these TEC/PECs.

Vegetation unit **EmBmPoAn** was determined to represent FCT 20a '*Banksia attenuata* woodland over species rich dense shrublands'. FCT 20a is synonymous with the State-listed SCP20a '*Banksia attenuata* woodland over species rich dense shrublands' TEC.

Vegetation unit **BMpXp** represents FCT 21c 'low lying *Banksia attenuata* woodlands of shrublands'. FCT 21c is synonymous with the State-listed SCP21c 'low lying *Banksia attenuata* woodlands or shrublands' PEC.

Vegetation units **BpAnCf**, **BpGvJsXp**, **BmCfSl**, **EmBDtXp**, **EmBaXp** and **EmBHh** represent FCT 28 'Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* woodlands'. FCT 28 can be representative of the 'banksia woodlands of the Swan Coastal Plain' TEC and state listed PEC of the same name. The structure, composition and patch size of vegetation units **BMpXp**, **BmCfSl**, **EmBDtXp**, **EmBaXp**, **EmBmPoAn**, **EmBHh**, **BpAnCf** and **BpGvJsXp** indicates that they represent the Commonwealth listed 'banksia woodlands of the Swan Coastal Plain' TEC and the state listed PEC of the same name.

The 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' PEC (Tuart Woodlands PEC) was recorded within the development envelope and is synonymous with the federal listed TEC of the same name, which is listed as 'Critically Endangered' pursuant to the EPBC Act. The description and criteria defining the PEC at a state level relies on the listing advice of the Commonwealth Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community TEC, as no state level listing advice exists for the PEC (DoEE 2019). Emerge Associates (2025e) provides an assessment of the site conditions against the Tuart Woodlands TEC criteria (**Appendix E**, Table 12).

As per the Commonwealth conservation advice, the extent of Tuart Woodlands PEC comprises individual tuart trees canopy, which are buffered by 30 m and must be within 30 m of another tuart tree canopy. This results in the tuart canopy and the adjacent areas within 30 m forming the full spatial extent of a Tuart Woodlands PEC patch. Based on this, a total of five discrete patches representing the PEC were recorded within the development envelope.

Appling the Commonwealth listing advice to define the PEC results in areas of vegetation associated with the **EmBaXp** and **BpGvJsXp** vegetation unit contributing to the total PEC extent. Vegetation associated with the Tuart Woodlands PEC patches therefore comprises the **EmBaXp** and **BpGvJsXp** vegetation unit and a total of 13 tuart trees, 11 of which occur within the residential development area and 2 occur external to the development envelope, forming part of a patch that extends into the development envelope. A total of 0.28 ha of the Tuart Woodlands PEC patch is associated purely with tuart canopy. When applying the Commonwealth conservation advice criteria and buffer, this results in a buffered PEC extent of 3.63 ha. As such, the remaining extent of the PEC that is not tuart

tree canopy, is associated with the **EmBaXp** and **BpGvJsXp** vegetation in the western portion of the development envelope. Therefore, it is relevant to note that the Tuart Woodlands PEC patches are not associated with vegetation units characterised by the presence of an overstory of tuart and rather the vegetation unit comprises scattered tuarts, which were note identified as a key species defining the vegetation unit. In relation to FCT's, FCT 25 (Southern *Eucalyptus gomphocephala – Agonis flexuosa* woodlands) and FCT 30b (Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands) are strongly correlated with Tuart Woodlands TEC and where tuart is a defining species as per the conservation advice (DoEE 2019). FCT 28 occurs within the development envelope and is not strongly correlated with Tuart Woodlands TEC or tuart dominated vegetation types, however can be marginally associated, and the presence and density of tuart trees varies. The conservation advice (DoEE 2019) defines FCT 28 as Spearwood *Banksia attenuata* or *Banksia attenuata - Eucalyptus woodlands*'. While FCT 28 can be associated with tuart vegetation, the **EmBaXp** and **BpGvJsXp** vegetation in the development envelope includes scattered tuart trees rather than a tuart dominated community and tuart was not identified as a key defining species when characterising the vegetation units.

Small portions of three of the patches extend beyond the development envelope boundary. The patches range in size from 0.5 ha to 2 ha and are thus subject to vegetation condition thresholds. All five patches were in 'high' to 'very high' condition due to intact native understorey cover and moderate species richness and were thus considered to meet the criteria of the tuart woodlands PEC. An additional 2 tuart trees within the residential development area were recorded and do not form part of the Tuart Woodlands PEC as they do not meet the criteria.

Table 15 and **Figure 13** detail the extent of state listed TEC/PECs present within the residential development area and conservation area, as identified by Emerge Associates (2025e). No additional TEC/PECs are considered likely to occur within the development envelope (Emerge Associates 2025e).

Table 15: TEC/PECs recorded within the development envelope

TEC/PEC name	Conservation Status		Spatial extent within development envelope (ha)	
	State	EPBC Act	Residential development area	Conservation area
Banksia woodlands of the Swan Coastal Plain PEC	P3	EN	12.29	16.08
SCP20a '*Banksia attenuata* woodland over species rich dense shrublands' TEC	CR	EN	0.00	1.87
SCP 21c 'low lying *Banksia attenuata* woodlands of shrublands' PEC	P3	EN	0.88	0.02
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain PEC	P3	CR	3.63	0.00

To provide regional context of significant vegetation identified within the development envelope and in proximity to the development envelope, the likely existing extent of the PECs relevant to the residential development area (Banksia woodlands PEC, SCP21c PEC and Tuart woodlands PEC) has been investigated using DBCA database search results (reference no. 50-0924EC) publicly available TEC mapping and current extent of native vegetation mapping (DPIRD 2020; DBCA 2022b). The search results from DBCA's threatened, and priority ecological communities database provide areas which are likely to represent these PECs within 10 km of the development envelope (reference no. 50-0924EC) (DBCA 2024d). It is noted that the areas provided represent patches of vegetation with buffers. In some cases, due to the vegetation mapping approach, the likely extent of PECs occurrence extends beyond the 10 km search area, as the vegetation patches were not clipped to fit within the 10 km buffer. To inform regional context, predictive mapping of the likely extent of Banksia Woodland PEC has been extended to 12 km by including the native vegetation extent as well as the buffered polygons as noted above. It is however noted that the full extent of the PECs is not indicated as likely to occur, nor can it be assumed that all native vegetation within the 12 km is potentially PEC habitat. The search results are based on the Commonwealth's predictive modelling identifying areas where the Banksia Woodland PEC is 'likely to occur' but requires ground-truthing to verify the presence of the Banksia Woodland PEC (DBCA 2024d).

The DBCA buffered PEC extents was validated with the Department of Primary Industries and Regional Development's (DPIRD) Native Vegetation Extent dataset to appropriately reflect the likely extent of the PECs within 12 km of the development envelope. Comparison of the buffered DBCA search results to DPIRDs current native vegetation extent dataset determined that approximately 3,170 ha of the Banksia Woodland PEC, 53 ha of SP21c PEC and 543 ha of Tuart Woodlands PEC may occur within 12 km from the development envelope, with this regional extent shown in **Figure 14**. For local context, of this, a total of 653 ha of the Banksia Woodland PEC, 0 ha of SP21c PEC and 376 ha of Tuart Woodlands PEC may occur within 6 km from the development envelope (**Figure 14**).

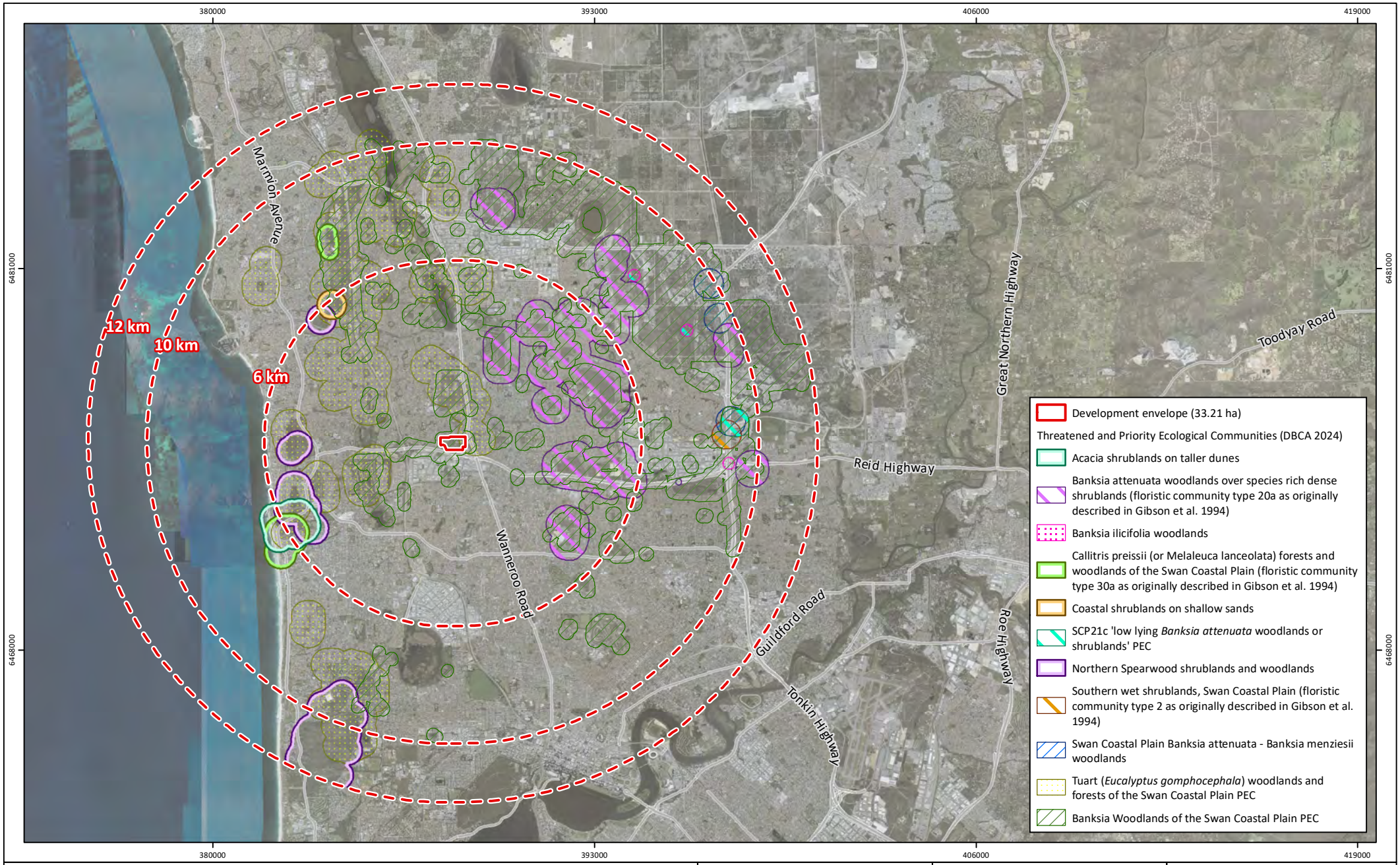

Figure 12: Ecological Communities Database Search Results

Project: Environmental Review Document
Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number:
EP24-129(08)--F92
Drawn: CTH
Date: 11/02/2025
Checked: EKB
Approved: AV
Date: 24/06/2025

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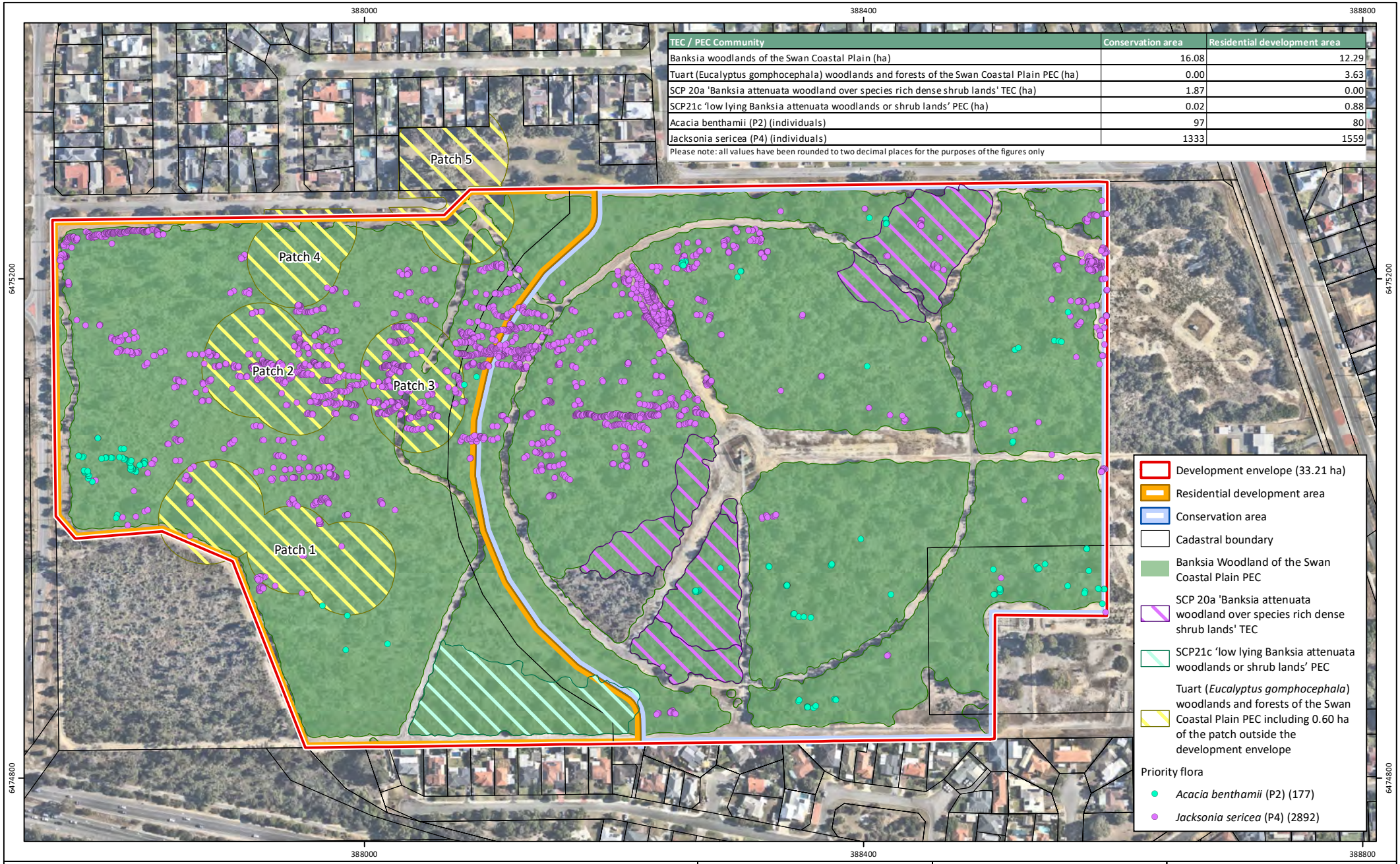
Metres
Scale: 1:170,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES



TEC / PEC Community	Conservation area	Residential development area
Banksia woodlands of the Swan Coastal Plain (ha)	16.08	12.29
Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain PEC (ha)	0.00	3.63
SCP 20a 'Banksia attenuata woodland over species rich dense shrub lands' TEC (ha)	1.87	0.00
SCP21c 'low lying Banksia attenuata woodlands or shrub lands' PEC (ha)	0.02	0.88
Acacia benthamii (P2) (individuals)	97	80
Jacksonia sericea (P4) (individuals)	1333	1559

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 13: Threatened and Priority Ecological Communities and Flora

Project: Environmental Review Document
Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number:
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Date: 28/04/2025
Checked: EKB
Approved: AV
Date: 30/05/2025

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GDA2020 MGA Zone 50

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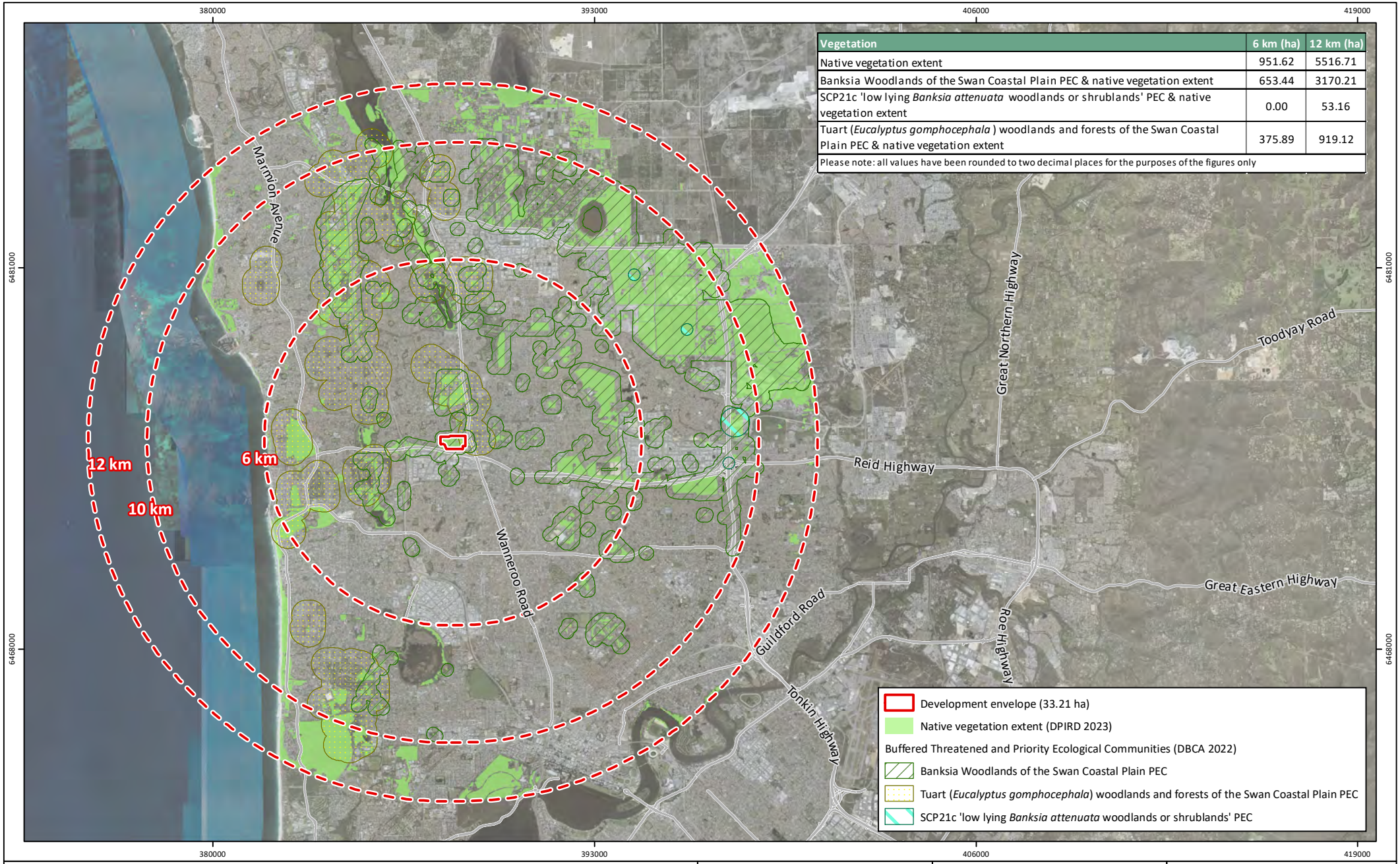

Vegetation	6 km (ha)	12 km (ha)
Native vegetation extent	951.62	5516.71
Banksia Woodlands of the Swan Coastal Plain PEC & native vegetation extent	653.44	3170.21
SCP21c 'low lying *Banksia attenuata* woodlands or shrublands' PEC & native vegetation extent	0.00	53.16
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain PEC & native vegetation extent	375.89	919.12

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 14: Existing Native Vegetation Extent and and Threatened and Priority Ecological Communities

Project: Environmental Review Document
Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number:
EP24-129(08)--F51b
Drawn: CTH
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Metres
Scale: 1:170,000@A4
GDA2020 MGA Zone 50

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5.3.3 Flora

The Detailed Flora and Vegetation Assessment undertaken by Emerge Associates (2025e), recorded a total of 167 native and 41 non-native (weed) species representing 46 families and 151 genera within the broader survey area. No threatened flora species were recorded during the surveys. The dominant families containing native taxa were Fabaceae (18 native taxa and three weed taxa) and Orchidaceae (15 native taxa and one weed taxa). Sampling recorded 189 species from 27 samples with an additional 27 species recorded opportunistically across the survey area.

A total of 41 introduced species were recorded across the broader survey area. Two species listed as a declared pest (C3) pursuant to the *Biosecurity and Agriculture Management Act 2007, Moraer flaccida* (one-leaf Cape tulip) and *Opuntia stricta* (common prickly pear) was recorded by Emerge Associates (2025e) within the survey area. *O. stricta* is also listed as a Weed of National Significance (WoNS).

Pathogens such as *Phytophthora spp*. (dieback) affect susceptible plants by attacking their root system which inhibits uptake of water and nutrients (DPaW 2015). No records of dieback occur in the development envelope or immediate surrounds, but no formal testing has been undertaken (SCNRM 2022).

5.3.3.1 Threatened and priority flora

Based on the desktop investigations one threatened and nine priority flora species were classified as having a 'high' or 'moderate' likelihood of occurrence within the development envelope of the proposal and immediate surrounds, as outlined in **Table 16** below and further discussed in **Appendix E** (Emerge Associates 2025e).

Table 16: Threatened or priority flora species with a high or moderate likelihood of occurrence in the development envelope

Species	Status		Life strategy	Flowering period	Likelihood of occurrence
	WA	EPBC Act			
Caladenia huegelii	CR	EN	PG	Sep-early Nov	Moderate
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)	P1	-	P	Sep-Dec	Moderate
Acacia benthamii	P2	-	P	Aug-Sept	High
Beyeria cinerea subsp. *cinerea*	P3	-	P	May-Oct	Moderate
Conostylis bracteata	P3	-	P	Aug-Sep	Moderate
Hibbertia leptotheca	P3	-	P	Aug-Oct	Moderate
Sarcozona bicarinata	P3	-	P	Aug	Moderate
Anigozanthos humilis subsp. *chrysanthus*	P4	-	P	Jul-Oct	Moderate
Eucalyptus foecunda subsp. *foecunda*	P4	-	P	Jan-Mar	Moderate
Jacksonia sericea	P4	-	P	Dec-Feb	High

CR=critically endangered, EN=endangered, VU=vulnerable, P1-P4=Priority 1-Priority 4, P=perennial, PG=perennial geophyte

Emerge Associates (2025e) identified two priority flora species within the development envelope, namely, *Acacia benthamii* (P2) and *Jacksonia sericea* (P4). A total of 177 individuals of *A. benthamii* (P2), and a total of 2,892 individuals of *J. sericea* (P4) were recorded within the development envelope, of which 80 and 1,559 occur within the residential development area, respectively (**Figure 13**). Emerge Associates (2025e) concluded that the field surveys in September, October and November 2024 were considered sufficient to determine that the remaining priority species identified in the likelihood of occurrence assessment are absent. None of those species were detected during previous surveys (Weston 2001; Cardno 2008; Strategen 2019; Strategen-JBS&G 2021; JBS&G 2023; Anders Environmental Consulting 2024).

To provide regional and local context of priority flora identified within the development envelope, the known records of *A. benthamii* (P2) and *J. sericea* (P4) has been investigated using DBCA database search results (reference no. 11-1024FL) and site details from Bush Forever area descriptions as shown on **Figure 15** (Government of WA 2000; DBCA 2022a)**.**

5.4 Environmental impacts

The implementation of the proposal will result in anticipated permanent, direct impact through clearing of vegetation, discussed in **Section 5.4.1** below.

A risk assessment has been undertaken (**Appendix G**) for this factor to consider additional, unplanned direct and indirect impacts. The following four key risk events relevant to flora and vegetation have been rated as 'moderate' or 'low' prior to mitigation:

- Risk ID FV1 – Unapproved clearing of flora and vegetation (Initial risk rating 'moderate'): Direct impact through the loss of flora, vegetation and fauna habitat and potentially indirect impact through increased edge effects and fragmentation due to clearing activities
- Risk ID FV2 – Spread or introduction of weeds or pathogens (Initial risk rating 'low'): Indirect and direct impact through reduced extent or quality of flora, vegetation and fauna habitat in the conservation area due to clearing activities
- Risk ID FV3 - Habitat fragmentation (Initial risk rating 'low'): Indirect and direct impact through reduced extent or quality of flora, vegetation and fauna habitat through increased edge effects and fragmentation due to construction activities
- Risk ID FV3 - Bushfire (Initial risk rating 'low'): Direct and indirect impact to remaining flora and vegetation through increased fire risk due to construction activities.

5.4.1 Anticipated direct impacts to flora and vegetation

The implementation of the proposal will result in the permanent, direct impact through clearing of vegetation. The residential development area and the conservation area have been used to quantify and assess the impacts of the proposal on flora and vegetation.

Vegetation units

Up to 12.29 ha (37%) of native vegetation (within native vegetation units BMpXp, BpGvJxXp, EmBaXp and EmBHh) occurs within the future residential development area and therefore may be cleared as part of future implementation of the proposal as shown in **Table 17**.

Table 17: Potential impacts to vegetation units

Vegetation unit	Development envelope (ha)	Conservation area (ha)	Residential development area (ha)	% Impact
BMpXp	1.81	0.55	1.25	69.06
BpGvJsXp	9.40	2.49	6.90	73.40
BpAnCf	1.72	1.72	0.00	0.00
EmBaXp	2.94	0.00	2.94	100.00
EmBDtXp	7.19	6.16	1.02	14.18
EmBmPoAn	1.87	1.87	0.00	0.00
EmBHh	3.44	3.27	0.17	4.94
JfAsXp	0.30	0.30	0.00	0.00
Cleared	4.56	3.29	1.27	27.85

Vegetation condition

With respect to native vegetation condition, the residential development area intersects 7.88 ha (24%) of intact native vegetation in 'good' or better condition, which therefore may be cleared as part of future implementation of the proposal (**Table 18**). The residential development area comprises historically disturbed areas with approximately 5.68 ha (17%) of 'completely degraded' and 'degraded' condition native vegetation (Emerge Associates 2025e).

As discussed in **Section 5.3.2.2** above, the indicative regenerated vegetation condition based on the comparative analysis has been considered and included in **Table 18** below.

Table 18: Potential impacts to vegetation condition

Condition Category (EPA 2016d)	Conservation area (ha)	Current vegetation condition (Emerge Associates 2025e)			Indicative regenerated vegetation condition		
		Development envelope (ha)	Residential development area (ha)	% Impact	Development envelope (ha)	Residential development area (ha)	% Impact
Pristine	0	0	0	N/A	0	0	N/A
Excellent	2.60	2.60	0	0	2.60	0	0
Very Good	11.11	12.17	1.05	8.63	17.84	6.73	37.72
Good	1.03	7.86	6.83	86.90	5.69	4.66	81.89
Degraded	1.62	6.03	4.41	73.13	1.71	0.90	5.26
Completely Degraded	3.29	4.56	1.27	27.85	4.56	1.27	27.85

Karrakatta Complex - Central and South vegetation complex

A total of 7.88 ha of native vegetation in the residential development area is in 'good' and 'very good' condition, therefore, representative of the Karrakatta Complex - central and south vegetation complex. As discussed in **Section 5.3.2**, statewide vegetation statistics indicate that 23.5% of the pre-

European extent of the Karrakatta complex - central and south remained on the Swan Coastal Plain in 2018, with 4.6% protected for conservation purposes (Government of Western Australia 2019).

The clearing of 7.88 ha of native vegetation representative of the Karrakatta complex – central and south within the development envelope would not cause significant fragmentation and would account for 0.59% of the total remaining vegetation extent within protected Bush Forever sites within 12 km, and approximately 0.06% of the total remaining vegetation complex extent (**Figure 16**).

Potential impacts to Karrakatta Complex – Central and South vegetation complex are summarised in **Table 19** below.

Table 19: Potential impacts to Karrakatta Complex – Central and South

Extent	Karrakatta Complex – Central and South
Swan Coastal Plain extent	
Pre-European extent	53,081 ha
2018[1] extent remaining on Swan Coastal Plain	12,467 ha
Percentage of pre-European extent remaining on Swan Coastal Plain protected for conservation purposes	4.6%
Within the residential development area	
'Good' or better condition vegetation within future residential development area	7.88 ha
'Good' or better condition vegetation within future conservation area	14.74 ha
Percentage of 'Good' or better condition vegetation impacted	35%

[1] most recent data published by DBCA

Threatened Ecological Communities

A total of four TEC/PECs were identified within the development envelope, of which the residential development area intersects with three PEC's, as outlined in **Table 20** below.

The conservation area achieves protection and retention of 16.08 ha (56.68%) of Banksia woodlands of the Swan Coastal Plain PEC and 1.87 ha (100%) of SCP20a 'Banksia attenuata woodland over species rich dense shrublands' TEC.

Table 20: Potential impacts to TEC/PECs

TEC/PEC name	Development envelope (ha)	Conservation area (ha)	Residential development area (ha)	Impact (%)
Banksia woodlands of the Swan Coastal Plain PEC	28.37	16.08	12.29	43.32
SCP20a '*Banksia attenuata* woodland over species rich dense shrublands' TEC	1.87	1.87	0.00	0
SCP 21c 'low lying *Banksia attenuata* woodlands of shrublands' PEC	0.90	0.02	0.88	97.78
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain PEC	3.63	0.00	3.63	100

As discussed in **Section 5.3.2.3** above, based on the DBCA database search results, a total of approximately 3,170 ha of the Banksia Woodland PEC, 53 ha of SP21c PEC and 543 ha of Tuart Woodlands PEC may occur within 12 km from the development envelope (**Figure 14**). Based on the mapped extent of the PECs, the proposal will result in an approximate 0.39% reduction of the Banksia Woodland PEC, 1.70% reduction of the SCP21c PEC and 0.67% reduction of the Tuart Woodlands PEC within 12 km of the development envelope.

At a local scale (within 6 km) a total of 653 ha of the Banksia Woodland PEC, 0 ha of SP21c PEC and 376 ha of Tuart Woodlands PEC may occur within 6 km from the development envelope (**Figure 14**). As such, the proposal will result in an approximate 1.88% reduction of Banksia Woodlands PEC, 100% reduction of SC21c PEC extent and 0.97% reduction of Tuart Woodlands PEC extent within 6 km of the development envelope.

As discussed above in **Section 5.3.2.3** in relation to Tuart Woodlands PEC, a total of 0.28 ha of the Tuart Woodlands PEC patch is associated purely with tuart canopy and the remaining extent of the PEC does not include tuart tree canopy and is associated with the **EmBaXp** and **BpGvJsXp** vegetation units. When applying the Commonwealth conservation advice criteria and buffer, this results in a buffered PEC extent of 3.63 ha. While FCT 28 can be associated with tuart vegetation, the **EmBaXp** and **BpGvJsXp** vegetation in the development envelope includes scattered tuart trees and lacks a tuart dominated community, and tuart was not identified as a key defining species when characterising the vegetation units. As such, the loss of 0.28 ha of tuart canopy contributes to approximately 0.07% of the mapped extent within 6 km of the development envelope and 0.03% of the mapped extent within 12 km of the development envelope.

Threatened and priority flora

Up to a total of 80 (45%) *A. benthamii* individuals and 1,559 (54%) *J. sericea* individuals will be potentially impacted by the proposal (**Table 21**). Additionally, the conservation area will retain 97 (55%) *A. benthamii* individuals and 1,333 (46%) *J. sericea* individuals.

Table 21: Potential impacts to threatened and priority flora

Species	Development envelope	Conservation area (ha)	Residential development area	Impact (%)
Acacia benthamii	177	97	80	45%
Jacksonia sericea	2,892	1,333	1,559	54%

As discussed above, a total of 1,340 ha and 549 ha of the Karrakatta Complex – central and south vegetation complex occurs within 12 km and 6 km radius of the proposal and is protected within Bush Forever sites. This vegetation is likely to support similar species composition to that of the development envelope. To further understand the likely occurrences of *J. sericea* and *A. benthamii* within the surrounding areas, Bush Forever and DBCA's threatened and priority flora species database has been investigated.

The DBCA database search results identified 25 records (some of which recorded multiple individuals) of *J. sericea* and 3 records of *A. benthamii* within 10 km of the development envelope.

Bush Forever (Government of WA 2000) identifies 4 Bush Forever sites with records of *A. benthamii* and 14 Bush Forever sites with records *J. sericea* as shown on **Figure 15**. *A. Benthamii* was recorded in Bush Forever Sites 317 (Kings Park), 465 (Passmore Street Bushland, Southern River) and 406 (Wilbinga-Caraban Bushland). Kings Park is 12 km south of the development envelope while Passmore Street bushland is 32.6 km southeast and Wilbinga-Caraban Bushland is 48 km north. A total of 7 Bush Forever sites containing *J. sericea* are located within 12 km of the development envelope including:

- Bush Forever Site 204: Star Swamp Reserve
- Bush Forever Site 201: Koondoola Regional Bushland
- Bush Forever Site 493: Errina Road Bushland
- Bush Forever Site 299: Yellagonga Regional Park
- Bush Forever Site 303: Whitfords Avenue Bushland
- Bush Forever Site 407: Woodvale Nature Reserve
- Bush Forever Site 312: Bold Park and Adjacent Bushland.

The 80 individuals of *A. benthamii* to be removed as part of the proposal represent 45% of the individuals recorded within the development area, and 33% of the individuals recorded within the broader survey area (Emerge Associates 2025e). At a local scale 247 known records of *A. benthamii* occur within 6 km of the development envelope. At a regional scale 218 known records occur within 12 km of the development envelope. The removal of 80 individuals will result in a 32% decrease in the known records within 6 km of the development envelope and 32% of known records within 12km of the development envelope. It is noted that these records can account for multiple individuals occur at each record location. As such this is considered an underestimate of the population. The proposed clearing is therefore unlikely to result in significant impacts to conservation significant flora at either a local or regional scale.

The 1,559 individuals of *J. sericea* to be removed as a part of the proposal represents 55% of the individuals recorded within the development area, and 36% of the individuals recorded across the broader survey area (Emerge Associates 2025e). At a local scale 4,345 known records of *J. sericea*

occur within 6 km of the development envelope. At a regional scale 4,362 known records occur within 12 km of the development envelope. The removal of 1,559 individuals will result in a 36% decrease in the known records within 6km of the development envelope and 36% of known records within 12km of the development envelope. It is noted that these records can account for multiple individuals occur at each record location. As such this is considered an underestimate of the population. The proposed clearing is therefore unlikely to result in significant impacts to conservation significant flora at either a local or regional scale.

5.4.2 Direct impacts

Direct impacts on flora and vegetation are impacts that result in the direct (permanent) loss of flora or vegetation values (i.e. through clearing). Direct impacts arise from clearing native vegetation within the development envelope as well as accidental unauthorised clearing outside the approved clearing boundary. The risk of unapproved clearing of flora and vegetation is considered as Risk ID FV1 and anticipated direct impacts as a result of implementation of the proposal are discussed above in **Section 5.4.1.**

Unapproved clearing of flora and vegetation (Risk ID FV1)

There is a risk that accidental unauthorised clearing outside the approved clearing boundary during the implementation of the proposal, would result in additional unplanned loss of flora and vegetation.

There is a risk that the current land uses for transmission activities and maintenance, through intensification of current land uses, change in land uses or decommissioning of the sites infrastructure would result in unapproved clearing or disturbance to flora and vegetation within the conservation area.

5.4.3 Indirect impacts

Indirect impacts on flora and vegetation are impacts that may not result in the direct loss of flora or vegetation values (i.e. through clearing) but impacts that could result in a negative impact to flora and vegetation values such as reduced vegetation condition, introduction of disease. Indirect impacts, if severe enough and not appropriately managed could leave to permanent (direct) loss of flora and vegetation values. Indirect impacts are discussed in the following sections.

Spread of weeds, diseases and dust (Risk ID FV3)

Weeds have the potential to outcompete and displace native vegetation if introduced or conditions are altered to favour their growth. Weeds may be spread and/or introduced by poor hygiene practices on vehicles and equipment during the construction phase of the proposal and associated with transportation of soils, weed vegetative material and seeds being transported from or into the development envelope.

Dieback, caused by the plant pathogen *Phytophthora spp.*, affects at least 40% of native flora species within the south-west of Western Australia. It is a soil-borne pathogen that affects the root system of plants, restricting the absorption of water and nutrients, which can lead to plant death. The

pathogen is spread through the movement of soil and water such as through construction vehicles and during vegetation clearing.

The proposal has the potential to result in dust generation during construction works that may potentially deposit on flora and vegetation in the immediate surrounds of the development envelope.

Habitat fragmentation (Risk ID FV3)

Fragmentation occurs when the continuity of vegetation i.e. ecological linkages is disrupted such as through vegetation clearing and when an area of vegetation is reduced into multiple smaller patches.

Implementation of the proposal will result in increased fragmentation of vegetation through the reduction of the current size of vegetation present and increase the distance to adjacent vegetation patches. However, Hamersley and its surrounds are within an urbanised and existing highly fragmented landscape. The development envelope forms part of two ecological linkages and native vegetation within the development envelope is connected to patches of native vegetation to the southwest and north but is otherwise already fragmented and disconnected from vegetation in the broader area.

The proposal is not likely to increase fragmentation of vegetation in the local area. The closest patch of vegetation within the immediate surrounds of the development envelope is to the southwest of the development envelope which is currently already fragmented due to boundary fences and fire breaks. This patch occurs on Main Roads WA land and has been indicated for removal as a part of the upgrading of the Erindale Road and Reid Highway intersection. Other vegetation patches within the surrounding area are already fragmented by fencing, roads and housing. Additionally, the development envelope is currently fenced, providing limited linkage of vegetation for terrestrial fauna species. The implementation of the proposal will not increase the fragmentation between these patches and the vegetation to be retained in the development envelope.

Bushfire within conservation area (Risk ID FV4)

Due to the increased presence of people and ignition sources there is potential for increased fire risk, which could affect flora and vegetation in the adjacent conservation area. In the short-term (i.e. during construction), implementation of the proposal and associated development and supporting infrastructure works will involve the use of construction machinery and the movement of potential fuels (such as building debris, waste, cleared vegetation, etc.), which presents a risk of accidental fire ignition that has the potential to impact flora and vegetation adjacent to the proposal. This risk deals with potential consequences on native vegetation, not life and property.

5.4.4 Cumulative impact assessment

The cumulative impact assessment has considered:

- The known extent of native vegetation remaining within 6 and 12 km of the proposal
- Estimated pre-European extent of vegetation within 6 and 12 km of the proposal
- Known extent of relevant vegetation complexes remaining within the Perth region

- An estimation of protected native vegetation versus vegetation which may be subject to future development based on planning schemes and zones.

The above consideration provide an estimation of the native vegetation within 6 and 12 km of the development envelope likely to support similar flora and vegetation values (including TEC/PEC and priority flora species) to that of the development envelope.

Native vegetation and Karrakatta Complex - Central and South vegetation complex

Historically vegetation clearing has occurred within 12 km of the proposal for residential and infrastructure uses. Aerial photography indicates that significant clearing occurred prior to 1974.

Within 6 km and 12 km of the proposal, there is 952 ha and 5,517 ha of native vegetation respectively, as shown on **Figure 14**. The native vegetation within the residential development area (12.29 ha), represents a 1.3% and 0.2% of the mapped extent of native vegetation within 6 km and 12 km, respectively.

Land parcels presently zoned as 'parks and recreation' provide an area of 1,218 ha within 6 km and 7,319 ha within a 12 km radius of the proposal, as shown on **Figure 16**. These areas are afforded protection through land use zoning, and it is therefore anticipated that any vegetation within these protected areas will remain in the future. A total of 699 ha and 813 ha of the Karrakatta complex - central and south is mapped within 'parks and recreation' reserves (**Figure 16**).

Studies have indicated that the loss of biodiversity caused by habitat fragmentation is significantly greater once a habitat type falls below 30% of its original extent (Miles 2001). The national objectives and targets for biodiversity conservation established an objective of retaining 30% of the original extent of each vegetation complex (Environment Australia 2001). The EPA (2008) considers that remnants of vegetation complexes where less than 10% of the complex remains within 'constrained areas' (areas where there is a reasonable expectation that development will be able to proceed) are of high conservation significance and are a priority for protection.

The 'Karrakatta complex – central and south' vegetation complex has approximately 23.5% of its original extent remaining, of which approximately 4.6% is protected. A total of 9,201 ha and 17,277 ha of the Karrakatta complex – central and south occurs within 6 km and 12 km, respectively of the development envelope. Of this, 1,340 ha and 549 ha of this vegetation complex occurs within 12 km and 6 km radius of the proposal and is protected within Bush Forever sites.

The clearing of 7.88 ha of native vegetation representative of the Karrakatta complex – central and south within the development envelope would account for 0.59% of the total remaining vegetation extent within protected Bush Forever sites within 12 km, and approximately 0.06% of the total remaining vegetation complex extent (**Figure 16**).

Summary

In summary, based on the minor (0.06%) removal of native vegetation representative of the Karrakatta complex – central and south resulting in a reduction of the vegetation complex from 23.5% to 23.44% and the amount protected in conservation and reserves, cumulative impacts are not considered significant.

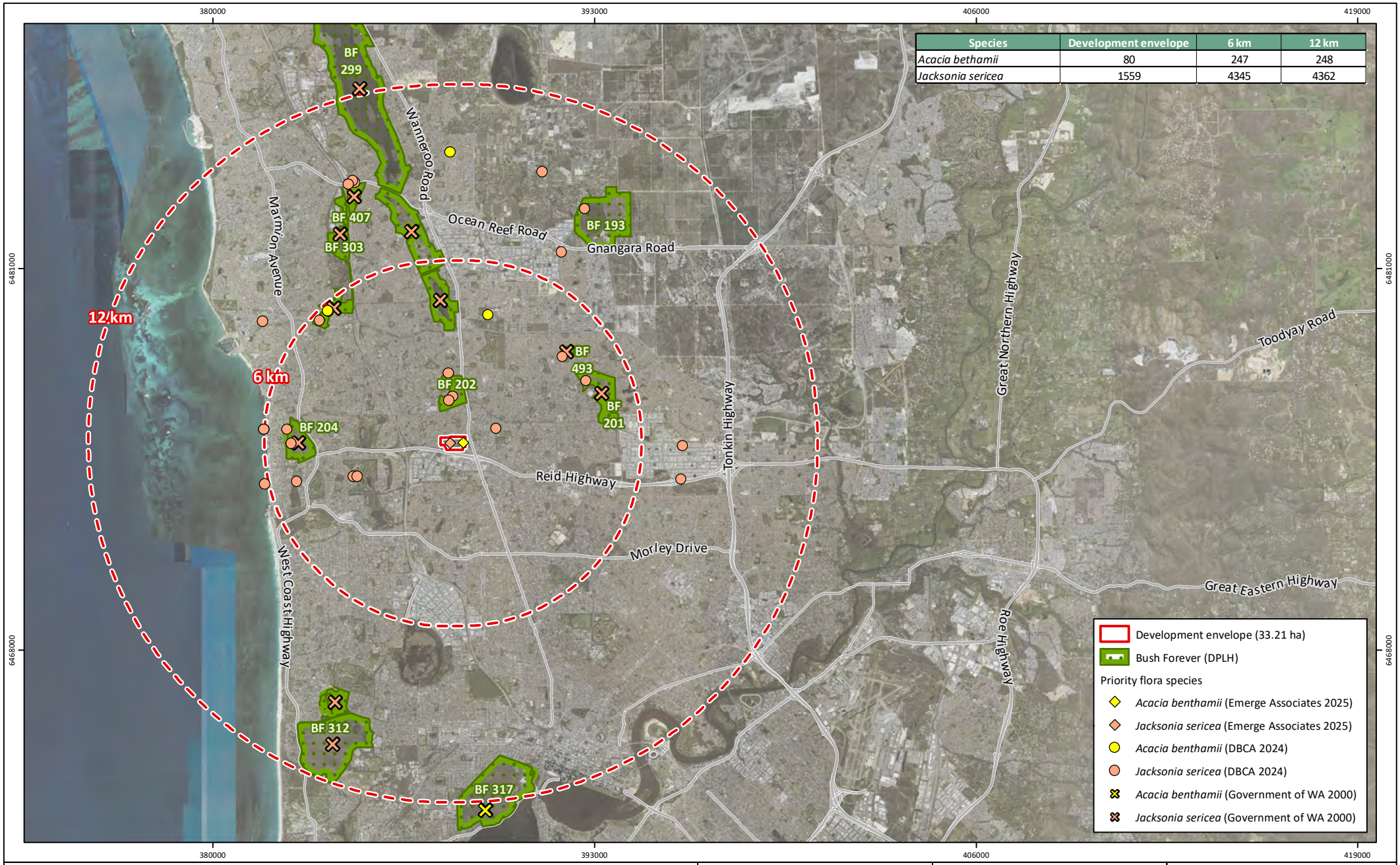

Figure 15: Local and Regional Context for Priority Flora Species

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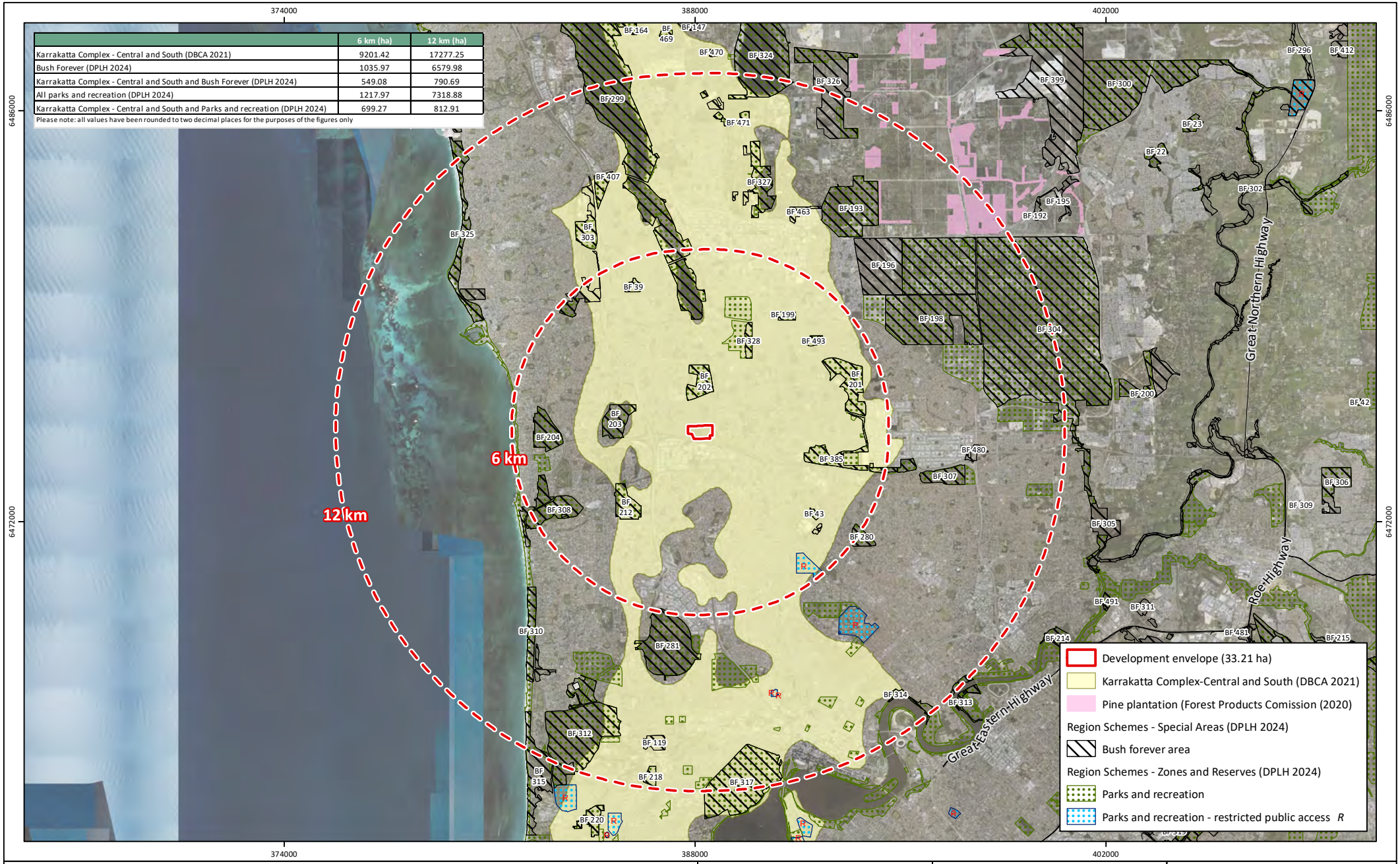
N

0 2,000 4,000 6,000
Metres
Scale: 1:170,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES



	6 km (ha)	12 km (ha)
Karrakatta Complex - Central and South (DBCA 2021)	9201.42	17277.25
Bush Forever (DPLH 2024)	1035.97	6579.98
Karrakatta Complex - Central and South and Bush Forever (DPLH 2024)	549.08	790.69
All parks and recreation (DPLH 2024)	1217.97	7318.88
Karrakatta Complex - Central and South and Parks and recreation (DPLH 2024)	699.27	812.91

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 16: Locally and Regionally Significant Vegetation and Region Scheme Zoning

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N

0 2,000 4,000 6,000
Metres
Scale: 1:170,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

5.5 Mitigation

There are a range of measures to mitigate the potential impacts on flora and vegetation values. This includes impact avoidance, minimisation and rehabilitation measures, consistent with the EPA mitigation hierarchy (EPA 2016b).

Because the loss of 12.29 ha of native vegetation within the residential development envelope is planned and unavoidable to implement the proposal, the proponent has considered a range of measures to reduce the residual risk on flora and vegetation. Following the consideration of mitigation measures, a 'low' and 'very low' risk rating remains for the risk events outlined in **Section 5.4**

5.5.1 Avoid

As outlined in Section 1.2 almost 60% of the development envelope will be conservation, achieving retention of 16.37 ha of native vegetation. The proposal demonstrates avoidance through the proposed conservation area, which avoids impacts to:

- 16.37 ha of native vegetation units associated with the 'Karrakatta complex - central and south' vegetation complex in varying condition including:
  - 2.60 ha of 'excellent' condition vegetation
  - 11.11 ha of 'very good' condition vegetation
  - 1.03 ha of 'good' condition vegetation
  - 1.62 ha of 'degraded' condition vegetation
  - 3.29 ha of 'completely degraded' vegetation
- 16.08 ha of the Banksia woodlands of the Swan Coastal Plain TEC/PEC (Endangered under EPBC Act and Priority 3 under the Western Australia (WA) policy framework)
- 1.87 ha of the '*Banksia attenuata* woodlands over species rich dense shrublands' (Swan Coastal Plain (SCP) 20a) TEC/PEC (Endangered under EPBC Act and Critically Endangered under EP Act)
- 0.02 ha of the 'Low lying *Banksia attenuata* woodlands or shrublands' TEC/PEC (SCP21c) (Endangered under EPBC Act and Priority 3 under the WA policy framework)
- 97 *Acacia benthamii* individuals (Priority 2 under the WA policy framework)
- 1,333 *Jacksonia sericea* individuals (Priority 4 under the WA policy framework).

Additionally, measures to avoid further impacts to environmental values within the residential development area have been extensively considered by the proponent and included the preparation of an indicative concept plan, which outlines proposed areas of future retention (**Appendix B**). This has been designed with consideration to the development envelope constraints (sewer easement, bushfire requirements, topography and cut and fill requirements). The proponent has undertaken various historic assessments and sought advice to understand what environmental values can be retained within the residential development area.

However, since retention areas within the residential development area cannot be confirmed until later stages of planning and development once detailed design is confirmed, for impact assessment, mitigation and management purposes, it is assumed all flora and vegetation values within the

residential development area will be removed, even though additional retention of environmental values is highly likely to occur.

In accordance with planning requirements, a minimum of 10% of the gross subdivisible area will be allocated as POS. Additionally, retention of vegetation in parts of the public realm, such as road reserves will be further investigated. Although commitments to specific avoidance areas in the residential development area cannot be made prior to detailed design, the proponent has committed to a tree protection-oriented design approach including the following:

- Exploring design options to maximise the number of trees retained within road reserves and public open space areas
- Adjust lot boundaries where necessary to accommodate trees that marginally encroach into private lots
- Design road alignments and carriageways to minimise tree removal—considering solutions such as meandering streets, staggered lot boundaries, wider verges, and traffic-calming choke points
- Minimise earthworks and preserve natural ground levels to the greatest extent practicable.

All future retained trees within road reserves and POS areas will be protected consistent with measures outlined in the *Australian Standard AS 4970-2009 Protection of Trees on Development Sites* and include surrounding buffers outside the retention area to protect trees and roots from impacts as a result of bulk earthworks.

In addition to the potential retention of flora and fauna values within the residential development area, some of these values will likely be retained values within the APZ within Lot 803. However, this is dependent on the finalisation of POS placement and will be confirmed during later stages of the planning and development process. To reiterate, it is assumed for impact assessment purposes all flora and fauna values will be removed with the APZ, even though this it is no likely to be the case.

It is noted that revegetation of cleared and degraded areas will be undertaken in accordance with a Landscape Masterplan, which will be prepared at later stages of the planning and development process. However, this is not considered to provide a specific conservation outcome. Approximately 10% of the residential development area will include POS incorporating a mixture of turfed areas and garden beds with native species. Preference will be given to the use of locally native species within POS and streetscapes, subject to commercial availability of plant stock and compliance with local authority and other policies and guidelines. Where locally native species cannot be used, suitable Southwest WA or Australian native species will be selected. The landscaping works intention is to re-introduce native vegetation and associated fauna habitat through planting of native species surrounding public shared pathways and public open space turfed areas, providing linkage between the surrounding remnant vegetation and the development envelope.

In summary, for impact assessment, mitigation and management purposes, a risk averse approach has been applied and it is assumed all flora and vegetation values within the residential development area will be removed, even though additional retention of environmental values is highly likely to occur. Indicative retention opportunities are considered in **Section 5.5.1.1** below.

5.5.1.1 Indicative retention opportunities

The proponent has carefully considered measures to avoid further impacts within the residential development area, which resulted in the preparation of an indicative concept plan (**Appendix B**) that identifies proposed retention areas. The plan accounts for constraints such as infrastructure, bushfire, and topography, and builds on previous assessments and advice regarding the retention of environmental values. Ultimate retention outcomes within the residential development area cannot be confidently committed to until later stages of planning and development once detailed design is undertaken.

Notwithstanding, based on the indicative concept plan, the extent of flora and vegetation values that may be indicatively retained has been investigated (**Table 22**). The indicative retention opportunities are purely for indicative purposes only and not considered in regard to avoidance or impact assessment purposes. A visual representation of the indicative retention opportunities is provided in **Figure 17**. For reference, a comparison to the proposed environmental outcomes achieved within the conservation area is included (**Table 22**).

It is noted that Banksia Woodlands PEC, SCP21c PEC and Tuart Woodlands PEC indicated as retention opportunities rely on thresholds of the vegetation to meet the PEC criteria. As such, in a post development scenario where adjacent patches of vegetation are removed, the remaining extent of PECs may no longer meet the listing criteria. The Tuart Woodlands PEC criteria rely on size, condition, vegetation connectivity (i.e. distance to adjacent tuart trees (30 m from canopy)) and surrounding context thresholds, and Banksia Woodlands PEC criteria rely on size, condition and connectivity.

As such, the remaining extent of these PECs is likely to not represent or represent a portion of the PEC, as defined in the listing criteria in a post development scenario.

Table 22: Indicative retention opportunities of flora and vegetation based on the current concept plan layout

Flora and vegetation values	Total within the development envelope	Indicative retention opportunities[1]		Avoidance achieved within the conservation area	
		Extent within the residential development area	% of total extent	Extent within the conservation area	% of total extent
Native vegetation	28.67 ha	3.67 ha	12.80	16.36	57.06
Banksia Woodlands PEC	28.37 ha	3.66 ha*	12.90	16.08	56.68
SCP21c PEC	0.90 ha	0.12 ha*	13.33	0.02	2.22
Tuart Woodland PEC	3.63 ha	1.02 ha*	28.10	0.00	0.00
A. benthamii	177 individuals	76 individuals	42.94	97	54.80
J. sericea	2,892 individuals	439 individuals	15.18	1,333	46.09

[1] Note that indicative retention within the residential development area is provided for context purposes only and are not considered for impact assessment purposes

* It is noted that these environmental values rely on connection to adjacent patches and in a post development scenario will not, or a portion of, will meet the criteria for the PEC

5.5.2 Management

Risk ID FV1 - Unapproved clearing of flora and vegetation (Residual risk rating 'low')

Mitigation measures

Native vegetation clearing will be managed in accordance with the CEMP to minimise potential risks to flora and vegetation. The CEMP will prescribe the extent of the clearing area before any clearing activities commence to ensure retained areas of vegetation external to the development envelope are maintained and not directly or indirectly adversely impacted as part of clearing and construction. This will include the establishment of no-access zones and fencing.

With consideration to current land uses and operational requirements, the conservation area will be managed in accordance with the CAMP to ensure long term protection and retention of native vegetation and associated environmental values.

Under the provisions of the *National Transmission Network Sales Act*, all broadcasting related activities within the development envelope, including the replacement and upgrading of infrastructure, are "immune" from state laws. While provision will be made to enable continuation of the current land use and operations in parallel with the proposals conservation area, the formal designation of the conservation area, together with the implementation of the CAMP and application of a Conservation Covenant on the land, will secure the protection of the conservation area and ecological restoration of cleared and degraded land. The proponent is effectively surrendering the use of the land from more intensive broadcasting related uses and effectively overrides its immunity from state planning and environmental regulations. Such immunity would otherwise conflict with the long-term conservation objectives for the land. The CAMP is provided in **Appendix M**.

Risk ID FV2 - Spread or introduction of weeds or pathogens: (Residual risk rating 'very low')

The introduction and spread of weeds and diseases will be mitigated through:

- The implementation of the CEMP that will outline appropriate construction management protocols such hygiene requirements for construction vehicles and dust management measures
- The implementation of the CAMP that will outline management actions for the conservation area
- Landscape treatments will remove the majority of weeds caused by bulk earthworks and construction
- Operation maintenance of landscape areas will include routine weed control measures. Treatments will also provide locations where weed management measures can be targeted to achieve more effective results, resulting in benefits for weed management not just within the development envelope but also in the immediate vicinity which would otherwise likely remain unmanaged.

Implementation of the landscape design will further enable the management of existing weeds prevalent across the development envelope, whilst ongoing management will mitigate further spread of weeds and diseases to surrounding remnant vegetation patches.

Risk ID FV3 - Habitat fragmentation (Residual risk rating 'very low')

The risk of habitat fragmentation outside the development envelope will be mitigated through the implementation of standard construction management measures in form of a CEMP to control vegetation clearing. This will include conditioned demarcation measures such as fencing and establishment of the APZ to include a buffer from construction works to retained vegetation within the conservation area to avoid any accidental clearing outside the approved clearing area, resulting in fragmentation of flora and vegetation.

Risk ID FV4 - Bushfire (Residual risk rating 'low')

In the event of a bushfire, the vegetation within the conservation area presents a potential threat to life and property located in the adjacent planned residential development. Conversely, the development itself, through proposed development works, increased human activity, and associated infrastructure, poses a threat to the integrity of the conservation area through the increased bushfire ignition sources.

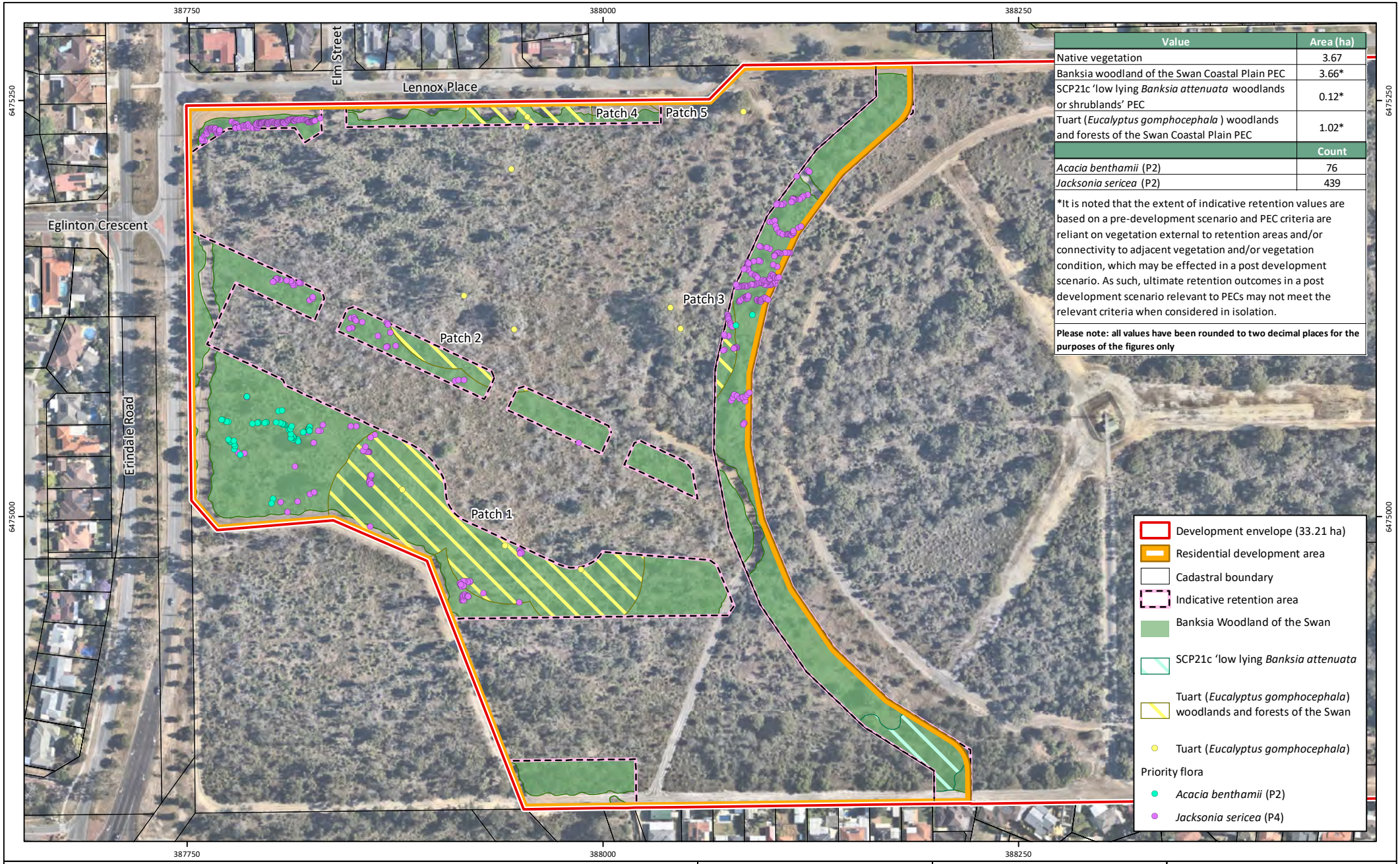
This risk will be mitigated through the following management measures, which not only reduce the risk to native vegetation, but also the impact on life and property:

- The Department of Fire and Emergency Services (DFES) declares total fire bans on days where fires are most likely to start and spread, pursuant to Section 24C of the *Bush Fires Act 1954*. Such declarations prohibit hot works such as welding, or operation of any engine, vehicle, plant, equipment or machinery in or around bushland that would likely to cause a bushfire or contribute to the spread of a bushfire
- The CEMP outlines construction management requirements to reduce the risk of ignition, fuel loads and impacts on surrounding vegetation. Such measures will likely be defined in accordance with a Bushfire Management Plan and could include limiting the types of machinery used in different weather conditions, limiting where different types of machinery can be used and stockpiling of materials can occur, specifying the time of year that certain activities can be undertaken, site housekeeping, provision of suitable water supplies to extinguish any ignitions.

In the long-term, there are statutory planning requirements to address the bushfire risk of any such land uses such as the proposal where they occur within bushfire prone areas (including areas within 100 m of stands of vegetation), with this mainly concerned with potential impacts on life and property. State Planning Policy 3.7 *Planning in Bushfire Prone Areas* requires development proposal located within a bushfire prone area to:

- Prepare a Bushfire Management Plan, which examines the likely long-term bushfire risk (following development) and the risk mitigation measures that will ensure the land is suitable for its intended purpose

- Where a 'high-risk' land use is proposed (for example a land use that has an increased risk of igniting a fire), the preparation of a Risk Management Plan is also required, which outlines mitigation measures to manage any increased risk of fire ignition associated with the land use.



Value	Area (ha)
Native vegetation	3.67
Banksia woodland of the Swan Coastal Plain PEC	3.66*
SCP21c 'low lying *Banksia attenuata* woodlands or shrublands' PEC	0.12*
Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain PEC	1.02*
	Count
Acacia benthamii (P2)	76
Jacksonia sericea (P2)	439

*It is noted that the extent of indicative retention values are based on a pre-development scenario and PEC criteria are reliant on vegetation external to retention areas and/or connectivity to adjacent vegetation and/or vegetation condition, which may be effected in a post development scenario. As such, ultimate retention outcomes in a post development scenario relevant to PECs may not meet the relevant criteria when considered in isolation.

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 17: Residential Development Area Indicative Retention Opportunities - Flora and Vegetation

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N

0 30 60 90
Metres
Scale: 1:3,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

5.6 Residual impact

Up to 12.29 ha of native vegetation ranging from 'completely degraded' to 'very good' condition associated with vegetation units **BMpXp, BpGvJxXp, EmBaXp** and **EmBHh**, with 7.88 ha of this representative of the 'Karrakatta – Central and South' vegetation complex will be cleared for the implementation of the proposal. The loss of up 12.29 ha of native vegetation will be permanent and unavoidable. The removal of 12.29 ha of native vegetation within the residential development area will result in the following residual impacts to flora and vegetation:

- 12.29 ha of Banksia Woodlands PEC
- 0.88 ha of SCP 21c 'low lying *Banksia attenuata* woodlands of shrublands' PEC
- 3.63 ha of 'Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain' PEC
- 80 *Acacia benthamii* (P2) individuals
- 1,559 *Jacksonia sericea* (P4) individuals.

The proposal will result in an approximate 0.39% (12.29 ha) reduction of the Banksia Woodland PEC within 12 km, however the residual impacts to 12.29 ha of Banksia Woodlands PEC are anticipated to be significant, and as such triggers an offset requirement. This is discussed in **Section 9**.

Overall, the remaining residual impacts to flora and vegetation are not considered to be significant. The following considerations have informed this conclusion:

- 16.37 ha of the total occurrence of native vegetation, of which 14.74 ha is representative of the 'Karrakatta – Central and South' vegetation complex will be avoided and retained within the conservation area
- Clearing will not reduce a vegetation complex to less than 10% of its pre-European extent. A total of 1,340 ha of the 'Karrakatta – central and south' vegetation complex is protected within Bush Forever sites within 12 km of the proposal. This vegetation likely provides similar vegetation and associated flora and vegetation values
- 97 *A. benthamii* (P2) individuals and 1,333 *J. sericea* (P4) individuals will be avoided and retained within the conservation area
- The area of SCP 21c 'low lying *Banksia attenuata* woodlands of shrublands' TEC/PEC which is expected to be lost is relatively small (0.88 ha) and accounts for approximately a 1.70% reduction of the PEC mapped within 12 km of the development envelope
- The area of Tuart Woodlands PEC which is expected to be lost is relatively small, comprising 3.63 ha (as defined using the Commonwealth listing advice for the TEC of the same name) and includes 0.28 ha of tuart tree canopy and the remaining extent is surrounding vegetation associated with the **BpGvJsXp** vegetation type. The **EmBaXp** and **BpGvJsXp** vegetation in the development envelope includes scattered tuart trees rather than a tuart dominated community and tuart was not identified as a key defining species when characterising the vegetation units. As such, the majority of the mapped PEC comprises vegetation that is not associated with a tuart dominated vegetation type. The vegetation is banksia dominated with scattered tuart trees. The 3.63 ha accounts for approximately a 0.67% reduction of the PEC mapped within 12 km of the development envelope. With consideration to the tuart canopy in

isolation, the loss of 0.28 ha of tuart canopy contributes to approximately 0.06% of the mapped extent within 12 km of the development envelope.

5.7 Environmental outcome

The environmental outcomes are:

- Removal of up to 12.29 ha of native vegetation within the residential development area (refer to **Figure 1**) including:
  - 7.88 ha of native vegetation representative of the Karrakatta complex – central and south vegetation complex
  - 12.29 ha of Banksia Woodlands PEC
  - 0.88 ha of SCP21c PEC
  - 3.63 ha of Tuart Woodlands PEC
  - 80 *A. benthamii* (P2) individuals
  - 1,559 *J. sericea* (P4) individuals
- Protection and conservation of 16.37 ha of native vegetation units within the conservation area comprising:
  - 14.74 ha of native vegetation representative of the Karrakatta complex – central and south vegetation complex
  - 97 A. benthamii (P2) individuals
  - 1,333 J. sericea (P4) individuals
  - 16.08 ha of Banksia Woodlands PEC
  - 1.87 ha of SCP20a TEC
  - 0.02 ha of SCP21c PEC
- Mitigation through the implementation of the CEMP and CAMP so to avoid any adverse impacts on surrounding vegetation in the broader locality and ensure long term protection of the conservation area including restoration of 3.15 ha within the conservation area providing additional habitat
- Mitigation through implementation of the Offset Strategy so to offset anticipated significant residual impacts to Banksia Woodlands PEC
- No significant cumulative impacts to flora and vegetation at either local or regional scale.

6 Terrestrial Fauna

6.1 EPA Objective

To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.

6.2 Relevant policy and guidance

The relevant policy and guidance for Terrestrial Fauna is summarised in **Table 23**.

Table 23: Relevant policy and guidance for the Terrestrial Fauna environmental factor

EPA and other State or Commonwealth policy and guidance (if relevant)	Explain how the policy and guidance has been considered
EPA policy and guidance	
Environmental Factor Guideline - Terrestrial Fauna (EPA 2016a)	Consulted in the consideration of potential impacts to terrestrial fauna as a result of the proposal.
Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020b)	The terrestrial and short range endemic fauna surveys conducted for the proposal and surrounding area utilise the survey methodologies outlined in the EPA Technical Guidance.
Technical Guidance: Sampling of short range endemic invertebrate fauna (EPA 2016c)	
Instructions for the preparation of data packages for the Index of Biodiversity Surveys for Assessments (IBSA) (EPA 2021a)	These instructions are to assist proponents in preparing and submitting online IBSA data packages, as part of the assessment process under the EP Act. Refer to **Section 6.3.1.2** of this ERD for IBSA references relevant to this proposal.
Other policy and guidance	
Western Australian Environmental Offsets Guidelines (Government of WA 2014)	Considered for the assessment of potential offset requirements as a result of the implementation of the proposal.
Relevant recovery plans, conservation advisories and/or threat abatement plans for conservation significant species that are known to occur, or are likely to occur in the vicinity of the development area.	The terrestrial fauna assessments conducted over the proposal's development envelope refer to the following recovery plans: • Carnaby's Cockatoo Recovery Plan (DEC 2013a) • Forest Black Cockatoo Recovery Plan (DoEE 2008) • Quokka (Setonix brachyurus) Recovery Plan (DEC 2013b) • Graceful sun-moth conservation advice (DEC 2011b)

6.3 Receiving environment

6.3.1 Studies and investigations

To inform the proposal, a range of studies and investigations relating to terrestrial fauna across the proposal's development envelope and surrounds have been undertaken in accordance with **Table A 1** (Task ID 5 to 10).

A total of seven historic surveys have been undertaken by other consultants across the development envelope relevant to terrestrial fauna between 2017 and 2023 and were used to inform the proposal's original referral and subsequent assessment reports. The historic surveys that were undertaken have occurred over varying portions of the development envelope, predominantly prior to the fire that occurred on 1 January 2023 and with varying methodologies. The historic surveys and the associated survey areas are detailed in **Table 24** below.

Table 24: Summary of historic surveys undertaken within the development envelope

Report name	Reference
Lot 802 Erindale Road, Hamersley Flora, vegetation and fauna survey	Strategen-JBS&G (2019)
Lot 802 Erindale Road, Hamersley Black Cockatoo Hollow Assessment	Strategen JBS&G (2019)
Lots 802 and 803 Erindale Road Hamersley SRE Desktop Assessment	Bennelongia Environmental Consultants (2021)
Part Lot 803 Erindale Road, Hamersley. Flora, vegetation and black cockatoo habitat assessment	Strategen-JBS&G (2021)
Basic Terrestrial Vertebrate Fauna Survey Lot 802, 803, 1 and 100 Erindale Road, Hamersley	Biologic (2021)
Lots 802 and 803 Erindale Road Hamersley: SRE Invertebrate Assessment	Bennelongia Environmental Consultants (2023)
Flora & Vegetation Survey Spring 2022 Lot 802 Erindale Rd, Hammersley WA 6022	JBS&G (2023)

Considering the differences in previous survey reports and age of surveys, Emerge Associates (2025a)undertook a Basic Fauna and Targeted Black Cockatoo Assessment to address outstanding EPA comments and variations in environmental values recorded in historic survey reports, likely as a result of different survey methodologies, different survey area and timing of historic survey reports. The SRE Invertebrate Assessment was undertaken Bennelongia Environmental Consultants (2023) to address outstanding EPA comments (Task ID 6) and has also been used to inform presence and likely impacts of SRE species within this report.

Table 25 below outlines the studies and investigations that have informed the current baseline conditions of the development envelope, related to terrestrial fauna, as well as the environmental impact assessment, detailed within this ERD (**Section 6.3.1.1** to **Section 6.7**). Information presented herein regarding terrestrial fauna values within the development envelope is primarily based on the findings of the most recent assessment completed by Emerge Associates (2025a), given it is the most recently completed and comprehensive fauna assessment of the development envelope and adopts a methodology consistent with EPA Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020b). An exception to this approach is where SRE fauna

are discussed, which primarily relies on the assessments completed by (Bennelongia Environmental Consultants 2021, 2023)

Table 25: Terrestrial fauna studies and investigations relevant to the proposal

Investigation/Study	Author	Survey date/s	Scope	Spatial coverage
Basic Fauna and Targeted Black Cockatoo Assessment **Appendix I**	(Emerge Associates 2025a)	13 November 2024 and 13 February 2025	A 'basic' fauna and targeted black cockatoo assessment was undertaken for the proposal in accordance with the EPA's *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA 2020) and the *EPBC Act* black cockatoo referral guidelines (DAWE 2022).	Full extent of Lot 802, Lot 803 and Lot 1 **Figure 18**
Black Cockatoo and Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community Habitat Quality Score Assessment - Lot 802 Erindale Road, Lot 1 and Lot 803 Wanneroo Road, Hamersley (HQS Assessment) **Appendix F**	(Emerge Associates 2025b)	14 May 2025	To assess the habitat quality score of Banksia Woodlands TEC/PEC and black cockatoos in accordance with the scoring tools provided by DCCEEW.	Development envelope
SRE Invertebrate Desktop Assessment **Appendix J**	Bennelongia Environmental Consultants (2021)	N/A	A desktop assessment to determine the likelihood that SRE and listed invertebrate species occur in the development envelope, based on the types of habitat present.	Desktop search area of 50km north and south of the development envelope, west to the Indian Ocean and east to the edge of the Darling Scarp
SRE Invertebrate Assessment **Appendix K**	Bennelongia Environmental Consultants (2023)	12 – 18 September 2022	Desktop assessment and field survey targeting invertebrates belonging to SRE Groups to collect species from recognised SRE Groups from habitat types within the development envelope.	Full extent of Lot 802, Lot 803 and Lot 1 **Figure 18**

6.3.1.1 Survey methodology

Basic fauna

The Basic Fauna and Targeted Black Cockatoo Assessment was undertaken across two sampling days in November 2024 and February 2025 (Emerge Associates 2025a). The survey area spanned the entirety of Lot 802, Lot 803 and Lot 1 and the report is provided in **Appendix I**.

The survey area was traversed on foot to evaluate the fauna habitat and record the presence of fauna species. An opportunistic fauna list was compiled which included evidence of species presence

such as tracks, scats, skeletal remains, foraging evidence and calls. Sampling of fauna habitats was undertaken at non-permanent sample locations with a 10-20 m radius. A total of ten sample locations were surveyed across the survey area, the position of which was recorded with a hand-held GPS unit. The data recorded within each sample included:

- Site details (site name, site number, observers, date, location)
- Environmental information (soil type, bare ground, rock outcropping, litter, time since last fire event, water features, disturbance and microhabitat types)
- Biological information (faunal group(s), dominant vegetation type, presence of canopy, shrub and ground vegetation layers)
- Other notes as required.

As part of the Basic Fauna and Targeted Black Cockatoo Assessment (Emerge Associates 2025a) a desktop search was conducted of conservation significant fauna species (including MNES fauna species) that may occur or have been recorded within proximity to the development envelope using *Dandjoo* (DBCA 2024a), DBCA's conservation significant fauna database (reference no. 5-1024FA (DBCA 2024c)), *Atlas of Living Australia* (ALA 2024) and literature references. The assessment identified 109 conservation significant species, listed under State and/or Commonwealth legislation as 'threatened' (48), 'priority'(24), 'migratory'(57) , 'conservation dependent' (1) and 'specially' (1) protected species.

Emerge Associates (2025a) assessed the 109 conservation significant species to determine their likelihood of occurrence within the development envelope and immediate surrounds, and was classified as 'high', 'moderate', 'low', 'very low, 'negligible' or 'nil'.

Black cockatoos

As part of the Basic Fauna and Targeted Black Cockatoo Assessment undertaken by Emerge Associates (2025a), a total of 14.75 hours of survey effort has been undertaken across 1 day with three ecologists which was dedicated to black cockatoo specific tasks within the development envelope, which exceeds the recommended survey effort for CBC as stated in the *Survey guidelines for Australia's threatened birds* (DEWHA 2010). Survey effort is shown in **Figure 18**.

Emerge Associates (2025a) assessed black cockatoo breeding roosting and foraging habitat, in accordance with the *EPBC Act black cockatoo referral guidelines* (DAWE 2022). The survey methodology is further in Emerge Associates (2025a) (**Appendix F**).

Conservation significant invertebrates and short-range endemic species

Bennelongia Environmental Consultants (2021, 2023) completed a desktop assessment for SRE species and conservation significant invertebrate species within a 50 km search radius of the development envelope. The desktop search area consisted of 50 km to the north and south of the development envelope, west until the Indian Ocean and east to the Darling Scarp. The Darling Scarp was excluded from the search area, as it is topographically and geologically distinct from the Swan Coastal Plain, and likely to contain many habitats and species that are not representative of the latter. SRE status is assigned using the categories: Confirmed, Possible and Likely. The designation 'Possible SRE' is designated where there is incomplete taxonomy and unknown species distributions.

Bennelongia Environmental Consultants (2023) prepared a revised desktop assessment and targeted SRE field survey in September 2022, to address EPA further requests (Task ID 6) (Bennelongia Environmental Consultants 2023). The survey report is provided in (**Appendix J, Appendix K**)**.** During the SRE survey, 10 sample sites were surveyed across the development envelope by Bennelongia Environmental Consultants (2023) (**Figure 18**) (**Appendix K**).

6.3.1.2 Index of biodiversity surveys for assessments submission

As part of the fauna assessment undertaken for the proposal, the survey report and associated data packages that have been submitted via IBSA Submissions as summarised in **Table 26**.

Table 26: Fauna surveys IBSA submission

Survey report submitted	IBSA /ISA submission number	IBSA number
Basic Fauna and Targeted Black Cockatoo Assessment **Appendix I**	IBSASUB-20250718-5233FA98	IBSA-2025-0354
SRE Invertebrate Assessment **Appendix K**	ISA - 0001031	ISA-0001031

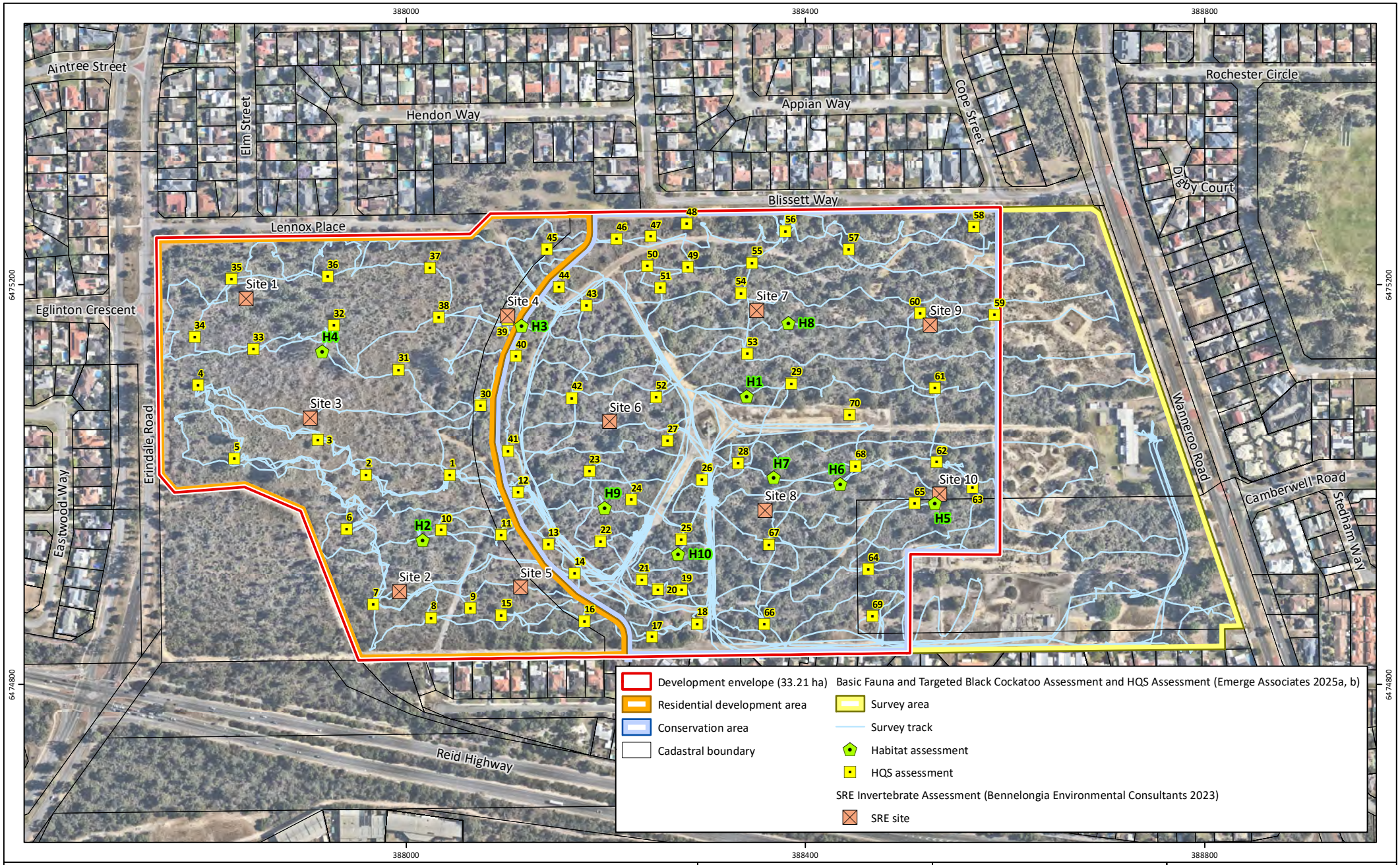

Figure 18: Fauna Survey Area and Survey Effort

Project:	Environmental Review Document Hamersley Residential Development and Conservation
Client:	BAI Communications

Plan Number:
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Metres

Scale: 1:5,000@A4

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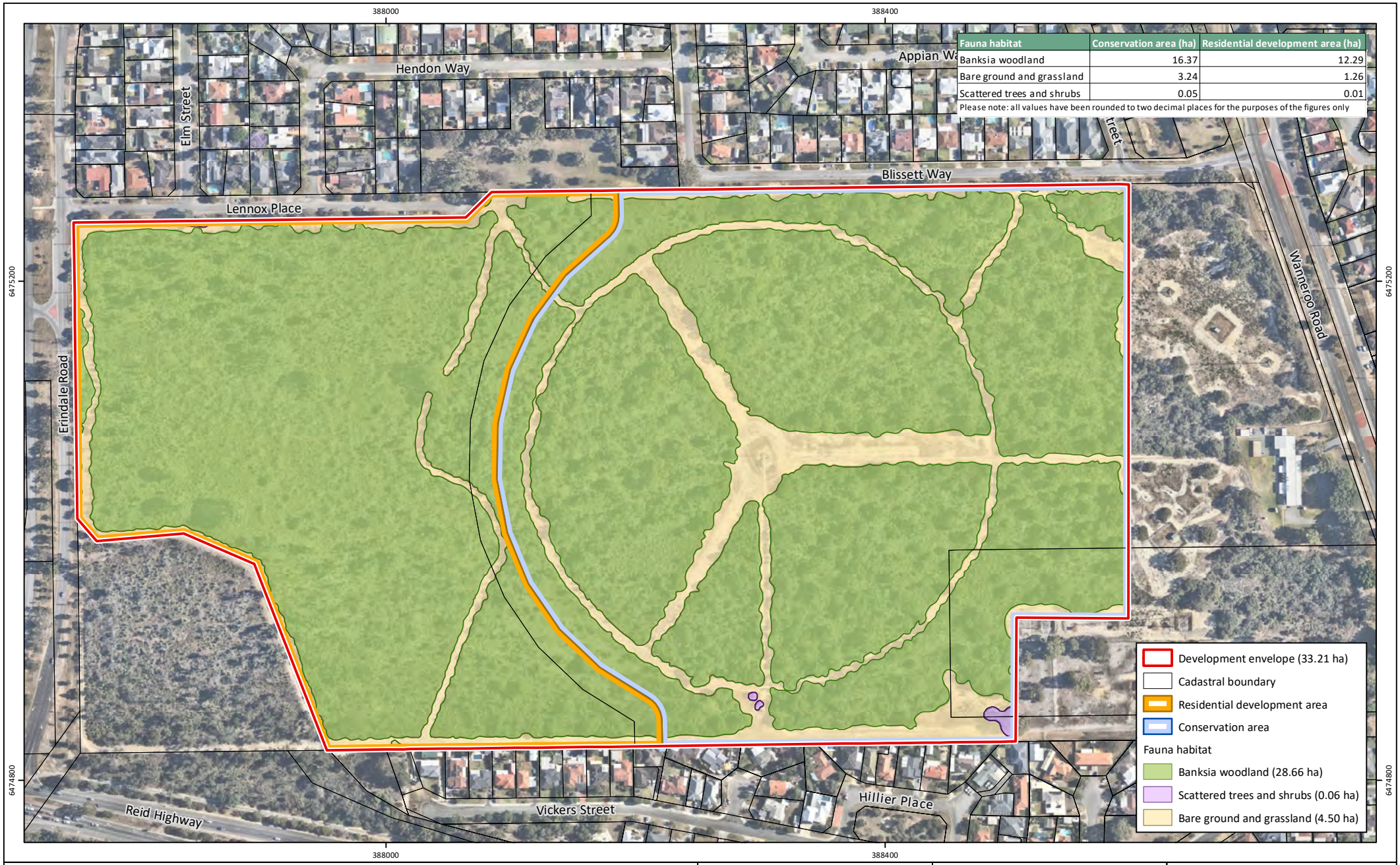
6.3.2 Fauna habitat types

Emerge Associates (2025a) identified three broad fauna habitat types within the development envelope including 'banksia woodland', 'scattered trees and shrubs' and 'bare ground and grassland'. The description and extent of the habitat types within the development envelope (and associated residential development area and conservation area) is outlined in **Table 27** and shown in **Figure 19**.

The majority of the residential development area contains banksia woodland habitat with the remainder being predominantly cleared areas. Extensive areas of banksia woodland habitat in the same or higher quality is located adjacent to the proposal and the wider area associated with the Karrakatta – Central and South vegetation complex. Therefore, this fauna habitat is widespread and well represented in the region is not confined to the development envelope.

Table 27: Fauna habitat types within the development envelope

Fauna Habitat	Description	Area (ha)		
		Residential development area	Conservation area	Development envelope
Banksia woodland	Woodland with *Banksia attenuata, B. menziesii, B. prionotes* and *B. ilicifolia* and also *Eucalyptus marginata and Eucalyptus gomphocephala* over native shrubs, particularly *Xanthorrhoea preissii* and native and nonnative grasses. Areas vary in value to fauna depending on level of disturbance. • High microhabitat complexity • Microhabitats consist of woody debris, runnels, dense leaf litter, dense shrub cover, fallen logs and sandy soils • Vegetation cover is continuous throughout the survey area with minor separation by sand tracks. Fencing fragments the survey area from outside vegetation • Disturbances largely comprised of dense weed cover, recent fire and dieback • Provides habitat for all species likely to occur within the survey area.	12.29	16.37	28.66
Scattered trees and shrubs	Scattered patches of native and non-native *Eucalyptus* spp. mostly located in and around infrastructure. • Low microhabitat complexity • Microhabitats consist of some woody debris and dense leaf litter where habitat is not actively managed • Habitat is mostly disconnected in isolated patches • May serve a traversal function between patches of banksia woodland habitat • Provides habitat for CBC and FRTBC.	0.01	0.05	0.06
Bare ground and grassland	Vehicle tracks, cleared areas and infrastructure. • Provides little to no value to fauna aside from a traversal function between habitats.	1.26	3.24	4.50



Fauna habitat	Conservation area (ha)	Residential development area (ha)
Banksia woodland	16.37	12.29
Bare ground and grassland	3.24	1.26
Scattered trees and shrubs	0.05	0.01

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 19: Fauna Habitat Types

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Metres
Scale: 1:4,000@A4
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6.3.3 Fauna species

Emerge Associates (2025a) has undertaken a desktop assessment and identified a total of 1,095 vertebrate fauna species (including no-conservation significant and conservation significant species) as occurring or potentially occurring within 10 km of the development envelope.

During the field survey, a total of 22 native fauna species and two introduced fauna species were directly or indirectly recorded, including two MNES species. One species listed as a declared pest pursuant to the BAM Act, *Vulpes vulpes* (fox), was recorded within the development envelope. A complete species list is provided in **Appendix I**.

6.3.4 Conservation significant fauna species

Emerge Associates (2025a) identified two threatened, one specially protected, one migratory and seven priority species as having a 'high' or 'moderate' likelihood of occurrence within 10 km of the site. The legislative or policy status and habitat preferences of these species are shown in **Table 28**.

Of these, two MNES fauna species (CBC and FRTBC), one priority mammal (quenda) and one priority invertebrate (Swan Coastal Plain trapdoor spider) were directly or indirectly recorded during field surveys within the development envelope (Bennelongia Environmental Consultants 2023; Emerge Associates 2025a).

Emerge Associates (2025a) indirectly or directly recorded CBC, FRTBC and quenda during the field surveys. Additionally, six priority, one migratory and one other specially protected fauna species were considered to possibly occur within the development envelope on the basis of opportunistic occurrence, or that they could fly over the development envelope, or where potentially suitable habitat occurs within the development envelope such as for the Swan Coastal Plain shield-backed trapdoor spider (trapdoor spider). These species are further considered below in **Section 6.3.4.1** to **Section 6.3.4.7.**

The remainder of the conservation significant fauna species identified in the desktop assessment are considered 'unlikely' to occur within the development envelope due to lack of suitable habitat or because the proposal lies outside of the species known distribution.

Table 28: Summary of conservation significant fauna species with a 'high' or 'moderate' likelihood of occurrence in the development envelope

Species name	Common name	Status		Habitat description	Likelihood
		WA	EPBC Act		
Birds					
Apus pacificus	Pacific swift	MI	MI	Aerial, migratory species that is most often seen over inland plains and sometimes above open areas, foothills or in coastal areas. Sometimes occurs over settled areas, including towns, urban areas and cities	Moderate

Table 28: Summary of conservation significant fauna species with a 'high' or 'moderate' likelihood of occurrence in the development envelope (continued)

Species name	Common name	Status		Habitat description	Likelihood
		WA	EPBC Act		
Birds (continued)					
Calyptorhynchus banksii naso	Forest red-tailed black cockatoo	VU	VU	*Eucalypt* and *Corymbia* forests, often in hilly interior. More recently also observed in more open agricultural and suburban areas including Perth metropolitan area. Attracted to seeding *Corymbia calophylla*, *Eucalyptus marginata*, introduced *Melia azedarach* and *Eucalyptus* spp. trees	High
Falco peregrinus	Peregrine falcon	OS	-	Mainly found around cliffs along coasts, rivers, ranges and around wooded watercourses and lakes	Moderate
Zanda latirostris	Carnaby's black cockatoo	EN	EN	Mainly proteaceous scrubs and heaths and adjacent eucalypt woodlands and forests; also plantations of *Pinus* spp. Attracted to seeding *Banksia* spp., *Dryandra* spp., *Hakea* spp., *Eucalyptus* spp., *Corymbia calophylla*, *Grevillea* spp., and *Allocasuarina* spp.	High
Invertebrates					
Australotomurus morbidus	Cemetery springtail	P3	-	Typical habitats for *Australotomurus* species are long undisturbed native grasslands and heathland at low and high elevations. Known only from four locations in Perth.	Moderate
Hylaeus globuliferus	Woolybush bee	P3	-	Males are territorial and may be found perched on the growing tips of *Adenanthos* sp., *Banksia* sp. or *Jacksonia* sp. Has also been recorded visiting the flowers of *Grevillea* sp.	Moderate
Idiosoma sigillatum	Swan Coastal Plain shield-backed trapdoor spider	P3	-	Widely distributed in sandy areas on the Swan Coastal Plain and on Rottnest Island (Prince 2003). Species predominantly recorded from remnant banksia woodland vegetation and heath on sandy soils.	High
Synemon gratiosa	Graceful sun-moth	P4	-	Coastal heathland on Quindalup dunes where it is restricted to secondary sand dunes due to the abundance of the preferred host plant Lomandra maritima. Banksia woodland on Spearwood and Bassendean dunes, where the second known host plant *L. hermaphrodita* is widespread.	High
Throscodectes xiphos	Stylet bush cricket	P1	-	Species poorly understood and documented. Known from Jandakot area, where it was originally collected in the axial leaf bases of grass trees (*Xanthorrhoea preissii*).	Moderate
Mammals					
Isoodon fusciventer	Quenda	P4	-	Dense scrubby, often swampy, vegetation with dense cover up to one metre high.	High

Table 28: Summary of conservation significant fauna species with a 'high' or 'moderate' likelihood of occurrence in the development envelope (continued)

Species name	Common name	Status		Habitat description	Likelihood
		WA	EPBC Act		
Reptiles					
Neelaps calonotos	Black-striped snake	P3	-	Coastal and near-coastal dunes, sandplains supporting heathlands and *Banksia* spp. woodlands.	Moderate

6.3.4.1 Quenda

The quenda (*Isoodon fusciventer*) is a non-volant mammal species which is not listed as threatened under State or Commonwealth legislation, however, it is identified as a 'Priority 4' species at a State level. The development envelope is located in the northern Swan Coastal Plain, within the known distribution of the species. Suitable habitat for the species includes dense understorey vegetation, often swampy and include residential gardens.

Quenda diggings were observed within the survey area and the banksia woodland habitat within the development envelope is considered to provide 28.70 ha of potential habitat for the species by providing refuge and potential foraging habitat (**Figure 19**).

6.3.4.2 Black-striped snake

Black striped snake is not listed as threatened under State or Commonwealth legislation, however, it is identified as a 'Priority 3' species at a State level. They are predominantly found in coastal heath of banksia and eucalyptus dominated habitats (Bush *et al.* 2007). The habitat within the development envelope meets the sandy soil profile and vegetation type associated with the species and several recent *iNaturalist* records exist within 10 km in less suitable and smaller bushland, including Rickman Delawney Reserve approximately 1 km south of the development envelope. The species is saurophagous, feeding exclusively on other reptiles. The site is large enough to support an assemblage of reptiles, indicated by the three recorded in the low intensity survey efforts of the 'basic fauna' component of the survey. This, in combination with the habitat value within the development envelope, indicate the black-striped snake may occur.

As such, the development envelope is considered to provide 28.70 ha of potentially suitable habitat associated with the banksia woodland habitat type, for the black-striped snake.

6.3.4.3 Pacific swift

Apus pacificus (Pacific Swift) is a highly mobile species that may opportunistically fly over or forage in the development envelope for short periods of time as part of a much larger home range. They would not breed within the development envelope. Any occurrence of pacific swift in the development envelope would likely be in the air space and largely independent from terrestrial habitat. On this basis the species is not considered further.

6.3.4.4 Peregrine falcon

Peregrine falcon are highly mobile species that may occasionally occur within or fly over the proposal as part of a much larger home range while searching for prey. The species occurs across Australia as well as Europe, Asia, Africa and the Americas but is not common anywhere. It occurs in a large range of habitats and requires abundant prey and secure nest sites, preferring coastal and inland cliffs or open woodlands near water, whilst it can also be found nesting on high city buildings. The species would not breed within the development envelope. Any occurrence of peregrine falcon in the development envelope would likely be in the air space and largely independent from terrestrial habitat. On this basis the species is not considered further.

6.3.4.5 Carnaby's black cockatoo

Species ecology

Broad scale mapping of the modelled distribution for CBC (Johnstone *et al.* 2011) identifies the development envelope within the species' known distribution range, but not within its breeding range. The northern Swan Coastal Plain is commonly used by the species for foraging and roosting and the development envelope and surrounds provide suitable foraging habitat for CBC. It is estimated that the northern Swan Coastal Plain supports 4,600 – 15,000 CBCs during the non-breeding season and a small number of breeding individuals, forming the largest population of non-breeding birds in south-western Australia (BirdLife International 2022).

Regional habitat data for CBC (DEC 2011a; Johnstone *et al.* 2011) and regional black cockatoo roosting surveys published by Birdlife Australia indicate that the development envelope contains areas of potential CBC foraging and roosting habitat, and is located in proximity to a number of roosting and breeding areas, the majority of which are located in the Darling Range to the east of the development envelope.

The proposal occurs within the CBC known distribution range and the species were recorded flying over the development envelope during field surveys undertaken by Emerge Associates (2025a).

The CBC recovery plan (DEC 2013a) defines 'habitat critical to the survival' of CBCs as the following:

- The eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding
- Woodlands sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established
- In the non-breeding season, the vegetation that provides food resources as well as the sites for nearby watering and night roosting enable CBC to effectively utilise the available food sources.

Habitat suitability - development envelope context

<u>Foraging habitat</u>

Emerge Associates (2025a) classified foraging habitat within the survey area as native or non-native based on the vegetation's naturalised status. It was then further classified as 'primary' or 'secondary'

based on black cockatoo foraging preferences. Primary foraging habitat was defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary foraging habitat was defined as plants that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource. Non-native foraging habitat comprises planted individuals of a range of native (but non-endemic) and exotic tree species. These species have differing food resource value and will not always be important for the species.

Based on the results of the targeted black cockatoo survey (Emerge Associates 2025a), the development envelope contains primary native foraging habitat and secondary native foraging habitat, the extents of which are detailed in **Table 29** and **Figure 20.**

Table 29: CBC foraging habitat present within the development envelope (Emerge Associates 2025a)

Foraging habitat	Extent of habitat in Development envelope (ha)	Extent of habitat in residential development area (ha)	Extent of habitat in conservation area (ha)
Primary native	28.66	12.29	16.37
Primary non-native	0.00	0.00	0.00
Secondary native	0.02	0.01	0.01
Secondary non-native	0.00	0.00	0.00
Total	**28.68**	**12.30**	**16.38**

All possible foraging species have been considered in the assessment provided in **Appendix I** (Emerge Associates 2025a). However, for the purposes of the ERD, black cockatoo habitat has been specifically refined in consideration of the *Referral guideline for 3 WA threatened black cockatoo species* (DAWE 2022) and identified food resources (which are sources important for their survival, as defined by recovery plans) and includes:

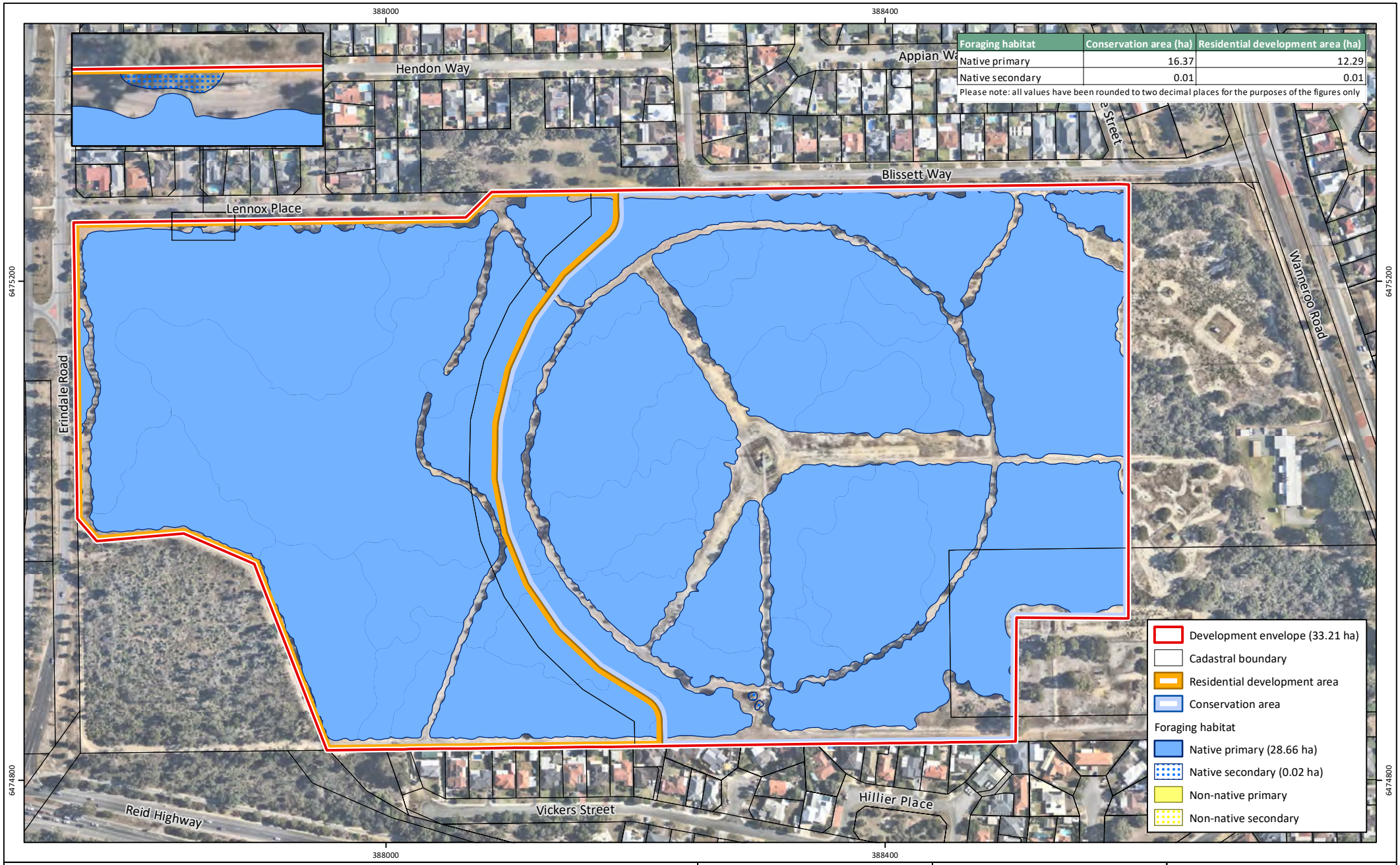
- 'High' quality native foraging habitat, which includes all native foraging habitat identified as primary and secondary native species
- 'Exotic' (non-native) foraging habitat, which includes only primary non-native species. Secondary non-native species have not been included.

The black cockatoo foraging habitat within the development envelope, separated into the residential development area and the conservation area, in relation to the referral guidelines as 'high' and 'exotic' foraging habitat is summarised in **Table 30** below.

Table 30: 'High' quality native foraging CBC habitat and exotic foraging CBC habitat within the development envelope

Foraging habitat type	Extent within the development envelope (ha)	Extent within the residential development areas (ha)	Extent within the conservation area (ha)
'High' quality (native)	28.68	12.30	16.38
Exotic (non-native)	0.00	0.00	0.00

The 28.68 ha of foraging habitat within the development envelope represents 3.40% of foraging habitat within 6 km and 0.57% of foraging habitat within 12 km of the development envelope.



Foraging habitat	Conservation area (ha)	Residential development area (ha)
Native primary	16.37	12.29
Native secondary	0.01	0.01

Please note: all values have been rounded to two decimal places for the purposes of the figures only

Figure 20: Carnaby Black Cockatoo Foraging Habitat

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Client: BAI Communications

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Date: 23/10/2025

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Metres
Scale: 1:4,000@A4
GDA2020 MGA Zone 50

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Roosting habitat

The targeted black cockatoo assessment recorded no evidence of CBC roosting within the development envelope. Roosting habitat for black cockatoos is defined as a stand of trees taller than 8 m (Glossop *et al.* 2011). Some trees within the development envelope (including Banksia Woodland and scattered trees) meet that criteria and provide potentially suitable roosting habitat for CBC, however they are not known to roost within the development envelope. On this basis, roosting habitat is not considered currently present within the development envelope.

Breeding habitat

The development envelope is outside of the CBC known breeding range. As such CBC breeding habitat within the development envelope is not given further consideration in this ERD. Breeding habitat is relevant to FRTBC as discussed further in **Section 6.3.4.6** below.

Habitat quality score

A black cockatoo habitat quality assessment was undertaken by Emerge Associates (2025b) utilising the habitat quality assessment methodology provided by DCCEEW to provide a systematic assessment of overall habitat quality for each species of black cockatoo potentially occurring within the development envelope as further detailed in **Appendix F.** The residential development area was determined to have a habitat quality score of 8 for CBC and 7 for FRTBC.

The results of the assessment are outlined in **Table 31** below.

Table 31: Black Cockatoo habitat quality assessment scores for the residential development area Emerge Associates (2025b)

Category	Habitat Quality Score	
	Carnaby's black cockatoo	Forest red-tailed black cockatoos
Site condition	5	4
Site context	3	3
Overall site habitat quality score	**8**	**7**
Species stocking rate	Yes	Yes

Habitat suitability - regional context

It is estimated that existing vegetation suitable for CBC foraging habitat within a 12 km radius of the development envelope (including the development envelope) comprises a total of approximately 4,969 ha, as shown on **Figure 21.** This is based on an analysis of regional vegetation mapping to identify areas of vegetation which may contain plant species known to be foraged upon by CBC. Potential foraging habitat data published by Glossop *et al.* (2011) has been used, but given this dataset was created in 2011 and in order to account for clearing of native vegetation that has occurred since this time, Emerge Associates have updated this dataset using the current native vegetation extent as provided by (DPIRD 2023a), to only show potential foraging habitat that currently remains.

The extent of potentially suitable foraging habitat within 12 km of the development envelope includes areas that are presently zoned 'Urban' under the Metropolitan Region Scheme and/or local planning schemes and could be under threat from future development pressures, but also areas such as 'Parks and Recreation' reserves, conservation areas and Bush Forever Sites that are under some form of enduring protection mechanism. Bush Forever Sites are afforded some protection through land use zoning, and it is therefore not anticipated that any black cockatoo habitat within Bush Forever Sites will be cleared in the future mitigating further habitat loss impacts. Approximately 3,466 ha or 69.75% of potential foraging habitat within 12 km of the development envelope is presently zoned as 'reserves' under the MRS, including regional parks and Bush Forever Sites. The foraging habitat within the development envelope (28.68 ha) represents 0.57% of this foraging habitat within 12 km of the development envelope.

Potential watering habitat for black cockatoos is shown on **Figure 22** including permanent and seasonal watering sources. Multiple permanent wetland features providing watering habitat for black cockatoos occur within 6 km of the development envelope and providing approximately 131 ha of permanent watering habitat which includes rivers, dams, lakes and other permanent water bodies. Additionally, there is approximately 325 ha of seasonal watering habitat potentially suitable for black cockatoos within 6 km of the development envelope.

Figure 21 provides the locations of the recorded roost sites within a 12 km radius of the development envelope, it is noted that a total of approximately 4,969 ha of potential black cockatoo foraging habitat is estimated to occur within this 12 km radius.

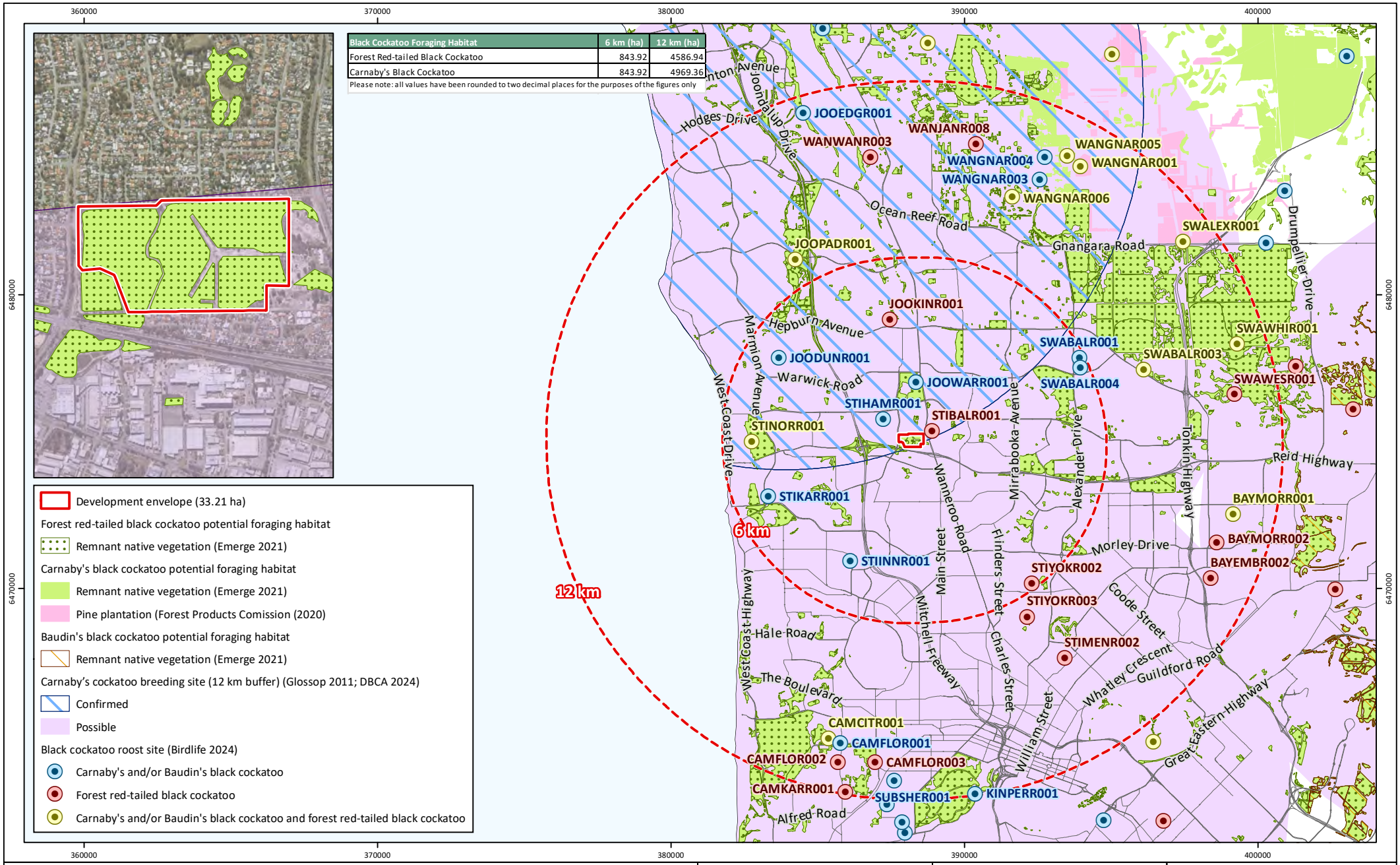

Figure 21: Black Cockatoo Habitat Regional Context

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Client: BAI Communications

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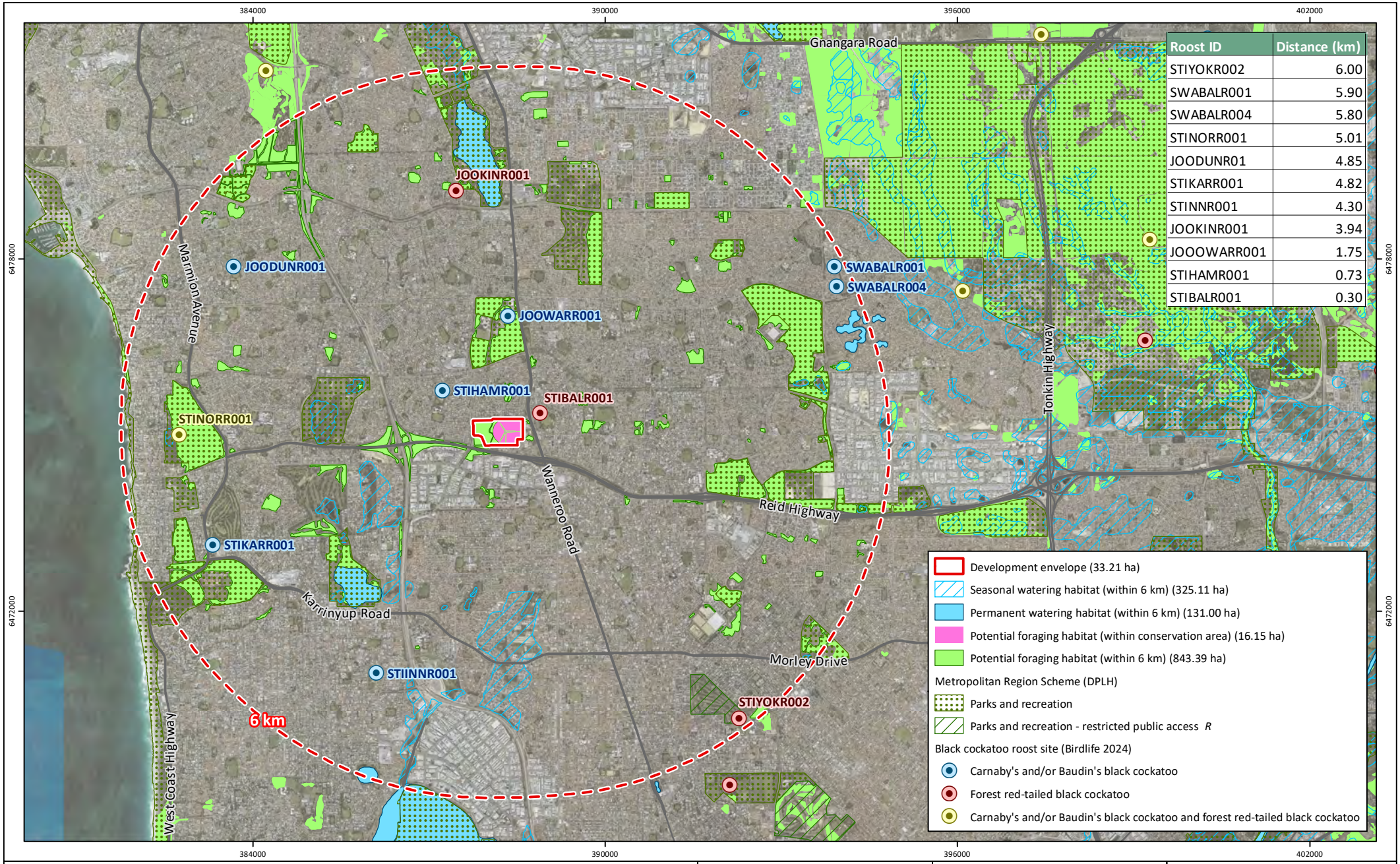

Figure 22: Black Cockatoo Habitat Local Context

Project: Environmental Review Document
Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number: EP24-129(08)--F59c
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Metres
Scale: 1:85,000@A4
GDA2020 MGA Zone 50

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Habitat suitability - local context

Areas of suitable CBC habitat of similar or higher value are located in close proximity to the development envelope. Bush Forever Site 202 (Warick Bushland) to the north and Bush Forever Site 203 (Carine Regional Open Space) to the northwest are within 2 km of the development area and are estimated to comprise 57.93 ha and 23.69 ha of vegetation providing suitable CBC and FRTBC foraging, roosting and breeding habitat respectively. Bush Forever Site 204 (Star Swamp Reserve) and Bush Forever Site 201 (Koondoola Regional Bushland) are within 6 km of the development area and contain 81.77 ha of CBC and 123.61 ha of FRTBC suitable foraging, roosting and breeding habitat. Bush Forever sites within 6 km of the development envelope are summarised in **Table 32** below.

In total approximately 844 ha of potential CBC and FRTBC foraging habitat (excluding habitat within the development envelope) within 6 km radius of the development envelope, of which 581 ha is secured in local and regional reserves as shown in **Figure 21** and **Figure 22**.

Table 32: Bush forever sites with potential Black cockatoo foraging habitat within 6 km of the development area

Site Number	Name	Distance from Development envelope (km)	Potential Black Cockatoo foraging habitat in Bush forever site (ha)
Bush Forever Site 202	Warick Bushland	0.9	57.93
Bush Forever Site 203	Carine Regional Open Space	1.8	23.69
Bush Forever Site 328	Marangaroo Conservation Reserve	2.6	26.64
Bush Forever Site 212	Lake Gwelup Regional Open Space	2.8	30.25
Bush Forever Site 385	Reid Highway Bushland	3.2	1.65
Bush Forever Site 299	Yellagonga Regional Park	3.6	37.62
Bush Forever Site 43	Cottonwood Reserve	4.1	10.79
Bush Forever Site 204	Star Swamp Reserve	4.2	81.77
Bush Forever Site 201	Koondoola Regional Bushland	4.3	123.61
Bush Forever Site 493	Errina Road Bushland	4.3	10.93
Bush Forever Site 199	Landsdale Park	4.3	15.60
Bush Forever Site 308	Trigg Bushland and Adjacent Coastal Reserve	4.4	50.09
Bush Forever Site 303	Whitfords Avenue Bushland	5.2	50.77
Bush Forever Site 280	Dianella Regional Open Space	5.7	3.34
Bush Forever Site 281	Herdsman Lake Regional Park	5.8	1.36

The nearest known roost site for CBC is located 0.73 km to the northwest of the development envelope. **Table 33** provides a summary of CBC roost site records within a 6 km radius of the development envelope as recorded in Birdlife Australia's Great Cocky Count (Pryor *et al.* 2023).

Table 33: CBC known roost sites within 6 km of development envelope (Pryor et al. 2023)

Roost Site ID	Species	Distance from Development envelope (km)
STIHAMR001	CBC and BBC	0.73
JOOWARR001	CBC and BBC	1.75
STIINNR001	CBC and BBC	4.30
STIKARR001	CBC and BBC	4.82
JOODUNR001	CBC and BBC	4.85
STINORR001	CBC, FRTBC and BBC	5.01
SWABALR004	CBC and BBC	5.80
SWABALR001	CBC and BBC	5.90

6.3.4.6 Forest red-tailed black cockatoo

Species ecology

Broad scale mapping of the modelled distribution for forest red-tailed black cockatoo (FRTBC) (Johnstone *et al.* 2011) identifies the development envelope within the species' known range. No breeding range modelling is available for the species; however, it is known to breed mainly in the jarrah forest region (DBCA 2017a) and in small populations on the Swan Coastal Plain within the Baldivis, Stakehill, Lake McLarty and Capel area and increasingly in the Perth metropolitan area (Garnett *et al.* 2011). The Swan Coastal Plain is also commonly used by the species for foraging and roosting.

Habitat critical to the survival and important populations of FRTBC comprises all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 mm of annual average rainfall (DoEE 2008).

FRTBC has no set breeding area or season, occurring across the Swan Coastal Plain at any time of the year. Datasets for migration and movement patterns for FRTBC are not publicly available and so no map has been provided. Migration and movement patterns for FRTBC are broad and do not follow defined consistent routes.

Habitat suitability - development envelope context

Foraging habitat

As discussed above in regard to CBC, Emerge Associates (2025a) classified foraging habitat within the survey area as native or non-native based on the vegetation's naturalised status. It was then further classified as 'primary' or 'secondary' based on black cockatoo foraging preferences.

Based on the results of the targeted black cockatoo survey (Emerge Associates 2025a), the development envelope contains primary native foraging habitat and secondary native foraging habitat, the extents of which are detailed in **Table 34** and **Figure 23**.

Table 34: FRTBC foraging habitat present within the development envelope (Emerge Associates 2025a)

Foraging habitat	Extent of habitat in Development envelope (ha)	Extent of habitat in residential development area (ha)	Extent of habitat in conservation area (ha)
Primary native	22.44	6.72	15.71
Primary non-native	0.00	0.00	0.00
Secondary native	0.73	0.73	0.00
Secondary non-native	0.04	0.00	0.04
Total	**23.20**	**7.45**	**15.75**

As discussed above in regard to CBC, FRTBC foraging habitat within the development envelope, was also defined in relation to the referral guidelines as 'high' and 'exotic' foraging habitat is summarised in **Table 35** below.

Table 35: High' quality native foraging FRTBC habitat and Exotic' foraging FRTBC habitat within the development envelope

Foraging habitat type	Extent within the development envelope (ha)	Extent within the residential development areas (ha)	Extent within the conservation area (ha)
'High' quality (native)	23.17	7.45	15.71
Exotic (non-native)	0.04	0.00	0.04

The 23.17 of FRTBC 'high' quality foraging habitat within the development envelope represents 2.75% of foraging habitat within 6 km and 0.50% of foraging habitat within 12 km of the development envelope.

Roosting habitat

The targeted black cockatoo assessment recorded no evidence of FRTBC roosting within the development envelope. Roosting habitat for black cockatoos is defined as a stand of trees taller than 8 m (Glossop *et al.* 2011). Roost STIBALR001 is located in Celebration Park 300 m north-west of the development envelope (Pryor *et al.* 2023). Therefore, 3.35 ha within the north-western portion of the conservation area, lies within 500 m of STIBALR001 are classified as part of STIBALR001 roosting site and tall trees within this area are suitable roosting habitat (as shown in **Figure 23**).

Some trees within the residential development area (including Banksia Woodland and scattered trees) meet that criteria and provide potentially suitable roosting habitat for FRTBC, however they are not known to currently roost within the residential development area. On this basis, roosting habitat is not considered currently present within the residential development area.

Breeding habitat

FRTBC do not have a defined breeding area and cannot be excluded from breeding on the Swan Coastal Plain or within the development envelope.

The Basic Fauna and Targeted Black Cockatoo Assessment involved a survey and subsequent assessment of black cockatoo breeding habitat within the development envelope utilising the survey methodology as outlined in **Section 6.3.1.**

A total of 60 black cockatoo habitat trees were recorded within the development envelope (after the 2023 fire) (Emerge Associates 2025a), of which 41 occur in the residential development area and 19 occur within the conservation area. Hollows that appeared potentially suitable for use by black cockatoo from the ground were then further inspected using a pole mounted camera and/or drone to measure internal hollow dimensions and assess for any signs of black cockatoo use. No potentially suitable nesting trees were identified to contain suitable hollows for black cockatoo breeding following the internal hollow inspections. All habitat trees were classified as potential nesting trees and comprised 13 tuart, 42 jarrah and five stag (dead) trees. The locations of the identified potential nesting trees are shown in **Figure 24**.

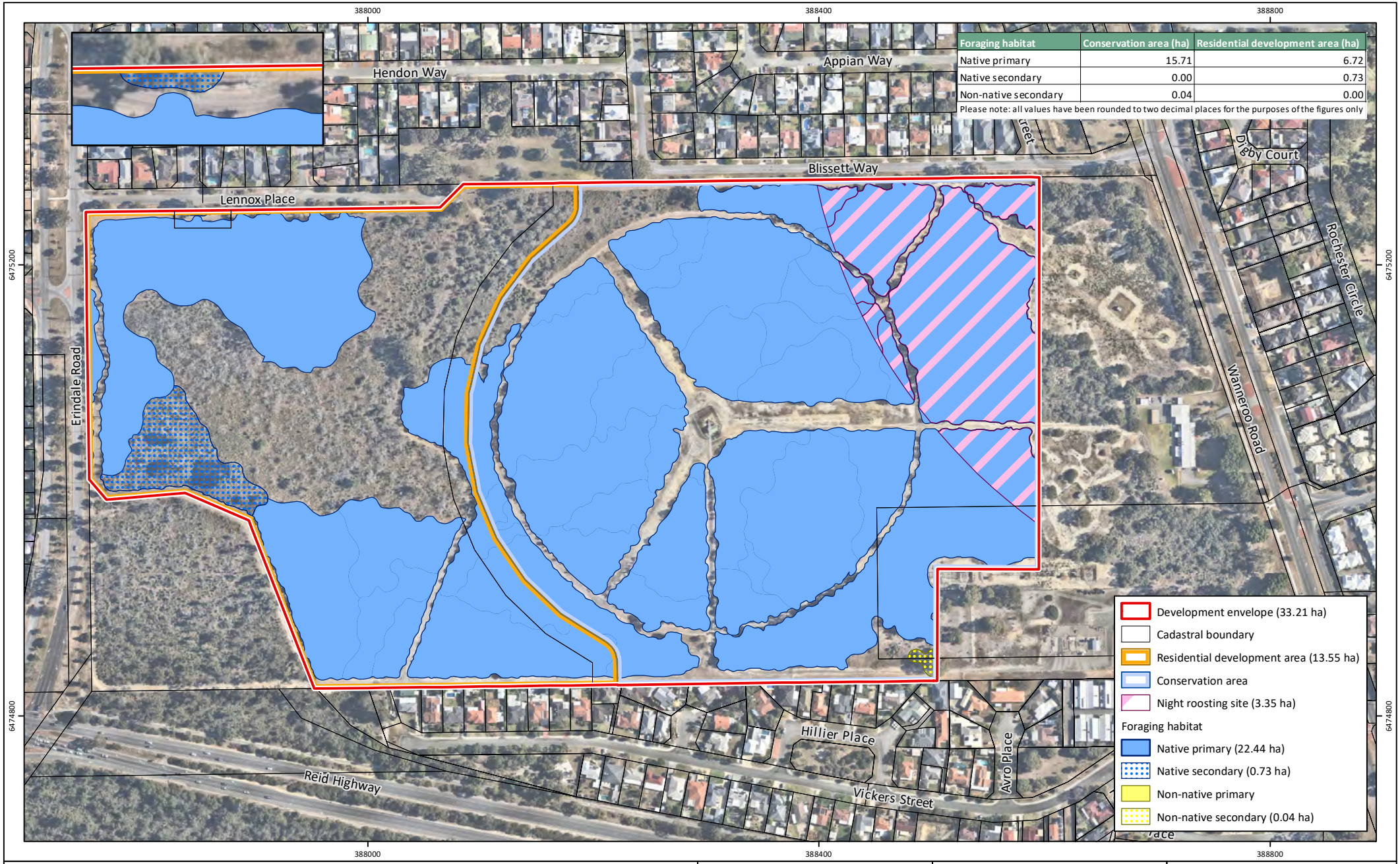

Figure 23: Forest Red-tailed Black Cockatoo Foraging Habitat

Project:	Environmental Review Document Hamersley Residential Development and Conservation
Client:	BAI Communications

Plan Number:
EP24-129(08)--F60d

Drawn:	WJC
Date:	22/10/2025
Checked:	EKB
Approved:	AV
Date:	23/10/2025

N

0 50 100 150
Metres

Scale: 1:4,425@A4

GDA2020 MGA Zone 50

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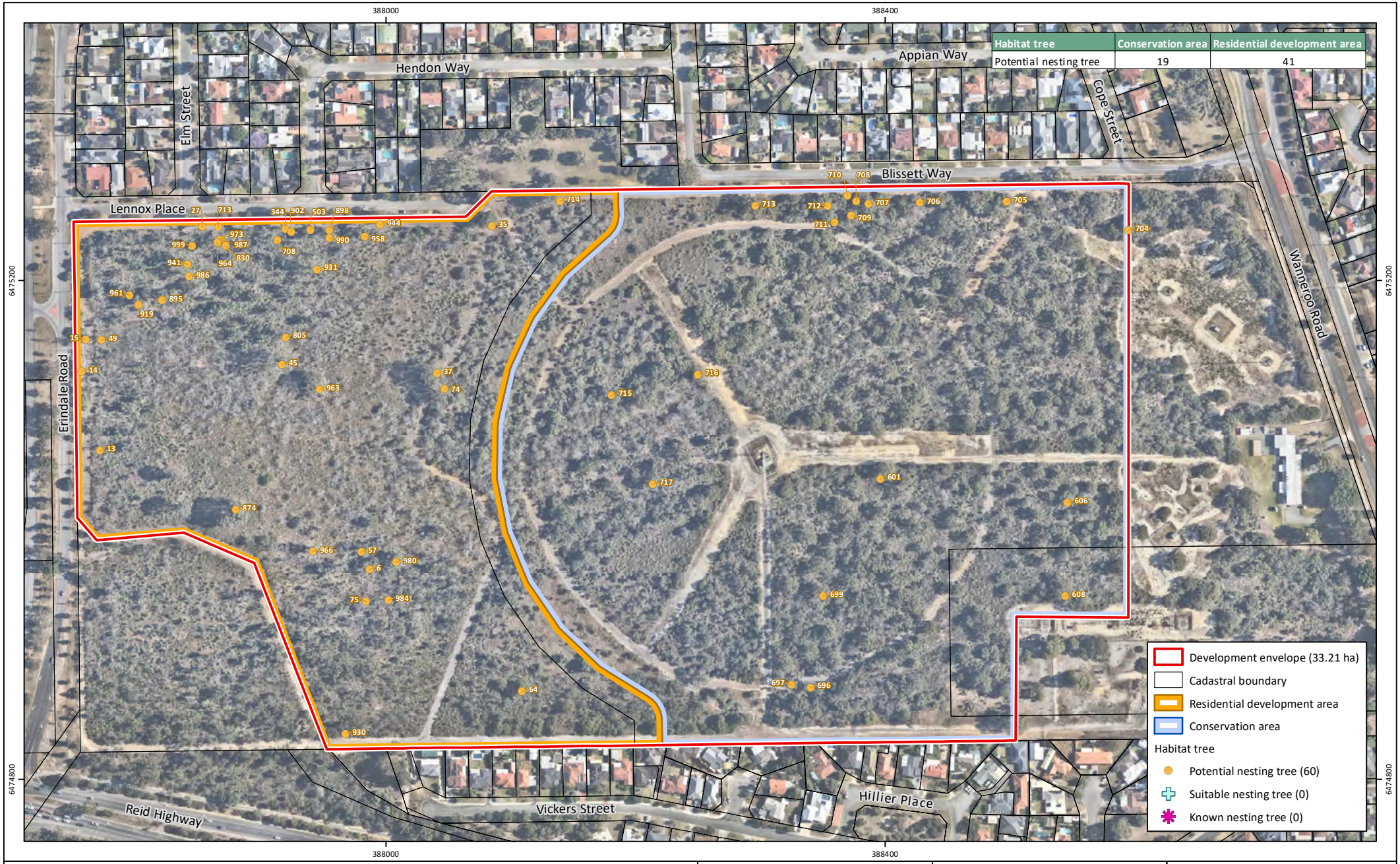

Figure 24: Black Cockatoo Habitat Trees

Project:	Environmental Review Document Hamersley Residential Development and Conservation
Client:	BAI Communications

Plan Number:
EP24-129(08)--F57c

Drawn:	WJC
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Checked:	EKB
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Date:	23/10/2025

N

0 50 100 150
Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

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Habitat quality score

The habitat outlined for CBC in **Section 6.3.4.5** also applies for FRTBC, with further detail provided in Emerge Associates (2025a) (**Appendix F**)**.** The residential development area was determined to have a habitat quality score of 7 for FRTBC.

Habitat suitability - regional context

It is estimated that existing vegetation suitable for FRTBC foraging habitat within a 12 km radius of the development envelope comprises a total of approximately 4,587 ha, as shown on **Figure 21.** This is based on an analysis of regional vegetation mapping to identify areas of vegetation which may contain plant species known to be foraged upon by FRTBC. As mentioned above in relation to CBC, potential foraging habitat data published by Glossop *et al.* (2011) has been used, but given this dataset was created in 2011, to account for clearing of native vegetation that has occurred since this time, Emerge Associates have updated this dataset using the current native vegetation extent as provided by (DPIRD 2023a), to only show potential foraging habitat that currently remains.

The extent of potentially suitable foraging habitat within 12 km of the development envelope includes areas with varying degrees of protection under the Metropolitan Region Scheme and/or local planning schemes. The current extent of potential FRTBC foraging habitat within 6 km of the development envelope that is under some form of protection is estimated to be 590 ha or 68.60% of the potential foraging within 6km of the development envelope.

At a broader scale, approximately 3,352 ha or 73.37% of all potential foraging habitat within 12 km of the development envelope is presently zoned as ‘reserves’ under the MRS, including regional parks and Bush Forever Sites.

The watering habitat outlined for CBC in **Section 6.3.4.5** also applies for FRTBC, with further detail provided in Emerge Associates (2025a).

Habitat suitability - local context

The local foraging context outlined for CBC in **Section 6.3.4.5**also applies for FRTBC, with further detail provided in Emerge Associates (2025a).

There are four records of FRTBC roosting within 6 km of the development envelope, two of which have recorded only FRTBC roosting while the remaining one has recorded all three species of black cockatoo, CBC, FRTBC and BBC. These roost sites are summarised in **Table 36** and shown on **Figure 22.** It is noted that approximately 4,773 ha of potential black cockatoo foraging habitat (excluding pine plantations) is estimated to occur within a 12 km radius of the development envelope as shown in **Figure 21**.

Table 36: FRTBC known roost sites within 6 km of development envelope (Pryor et al. 2023)

Roosting Site ID	Species	Distance from Development envelope (km)
STIBALR001	FRTBC	0.30
JOOKINR001	FRTBC	3.94
STINORR001	CBC, FRTBC and BBC	5.01

Table 36: FRTBC known roost sites within 6 km of development envelope (Pryor et al. 2023) (continued)

Roosting Site ID	Species	Distance from Development envelope (km)
STIYOKR002	FRTBC	6.00

The nearest known roost site for CBC is located 0.73 km to the northwest of the development envelope. **Table 33** provides a summary of CBC roost site records within a 6 km radius of the development envelope as recorded in Birdlife Australia's Great Cocky Count (Pryor *et al.* 2023). **Figure 21** provides the locations of the recorded roost sites within a 12 km radius of the development envelope, it is noted that a total of approximately 4,587ha of potential FRTBC foraging habitat is estimated to occur within this 12 km radius.

6.3.4.7 Invertebrate species

Emerge Associates (2025a) identified five conservation significant invertebrate species with potential to occur within the development envelope based on desktop and field assessment. These species are further discussed below.

Cemetery springtail

The cemetery springtail (P3) is a species of invertebrate. It has been recorded in four locations across Perth, Swan View, Tuart Hill, Guildford and Perth Airport but is likely more widespread. The species typically occurs in long undisturbed native grasslands and heath. The habitat within the development envelope has high weed disturbance and has been historically cleared in patches, however, some areas remain intact with less disturbance and so may provide suitable habitat. On this basis, the species is not considered further.

Graceful sunmoth

A total of 15 graceful sunmoth (P4) individuals were recorded in the eastern side of the development envelope in a survey in 2010 (DBCA 2024c). The entire development envelope has the potential to provide habitat for the species and will depend on the presence of the host plant *Lomandra hermaphrodita.* Bennelongia Environmental Consultants (2023) did not consider the species likely to occur based on the desktop assessment. With consideration to these factors, the species is not considered further.

Swan Coastal Plain shield-backed trapdoor spider

The trapdoor spider (P3) is a short range endemic[1] mygalomorph typically found in Perth in sandy soils throughout banksia woodlands. Therefore, Emerge Associates (2025a) considered the banksia woodland habitat within the development envelope to provide 28.70 ha of potentially suitable habitat for the trapdoor spider. The trapdoor spider is discussed further below.

Woolybush bee

The woolybush bee (P3) is found in Perth in remnant vegetation, specifically on *Grevillea* sp. flowers as well as the growing tips of *Adenanthos* sp., *Banksia* sp. or *Jacksonia* sp. DoEE (2016) describes the

[1] Species with a restricted distribution <10,000km^2

species is as being associated with the banksia woodlands PES which occurs within the banksia woodland habitat (Emerge Associates 2025e). While the species does not occur in database searches within 10 km of the development envelope since 1957, this is likely due to lack of survey effort than an absence of specimens. On this basis, the species is not considered further.

Stylet bush cricket

The stylet bush cricket is a poorly understood katydid species with few records available which is likely due to a lack of surveys. ALA indicates an individual was recorded in Innaloo in 1985 (ALA 2024). The only habitat information available is that the original specimen was recorded on the axial leaf bases of grass trees. It is possible they may therefore occur in the **banksia woodland** habitat in the development envelope but are likely to be widespread throughout similar habitats in the Perth region. On this basis, the species is not considered further.

Short range endemic species

Bennelongia Environmental Consultants (2021; 2023) undertook an SRE desktop assessment and field survey and the results are summarised below.

SREs are defined as terrestrial and freshwater invertebrate fauna species that have naturally small distributions of less than 10,000 km^2 (EPA 2016c). Given their potential to be restricted at small spatial scales, SRE species are generally at greater risk of changes in conservation status, local population or taxon extinctions than other, more widely distributed taxa. Other invertebrate species may also be of conversation significance, but have a widespread distribution and are therefore not considered SRE species.

The most recent desktop assessment undertaken by Bennelongia Environmental Consultants (2023) identified 136 species from SRE groups, of which two were considered confirmed SREs, 132 were considered *Likely Potential* SREs (39 species were treated as 'likely' as a precautionary measure due to lack of data) and 9 were considered *Unlikely Potential* SREs.

The vegetation within the development envelope is broadly composed of a *Banksia* and *Eucalyptus* woodland; similar woodland remnants in southwestern Australia are known to contain a range of microhabitats that harbour range-restricted invertebrates, including bark, leaf litter beds, soil humus and large debris. Further, *Banksia* woodlands typically support rich invertebrate communities on the Swan Coastal Plain, and their former extent has been considerably fragmented. Several range restricted invertebrates are known to inhabit and are associated with Banksia Woodlands PEC and the development envelope includes plant species endemic to the region (i.e. Macrozamia riedlei), which may be associated with host-specific invertebrates (Bennelongia Environmental Consultants 2023).

Based on the desktop assessment, a total of eight conservation significant SRE species were identified with the potential to occur within the development envelope, as outlined in **Table 37** below.

Table 37: SRE species identified during desktop assessment

Species	Common name	Conservation status	Likelihood of occurrence within the site	Identified during field survey
Euoplos inornantus	-	Priority 3	Moderate	No
Idiosoma sigillatum	Mygalomorph spider	Priority 3	High	Yes
Austroconops mcmillani	Biting midge	Priority 2	Low	No
Hesperocolletes douglasi	-	CR (BC Act)	Low-Moderate	No
Hylaeus globuliferus	Douglas' broad-headed bee	Priority 3	Moderate	No
Leioproctus contrarius	Short-tongued bee	Priority 3	Moderate	No
Leioproctus douglasiellus	-	EN (BC Act) and CR (EPBC Act)	Moderate	No
Neopasiphae simplicior	-	EN (BC Act) and CR (EPBC Act)	Low	No

During the SRE survey, 10 sample sites were surveyed across the development envelope by Bennelongia Environmental Consultants (2023) (**Appendix K**) (**Figure 18**). The SRE field survey recorded 622 individual specimens representing 25 species of invertebrates from eight SRE groups: two species of scorpion, two species of pseudoscorpion, three species of spider, one species of harvestmen, four species of isopods, five species of centipede, four species of land snail and four species of millipede. A full species list is provided in **Appendix K**. One conservation significant invertebrate species was recorded during the field survey, *Idiosoma sigillatum*. Nine species were identified as W*idespread* (not SREs), four species were considered *Unlikely Potential* SREs and eight species were considered *Likely Potential* SREs (with seven of these *Likely Potential*: DD and one *Likely Potential* SRE). The full methodology of the survey is provided in **Appendix J, Appendix K**.

One Confirmed SRE (*Idiosoma sigillatum*), also identified in the desktop assessment), and four Possible SRE species (the opilionid: *Megalopsalis* sp, the Isopod: *Styloniscus* and two Millipedes: *Antichiropus* and *Iulomorphidae* sp.), not identified in the desktop assessment, were recorded within the development envelope. Both the Confirmed and three Possible SRE species are known to occur more widely in the region or were recorded at multiple locations during the survey indicating that their distributions are wider than the survey could determine. The banksia woodland habitat within the development envelope is considered to provide 28.70 ha of potentially suitable habitat for the trapdoor spider.

One Potential SRE (Millipede: Iulomorphidae sp.) was only recorded within the residential development area, however it is considered probable that there are local occurrences outside the development envelope. The desktop assessment identified two species from the family Iulomorphidae (*Dinocambala ingens* and *Podykipus collinus*), both of which are restricted to the Perth area. The species collected is unlikely to be conspecific with *D. ingens* as it is restricted to the Darling Scarp (Edward and Harvey 2010; Framenau *et al.* 2008). Currently there are no publicly available sequences of *P. collinus* and so it is not possible to confirm whether Iulomorphidae sp. is *P. collinus*. The species collected could not be identified further due to lack of data (identification key requires male features, specimen collected was female). Other non-conservation significant SRE

identified within the desktop study are widespread and have not been identified during the field survey.

The SREs identified are known to occur more widely in the region, were recorded at multiple locations during the survey indicating that their distributions are wider than the survey could determine, or were considered probable that there are local occurrences outside the development envelope (Bennelongia Environmental Consultants 2023). On this basis, these potential SREs are not considered further.

6.3.5 Ecological linkages

Ecological linkages are linear landscape elements that allow the movement of fauna, flora and genetic material between areas of remnant habitat. This exchange of genetic material between vegetation remnants improves the viability of those remnants by allowing greater access to breeding partners, food sources, refuge from disturbances such as fire and maintenance of the genetic diversity of vegetation units and populations. Ecological linkages are ideally continuous or near continuous as the more fractured a linkage is, the less ease flora and fauna have in moving within the corridor (Alan Tingay and Associates 1998).

The Perth Biodiversity Project, supported by the Western Australian Local Government Association (WALGA), identified and mapped regional ecological linkages within the Perth Metropolitan Region (WALGA and PBP 2004). The development envelope occurs at the intersection of two ecological linkages as shown on **Figure 25.** Ecological Linkage No. 6 runs north from the development envelope and ecological linkage No. 22 runs east to west across the development envelope. These ecological linkages connect a number of Bush Forever sites in the wider local area including Warwick Bushland to the north, Star Swamp Bushland and Carine Regional Open Space to the west and Bush Forever Site No. 385 in Mirrabooka and Malaga to the east.

At a local scale native vegetation within the development envelope does provide an ecological linkage function by providing potential movement corridors for fauna; however, the linkage value is likely to be limited given that vegetation in parts of the development envelope is separated from surrounding vegetation through existing roads and fencing. The development envelope is currently fenced (with ringlock fencing) for the purpose of safety and security associated with the broadcasting infrastructure within Lot 803, thus the vegetation and associated fauna habitat within the development envelope provides limited function as an ecological linkage, especially for ground-dwelling fauna.

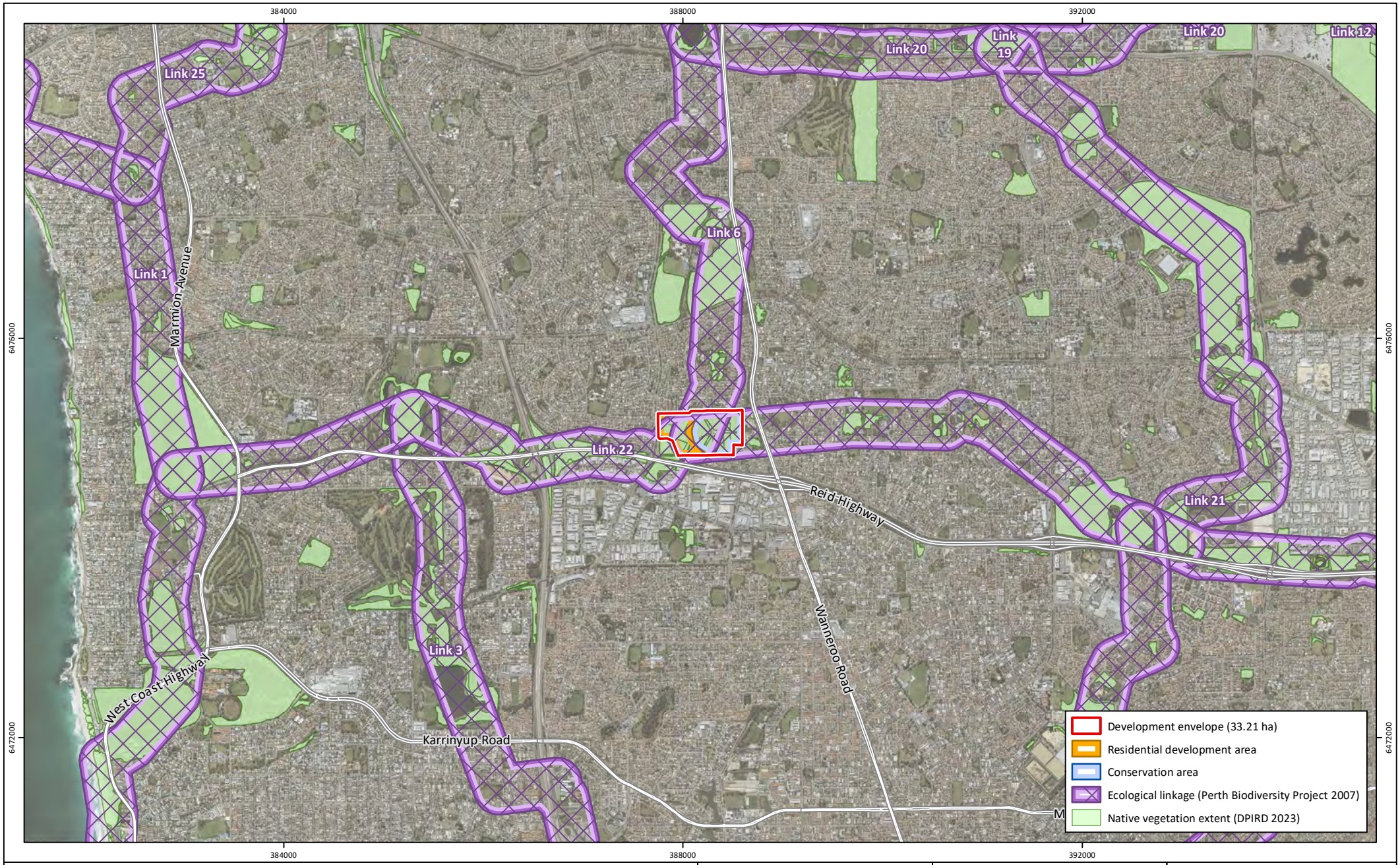

Figure 25: Ecological Linkages

Project: Environmental Review Document
Hamersley Residential Development and Conservation
Client: BAI Communications

Plan Number:
EP24-129(08)--F54c
Drawn: WJC
Date: 22/10/2025
Checked: EKB
Approved: AV
Date: 23/10/2025

N

0 1 2
Kilometers
Scale: 1:50,000@A4
GDA2020 MGA Zone 50

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6.3.6 Regional context

Vegetation types and associated fauna habitat strongly influence the diversity and composition of fauna taxa present within an area. As discussed in **Section 1.3.7** above, (Heddle *et al.* 1980) mapping shows the development envelope occurring within the 'Karrakatta complex - central and south', which is described as comprising an open forest of *Eucalyptus gomphocephala*, *Eucalyptus marginata* and *Corymbia calophylla* which reflects the cooler and wetter conditions in the southern portions of the Spearwood dunes compared to the northern portion. This vegetation is considered to provide suitable habitat for the quenda and trapdoor spider and potential suitable habitat for the black-striped snake. There is 9,201 ha of 'Karrakatta complex - central and south' complex within 6 km of the development envelope and 17,277 ha within 12 km providing suitable habitat for these species.

6.4 Environmental impacts

The implementation of the proposal will result in the permanent, direct removal of 12.29 ha of native fauna habitat, discussed further **in Section 6.4.1** below.

A risk assessment has been undertaken (**Appendix G**) for this factor. In addition to the Risk ID's identified for flora and vegetation (**Section 5.4**), which are also relevant to fauna habitat, the following risk event has been assessed and rated as 'low' prior to mitigation:

- Risk ID TF1 - Fauna interactions (Initial risk rating 'low'): Direct impact to fauna through injury or mortality due to clearing of vegetation within the residential development area.

The above risk event is discussed in **Section 6.4.2** below.

6.4.1 Anticipated loss of fauna habitat

Up to 12.29 ha (43%) of native fauna habitat (within the banksia woodlands fauna habitat type) occurs within the future residential development area and therefore may be cleared as part of future implementation of the proposal as shown in **Table 38**.

Table 38: Fauna habitat types within the development envelope

Fauna habitat	Development envelope (ha)	Conservation area (ha)	Residential development area (ha)	% Impact
Banksia woodland	28.66	16.37	12.29	42.88%
Scattered trees and shrubs	0.06	0.05	0.01	16.67%
Bare ground and grassland	4.50	3.24	1.26	28.00%

The removal of 12.29 ha (42.88%) of the banksia woodlands fauna habitat provides suitable and potential suitable habitat for the conservation significant species discussed below.

A total of 16.37 ha (57.12%) of the banksia woodlands fauna habitat will be retained within the conservation area providing potentially suitable habitat for the species. This retained habitat will remain within Ecological Linkage No. 6, and maintain connection between the conservation area and surrounding native vegetation (including Bush Forever sites). The development envelope is currently

enclosed by ringlock fencing, surrounded by roads and within an already highly fragmented landscape, providing limited connection for ground dwelling fauna.

As discussed above, a total of 1,340 ha and 549 ha of the Karrakatta Complex – central and south vegetation complex occurs within 12 km and 6 km radius of the proposal and is protected within Bush Forever sites. This vegetation is likely to support similar species composition to that of the development envelope.

6.4.1.1 Carnaby's black cockatoo

Foraging habitat: The proposal will remove 12.30 ha (42.83%) (associated with the banksia woodland and scattered trees and shrubs fauna habitat type) of 'high' value foraging habitat including 12.29 ha of primary foraging habitat (predominantly jarrah and banksia trees) and 0.01 ha of secondary foraging habitat (tuart and *Allocasuarina fraseriana, Jacksonia furcellata* and *Xanthorrhoea spp*.).

Roosting habitat: No CBC roosting habitat will be impacted.

Breeding habitat: No CBC breeding habitat will be impacted.

The habitat within the development envelope meets the definition of habitat considered critical to the survival of the species based on the presence of foraging habitat within 12 km of a known roosting site. Extensive areas (approximately 590 ha) of suitable habitat providing primary foraging, breeding and roosting habitat occurs within 6 km of the proposal and is protected in reserves. Due to the broad definitions of habitat critical to the survival of CBC, it is likely that all vegetated areas in the Swan Coastal Plain which also contain Eucalypt trees in proximity to wetlands provide habitat critical to CBC. There is approximately 4,969 ha of potential CBC habitat within 12 km of the development envelope of which 3,413 ha or 68.68% is currently protected under the MRS. The 12.30 ha of 'high' quality foraging habitat represents 0.25% of foraging habitat within 12 km of the development envelope.

6.4.1.2 Forest red-tailed black cockatoo

Foraging habitat: The proposed development will remove 7.45 ha of 'high' quality FRTBC foraging habitat including 6.72 ha of primary foraging habitat (predominantly jarrah trees) and 0.73 ha of secondary potential foraging habitat (as tuart and *Allocasuarina fraseriana, Jacksonia furcellata, Xanthorrhoea spp*. and *Persoonia saccata*).

Roosting habitat: No roosting or secondary evidence of roosting was observed.

Breeding habitat: The proposal will remove 41 potentially suitable habitat trees, none of which contain suitable breeding hollows.

The habitat within the development envelope meets the definition of habitat critical to the survival of the species as it contains jarrah woodlands and receives more than 600 mm of annual rainfall. The definition for habitat critical for FRTBC is broad and there is approximately 4,587 ha of FRTBC foraging habitat within 12km of the development envelope that would also receive more than 600 mm of annual rainfall. The 7.45 ha of 'high' quality foraging habitat represents 0.16% of foraging habitat within 12 km of the development envelope.

6.4.1.3 Black-striped snake

The proposal will result in the removal of 12.29 ha of potentially suitable habitat for black-striped snake. Although the habitat type identified may support the species based on its known habitat preferences, the black-striped snake has not been recorded and is not known to occur within the development envelope. As such, the development envelope contains potentially suitable habitat for the species, and the scale of habitat loss is unlikely to be significant at either a local or a regional scale. Similar habitat is extensive in the locality, with similar habitat types identified in the development envelope widespread within the local area including 590 ha of native vegetation with 6 km of the development envelope within protected Bush Forever sites (Emerge Associates 2025a). A total of 16.37 ha of banksia woodland fauna habitat type, providing the same potential habitat for the species, will be retained within the conservation area.

To further understand the likely occurrences of the black-striped snake within the surrounding areas, Bush Forever and DBCA's threatened and priority flora species database has been investigated.

The DBCA database search results identified 42 records (some of which recorded multiple individuals) of the black striped snake within 10 km of the development envelope 16 of which occur with 6 km of the development envelope (**Figure 26).** No records of the black-striped snake were identified in Bush Forever (Government of WA 2000).

While there were no records of the black-striped snake within the development envelope it is considered that potentially suitable habitat is present within the development envelope. The avoidance of vegetation in the conservation area will continue to provide the potentially suitable habitat. In consideration of this, the 42 known records of the species within 10km of the development envelope and the extensive areas of vegetation suitable to support these species in the surrounding area the impacts to this species are not considered significant.

6.4.1.4 Swan Coastal Plain shield-backed trapdoor spider

The proposal will result in the removal of 12.29 ha of suitable habitat for Swan Coastal Plain shield-backed trapdoor spider. The scale of habitat loss for this conservation significant species is unlikely to be significant at either a local or a regional scale. Other habitat is extensive in the locality, with similar habitat types identified in the development envelope widespread within the local area including 590 ha of native vegetation with 6 km of the development envelope within protected Bush Forever sites. A total of 16.37 ha of banksia woodland fauna habitat type, providing the same habitat for the species, will remain within the conservation area.

To further understand the likely occurrences of the Swan Coastal Plain shield-backed trapdoor spider within the surrounding areas, Bush Forever and DBCA's threatened and priority flora species database has been investigated.

The DBCA database search results identified 122 records (some of which recorded multiple individuals) of the Swan Coastal Plain shield-backed trapdoor spider within 10 km of the development envelope, 69 of which are within 6 km of the development envelope. These records are shown on **Figure 26**. No records of the Swan Coastal Plain shield-backed trapdoor spider were identified in Bush Forever (Government of WA 2000).

The removal of one record of the Swan Coastal Plain shield-backed trapdoor spider associated with the proposal represents a loss of 1.4% of the known records within 6 km of the development envelope and 0.82% of the known records within 10 km of the development envelope. The proposal is not considered a significant impact to the species.

6.4.1.5 Quenda

The proposal will result in the removal of 12.29 ha of suitable habitat for quenda. The scale of habitat loss for this conservation significant species is unlikely to be significant at either a local or a regional scale. Other potential Quenda habitat is extensive in the locality, with similar habitat types identified in the development envelope widespread within the local area 590 ha of native vegetation with 6 km of the development envelope within protected Bush Forever sites. A total of 16.37 ha of banksia woodland fauna habitat type, providing the same habitat for the species, will remain within the conservation area.

To further understand the likely occurrences of quenda within the surrounding areas, Bush Forever and DBCA's threatened and priority flora species database has been investigated.

The DBCA database search results identified 170 records of quenda within 10 km of the development envelope, 57 of which are within 6km of the development envelope. These records are shown on **Figure 26**. Quenda were identified in 97 Bush Forever sites across the Perth metropolitan region (Government of WA 2000). Seven of these sites are within 12km of the development envelope which include:

- Bush Forever Site 196: Gnangara Road Bushland, Landsdale/Cullacabardee
- Bush Forever Site 201: Koondoola Regional Bushland
- Bush Forever Site 299: Yellagonga Regional Park, Wanneroo/Woodvale/Kingsley
- Bush Forever Site 303: Whitfords Avenue Bushland, Craigie/Padbury
- Bush Forever Site 304: Whiteman Park, Whiteman/West Swan
- Bush Forever Site 327: Badgerup Lake And Adjacent Bushland, Wanneroo
- Bush Forever Site 407: Woodvale Nature Reserve, Woodvale.

The removal of one record of quenda associated with the proposal represents a loss of 1.75% of the known records within 6 km of the development envelope and 0.58% of the known records within 12 km of the development envelope. The proposal is not considered a significant impact to the species.

6.4.2 Indirect and direct impacts

Direct impacts include clearing of fauna habitat and fauna interactions during clearing and construction activities.

Fauna interactions (Risk ID TF1)

Construction activities and removal of native vegetation have the potential to result in fauna interactions, that is displacement, mortality or injury of fauna species.

6.4.3 Cumulative impacts

As discussed in **Section 5.4.4**, within 6 km and 12 km of the proposal, is 952 ha and 5,517 ha of native vegetation remains respectively (**Figure 16**). These areas of native vegetation are likely to support similar habitat to that within the development envelope, with the potential to provide suitable habitat for conservation significant fauna species including CBC, FRTBC, quenda and trapdoor spider, and potentially suitable habitat for and black-striped snake.

Land parcels presently zoned as 'parks and recreation' provide an area of 1,218 ha within 6 km and 7,319 ha within a 12 km radius of the proposal, as shown on **Figure 16**. These areas are afforded protection through land use zoning, and it is therefore anticipated that any vegetation within these protected areas will remain in the future.

The 'Karrakatta complex – central and south' vegetation complex has approximately 23.5% of its original extent remaining, of which approximately 4.6% is protected. A total of 1,340 ha of this vegetation complex occurs within Bush Forever sites within 12 km radius of the proposal, whilst 549 ha occur within 6 km of the proposal (**Figure 16**). The clearing of native vegetation within the development envelope would not cause significant fragmentation and would account for 0.92% of the total remaining vegetation extent within protected Bush Forever sites within 12 km and approximately 0.05% of the remaining vegetation complex extent.

6.4.3.1 Black cockatoos

Habitat for black cockatoos within the surrounding 12 km area was originally (prior to European settlement) much more contiguous, with fragmentation of habitat generally limited to areas of wetlands and surface water bodies, or areas without suitable vegetation types for use by black cockatoos. Since this time, the key driver which has led to the fragmentation of habitat within the development envelopes surrounding 12 km area is intense land uses and the widespread land clearing that was required to support the predominantly urban land uses of the region following European settlement.

Presently it is estimated that existing vegetation suitable for CBC and FRTBC breeding, foraging and roosting habitat within a 12 km radius of the development envelope comprises a total of approximately 4,969 ha for CBC and 4,587 ha for FRTBC.

The proportion of the current extent of potential CBC foraging habitat within 12 km of the development envelope that is reserved as 'Parks and Recreation' is estimated to be 3,413 ha or approximately 68.68% of the total presently available suitable habitat for CBC. Based on this, the proposed clearing of a maximum of 12.30 ha of CBC foraging habitat within the development envelope would result in the loss of approximately 0.25% of the total available habitat within 12 km of the development envelope and 0.36% of the total available habitat that is under some form of protection.

For FRTBC the proportion of potential foraging habitat reserved as 'Parks and Recreation' is estimated to be 3,352 ha or approximately 73.07% of the total. The proposed clearing of 7.45 ha of FRTBC foraging habitat would result in the loss of approximately 0.16% of the total available habitat within 12 km of the development envelope and 0.22% of the total available habitat that is under some form of protection.

The overall extent of black cockatoo habitat within a 12 km radius of the development envelope is shown in **Figure 21**.

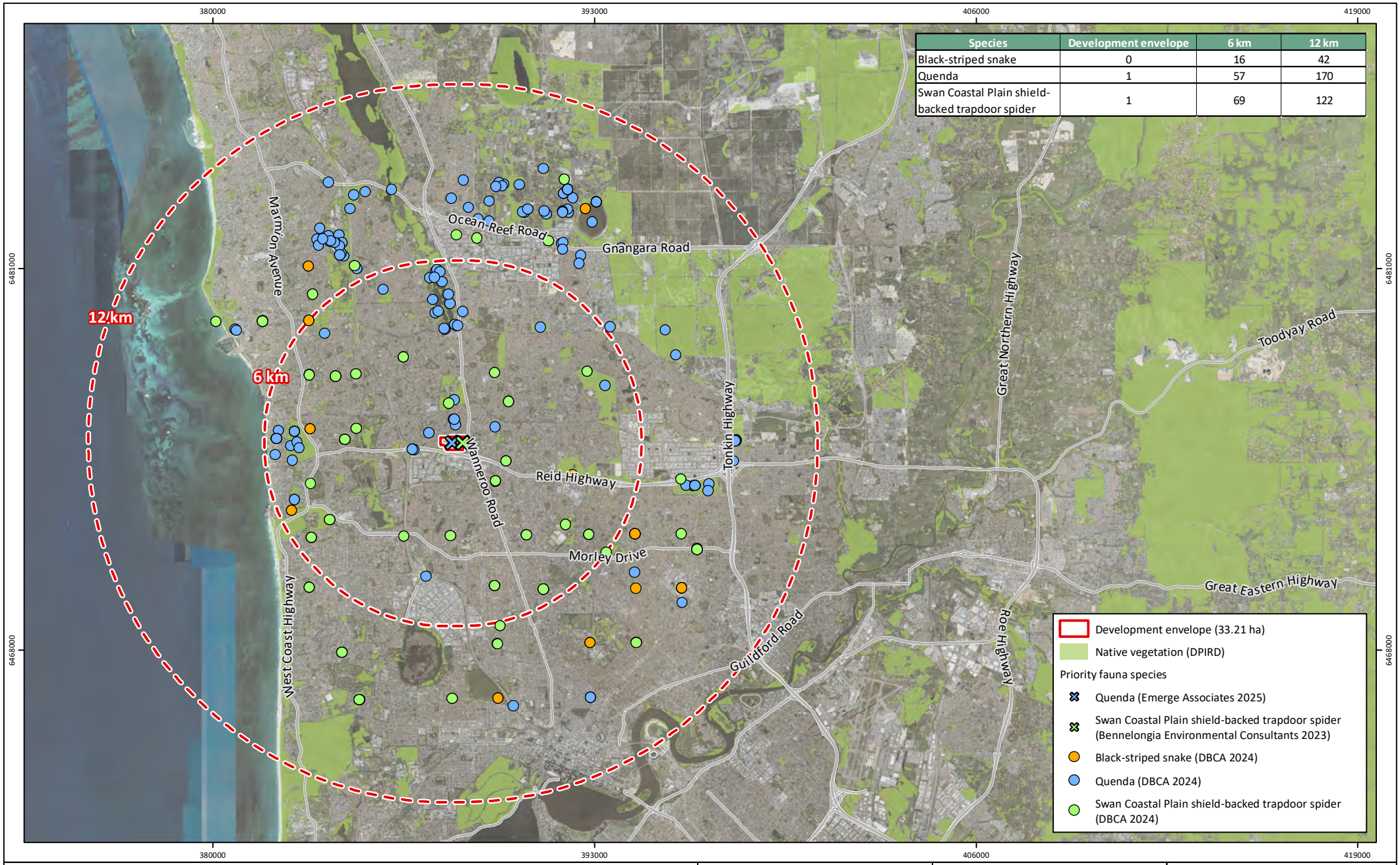

Figure 26: Local and Regional Context for Priority Fauna Species

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Approved: AV
Date: 23/10/2025

N

0 2,000 4,000 6,000
Metres
Scale: 1:170,000@A4
GDA2020 MGA Zone 50

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6.5 Mitigation

There are a range of measures to mitigate the potential impacts to terrestrial fauna values. This includes impact avoidance, minimisation and rehabilitation measures, consistent with the EPA mitigation hierarchy (EPA 2016a).

Because the loss of 12.29 ha of native fauna habitat within the residential development envelope is planned and unavoidable to implement the proposal, the proponent has considered a range of measures to mitigate potential impacts of the future implementation of the proposal and to reduce the residual impacts on terrestrial fauna habitat. Following the consideration of mitigation measures, a 'low' and 'very low' risk rating remains for the risk events outlined in **Section 6.5**.

6.5.1 Avoid

Almost 60% of the development envelope will be conservation, achieving avoidance of 16.37 ha of native vegetation providing fauna habitat. Avoidance is achieved through the proposed conservation area, which avoids impacts to:

- 16.37 ha of native vegetation units, providing fauna habitat, associated with the 'Karrakatta complex - central and south' vegetation complex in varying condition including:
    - 2.60 ha of 'excellent' condition vegetation
    - 11.11 ha of 'very good' condition vegetation
    - 1.03 ha of 'good' condition vegetation
    - 1.62 ha of 'degraded' condition vegetation
    - 3.29 ha of 'completely degraded' vegetation

  An additional 3.21 ha of bare ground and grassland fauna habitat type and 0.04 ha of scattered trees and shrubs fauna habitat type
- With respect to black cockatoo habitat:
    - 16.37 ha of 'high' quality, primary foraging habitat for CBC
    - 15.71 ha of 'high' quality primary foraging habitat and 0.04 ha of exotic, secondary non-native habitat for FRTBC
    - 3.35 ha of part of a known roost location, associated with Great Cocky Count roost location 'STIBALR001'. This habitat will be retained
    - 19 black cockatoo habitat trees, relevant to FRTBC
- 16.37 ha of native fauna habitat type (associated with the banksia woodland habitat type) providing suitable habitat for quenda, Swan Coastal Plain shield-back trapdoor spider and potential suitable habitat for black-striped snake and other SRE or potential SRE species.

6.5.1.1 Indicative retention opportunities

As previously discussed in **Section 5.5.1** and **Section 5.5.1.1,** the indicative concept plan includes measures to avoid some impacts within the residential development area. Again, this retention is not to be considered for impact assessment but is provided as further context around possible retention outcomes.

Based on the indicative concept plan, the extent of fauna values that may be indicatively retained has been investigated including a comparison to the proposed environmental outcomes achieved

within the conservation area (**Table 39**). A visual representation of the indicative retention opportunities is provided in **Figure 27**. Note that **Figure 27** shows the extent of black cockatoo foraging habitat based on the extent and value of CBC foraging habitat, which provides an overestimation of the value and extent of FRTBC foraging habitat. However, true extent and value of FRTBC foraging habitat is considered and provided in **Table 39**.

Table 39: Indicative retention opportunities for fauna habitat based on the current concept plan layout

Fauna values	Total extent within the development envelope	Indicative retention opportunities[1]		Avoidance achieved within the conservation area	
		Extent within the residential development area	% of total extent	Extent within the conservation	% of total extent
CBC foraging habitat	28.68 ha	3.67 ha	12.80	16.37 ha	57.08
FRTBC foraging habitat	23.20 ha	2.66 ha	11.47	15.71 ha	67.72
FRTBC potential nesting trees	60 trees	18 trees	30.00	19 trees	31.67
Banksia woodland habitat type	28.66 ha	3.67 ha	12.81	16.37 ha	57.12

[1] Note that indicative retention within the residential development area is provided for context purposes only and are not considered for impact assessment purposes

Risk ID TF1 - Fauna interactions (Residual risk rating 'very low')

Fauna interactions is a germane risk during construction activities and can be mitigated through a range of construction management measures. A Construction Environment Management Plan (CEMP) has been prepared (**Appendix H**) and outlines the following mitigation measures:

- Undertaking pre-clearing inspections of fauna habitats (including microhabitats such as logs, leaf litter, tree hollows and potential tree hollows) to ensure no fauna occur in the clearing area immediately prior to commencing clearing works. Should hollows (suitable for conservation significant species or other fauna species) be in use at the time of the inspection (noting none have been identified within the development envelope during recent surveys by black cockatoos), management actions outlined in the management plan will be applied. This can include stopping clearing temporarily, installing demarcation measures such as fencing around hollows and letting any animals vacate from the clearing area or if required safely remove to nearby vegetation outside of the clearing area (subject to licenses/approvals under the *Biodiversity Conservation Act 2016* (BC Act 2016))
- Implementation of a pre-clearing trapping program in the proposal's development envelope to capture and then relocate fauna species out of the construction area prior to the commencement of clearing activities. This typically involves relocation of any captured fauna to nearby bushland or conservation reserves. The management actions associated with potential fauna trapping are also regulated by DBCA pursuant to the BC Act 2016, which requires appropriate fauna handling licences to be in place
- During clearing works, having a suitably qualified and experienced fauna spotter/handler supervising the clearing activities, to actively search for fauna during clearing including

potential FRTBC hollows as outline above, relocate any opportunistically identified fauna, and attend to any injured fauna
- Stipulating limits on construction vehicle operating speeds and operating times (i.e. within daylight hours), to minimise the chance of vehicle strikes
- Undertaking clearing in a single direction, typically toward other areas of vegetation (i.e. the conservation area), to allow any remaining fauna to move themselves away from the area once works commence
- Providing training and inductions to construction personnel regarding fauna management
- Having a protocol in place to manage any fauna which might be injured, for example taking injured fauna to the nearest wildlife or veterinary clinic.

The CEMP will reduce the probability of fauna interactions resulting in injury and/or mortality during construction works and is therefore considered 'very low' risk.

Risk ID TF2 - Unapproved clearing of fauna habitat (Residual risk rating 'low')

As discussed in **Section 0,** clearing activities within the development envelope will be managed in accordance with the CEMP to minimise potential impacts to fauna habitat. The CEMP will prescribe the extent of the clearing area before any clearing activities commence to ensure retained areas of vegetation external to the development envelope are maintained and not directly or indirectly adversely impacted as part of the proposal implementation. This will include the establishment of 'no-access zones' including vegetation (and associated fauna habitat) protection fencing.

Risk ID TF3 - Edge effects (Residual risk rating 'very low')

Potential edge effects between the proposal and reserves containing native vegetation for conservation purposes will be mitigated through already established hard interfaces (i.e. public roads and share user paths), fire management (e.g. firebreaks), controlled access (e.g. fencing) via the implementation of the CEMP. Where there is no hard interface, the interface between the proposal and adjacent native vegetation will be managed through landscaping using native species**.**

Introduction and increased spread of weeds and/or disease

This risk will be mitigated through the preparation and implementation of a CEMP that will outline weed and disease management measures, as outlined in **Section 5.5.1**.

Introduction of feral animals

Given the nature of the proposal and existing pests and feral animals present, it is unlikely that the proposal will result in an increase in the abundance of non-native pests or feral predatory species in the area. Any pests such as rats and other feral animals within the development envelope will be controlled during the operation of the proposal.

Changes to the local fire regime

As discussed in **Section 0**, there are multiple mitigation measures and long term statutory planning requirements to address any potential changes to the local fire regime with the potential to impact on native vegetation providing terrestrial fauna habitat. Further potential of accidental ignition of

fires during the implementation of the proposal (construction phase) will be mitigated through the CEMP.

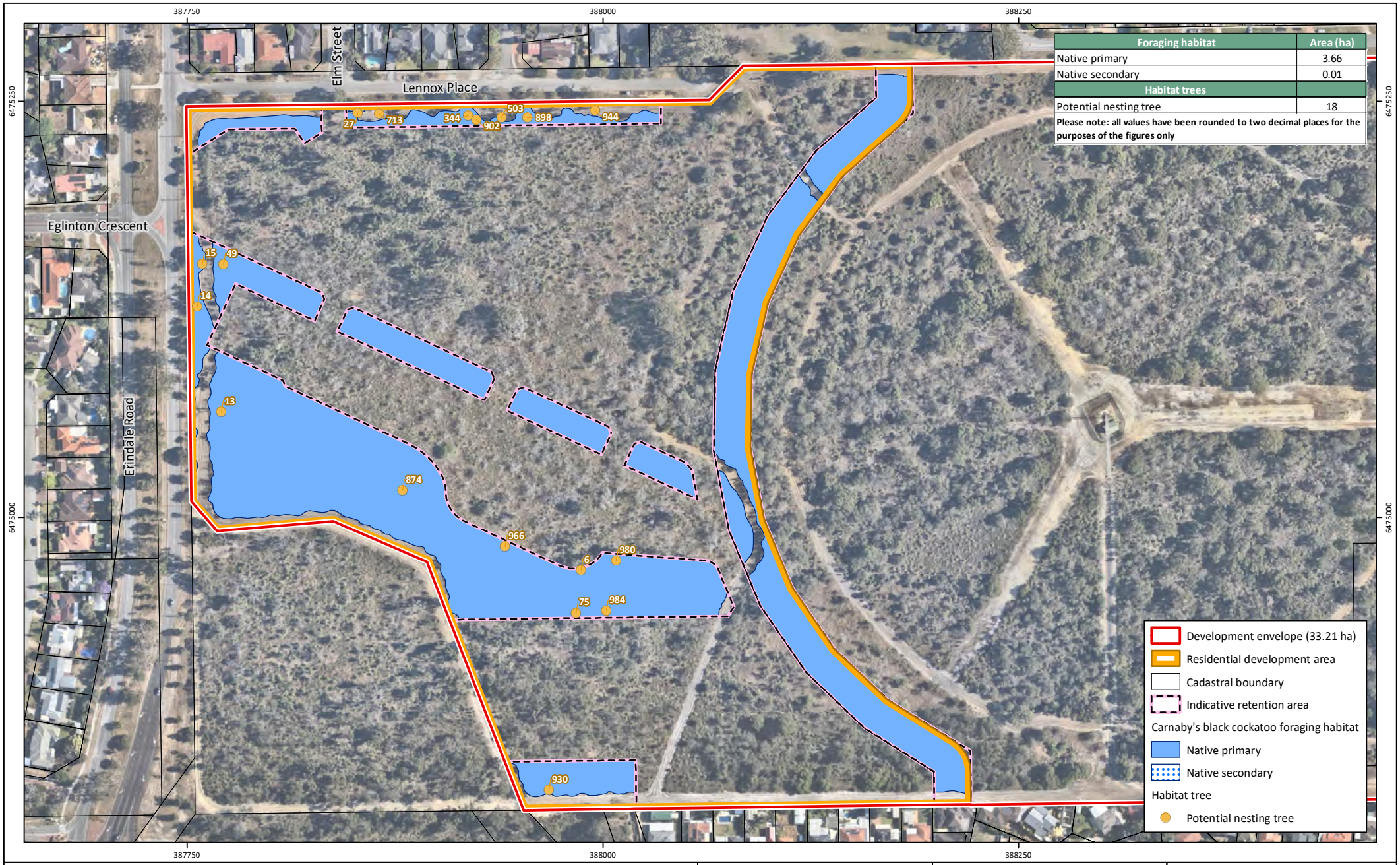

Figure 27: Residential Development Area Indicative Retention Opportunities - Black Cockatoo Habitat

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N

0 30 60 90
Metres
Scale: 1:3,000@A4
GDA2020 MGA Zone 50

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6.6 Residual impact

Following mitigation measures the three key risks associated with terrestrial fauna are rated as 'low' and 'very low' risk.

Up to 12.29 ha of native vegetation ranging from 'completely degraded' to 'very good' condition associated representative of the 'Karrakatta – Central and South' vegetation complex will be cleared for the implementation of the proposal. The loss of up 12.29 ha of native vegetation will be permanent and unavoidable. The removal of 12.29 ha of native vegetation within the residential development area will result in the following residual impacts to terrestrial fauna:

- The loss of up to 41 potential nesting trees providing breeding habitat for FRTBC, none of which contain hollows or are currently utilised by FRTBC
- The loss of up to 12.30 ha and 7.45 ha of foraging habitat for CBC and FRTBC, respectively
- The loss of up to 12.29 ha of native fauna habitat types (associated with the banksia woodland habitat type) providing suitable habitat for quenda (P4) and Swan Coastal Plain shield-backed trapdoor spider, and potentially suitable habitat for one priority reptile (black-striped snake).

The residual impacts to 12.30 ha and 7.45 ha of foraging habitat for CBC and FRTBC, respectively is likely to be significant, and as such trigger an offset requirement. This is discussed in **Section 9**. Overall, the remaining residual impacts to terrestrial fauna are not considered to be significant.

The following considerations have informed this conclusion:

- 16.37 ha of the total occurrence of vegetation, of which 14.74 is representative of the 'Karrakatta – Central and South' vegetation complex will be avoided and retained within the conservation area. This vegetation will remain within Ecological Linkage No. 6, maintaining some connection to surrounding vegetation for fauna species
- A total of 1,340 ha of the 'Karrakatta – central and south' vegetation complex occurs within Bush Forever sites within 12 km radius of the proposal, whilst 549 ha occur within 6 km of the proposal. This vegetation likely provides similar vegetation and associated fauna habitat, suitable for CBC, FRTBC, quenda, trapdoor spider and black-striped snake
- The loss of black cockatoo foraging habitat (12.30 for CBC and 7.45 for FRTBC) is relatively small in a local and regional context
- 16.37 ha of primary foraging habitat for CBC will be avoided and retained with the conservation area
- 15.75 ha of primary foraging habitat, 0.04 ha of secondary non-native and 19 suitable habitat trees for FRTBC will be avoided and retained with the conservation area
- A total of approximately 3,413 ha or 68.69% of potential foraging habitat for CBC within 12 km of the development envelope is zoned 'reserves' under the MRS, including regional parks and Bush Forever Sites. The foraging habitat within the residential development area (12.30 ha) represents 0.35% of this foraging habitat within 12 km of the development envelope
- A total of approximately 3,352 ha or 73.07% of potential foraging habitat for FRTBC within 12 km of the development envelope is zoned 'reserves' under the MRS, including regional parks and Bush Forever Sites. The foraging habitat within the residential development area (7.45 ha) represents 0.22% of this foraging habitat within 12 km of the development envelope.

6.7 Environmental outcome

The environmental outcomes resulting from the implementation of the proposal, with respect to terrestrial fauna are:

- Removal of up to 12.29 ha of fauna habitat including:
  - 12.29 ha of banksia woodland fauna habitat providing suitable habitat for CBC, FRTBC, quenda and trapdoor spider, and potentially suitable habitat for black-striped snake
  - 12.30 ha of CBC foraging habitat
  - 7.45 ha of FRTBC foraging habitat
  - 41 potential nesting trees for FRTBC
- Protection and conservation of 16.37 ha of fauna habitat within the conservation area (**Figure 19**) including:
  - 16.38 ha of CBC foraging habitat
  - 15.75 ha of FRTBC foraging habitat
  - 19 potential nesting trees for FRTBC
  - 16.37 ha of native fauna habitat providing suitable habitat for quenda and Swan Coastal Plain shield backed trapdoor spider, and potentially suitable habitat for black-striped snake.
- Mitigation through the implementation of the CEMP and CAMP so to avoid any adverse impacts on surrounding vegetation in the broader locality and ensure long term protection of the conservation area including restoration of 3.15 ha within the conservation area providing additional suitable fauna habitat
- Mitigation through implementation of the Offset Strategy so to offset anticipated significant residual impacts to CBC and FRTBC habitat
- No significant cumulative impact to fauna at either local or regional scale.

7 Greenhouse Gas Emissions

7.1 EPA Objective

To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable.

7.2 Relevant policy and guidance

The relevant policy and guidance for Greenhouse Gas Emissions is summarised in **Table 40.**

Table 40: Relevant policy and guidance for the Greenhouse Gas Emissions environmental factor

EPA and other State or Commonwealth policy and guidance (if relevant)	Explain how the policy and guidance has been considered
EPA policy and guidance	
Statement of Environmental Principles, Factors and Objectives and aims of EIA (EPA 2021b)	Referred to in the identification and assessment of potential impacts for each key environmental factor.
Western Australian Climate Policy (Government of Western Australia 2020)	Referred to in the assessment of the proposal in respect to the States net zero greenhouse gas emission targets.
Greenhouse Gas Emissions Policy for Major Projects (Government of Western Australia 2019)	Considers emission reduction targets and outlines the proponent's contribution to the State's net zero aspiration for major projects assessed by the EPA under the EP Act.
Environmental Factor Guideline – Greenhouse Gas Emissions (EPA 2023)	Consulted in the consideration of potential impacts to greenhouse gas emissions as a result of the proposal.

Under the EP Act, the EPA has the objective to use its best endeavours to protect the environment and to prevent, control and abate pollution and environmental harm. The EPA acknowledges that the warming climate may impact the Western Australian environment and the need for the EPA to consider the effects of proposals that contribute to the state's greenhouse gas (GHG) emissions (EPA 2021b).

The EPA defines greenhouse gas emissions and the associated scopes as the following:

- Scope 1: emissions that are released to the atmosphere as a direct result of an activity, or a series of activities, which are part of the proposal being considered by the EPA
- Scope 2: emissions that are released from the independent consumption of an energy product by the proposal. Scope 2 emissions are relevant to the consideration of a proposal because the proponent has control over its choice of independent energy quantity and source
- Scope 3: emissions that are indirect released emissions other than scope 2 emissions that are generated in the wider community occurring both upstream and downstream as a consequence of the activities of a proposal, but from sources not owned or controlled by the proponent as part of the proposal.

Generally, the EPA will have regard to this factor when considering proposals under Part IV of the EP Act and considers GHG emissions as relevant where emissions are to exceed 100,000 tonnes CO_2-e of scope 1 emissions in any year, or 100,000 tonnes of CO_2-e of scope 2 emissions in any year.

Previous consultation with the EPA determined that the scope of the greenhouse gas emission assessment is limited to emissions associated with the clearing of vegetation only and does not include emissions from construction and future development.

The change of land use associated with the proposal will result in clearing of vegetation leading to loss of bio-sequestration capacity. Degradation of the removed vegetation leads to stored carbon being released to atmosphere, primarily as CO2 and methane. These Scope 1 emissions have been estimated for the proposal. Emissions associated with fuel consumption by mobile equipment used for land clearing are also Scope 1. These have not been accounted in this assessment as they are likely to be insignificant due to the small size of the land parcel, the density of the vegetation and clearing being a one-off occurrence.

There are no Scope 2 emissions associated with the land clearing phase of the proposal.

7.3 GHG emissions calculation

The GHG emissions calculation was undertaken as part of the previous documentation prepared (Strategen JBS&G 2021) and summarised below.

The calculation of GHG emissions associated with land clearing for the proposal based on the following conservative assumptions and exclusions:

- Vegetation was mature without any disturbance
- Above and below ground biomass would be removed from 12.39 ha of land
- The above ground biomass estimate derived from the maximum biomass density inside the Proposal area in the Maximum Above Ground Biomass (also known as M) spatial layer developed for the Full Carbon Accounting Model (FullCAM) is representative of the site1
- A root to shoot ratio of 0.24 derived from published literature (Pate et al 1998, Beningo 2012) is representative of the development envelope vegetation
- The default Intergovernmental Panel on Climate Change (IPCC) value of carbon fraction of biomass dry matter of 0.5 is representative
- All carbon in biomass removed would all be released as CO2
- Any rehabilitation of the conservation area to be retained would provide negligible contribution to residual carbon sequestration potential
- Soil to remain on-site is expected to largely be covered with impervious surface (e.g., bitumen or concrete) or gardens; therefore, soil carbon would largely be retained and was not accounted for
- The carbon sequestration loss from vegetation clearing (ΣE_vt CO_2) was estimated from the following formula[2] (formular parameters are provided in **Table 41** below.
    - ΣEvt CO2 − e = A × AGB x (1 + R) x CF x CD.

Table 41: The carbon sequestration formula parameters

Parameter	Description	Value	Source
A	Area to be cleared in hectares	12.39 ha	-
AGB	Above ground biomass	108 t dry matter/ha	Maximum Above Ground Biomass (also known as M) spatial layer

Table 41: The carbon sequestration formula parameters (continued)

Parameter	Description	Value	Source
R	Root to shoot ratio to estimate below ground vegetation biomass	0.24	Pate *et al* 1998, Beningo 2012
CF	IPCC default carbon fraction of biomass	0.5	IPCC 2006
CD	Ratio of the molecular weight of carbon dioxide to carbon	3.67	Molecular weight CO2 (44) / Molecular weight C (14)

Using the above values, the potential GHG emissions from clearing of vegetation and loss of bio-sequestration capacity for the Proposal urban development would be 3,044 t CO2-e. A reduction of the vegetation in the 1.6 ha APZ could also contribute up to 285 t CO2-e (conservatively calculated for loss of total vegetation cover within APZ).

Potential impacts of GHG emissions include increase in the global GHG concentrations resulting in influence on changes to the climate. Future climate change projections predicted for Perth (CSIRO 2015) are:

- Average temperatures will continue to increase in all seasons (very high confidence)
- More hot days and warm spells are projected with very high confidence; fewer frosts are projected with high confidence
- A continuation of the trend of decreasing winter rainfall is projected with high confidence; spring rainfall decreases are also projected with high confidence; changes in other seasons are unclear
- Increased evapotranspiration is projected (high confidence)
- Increased intensity of extreme daily rainfall events is projected, with medium confidence
- Mean sea level will continue to rise and height of extreme sea-level events will also increase (very high confidence)
- A harsher fire-weather climate in the future (high confidence).

7.3.1 Potential environmental impacts

7.3.2 Direct impacts

The proposal will result in direct GHG emissions from the clearing of 12.29 ha of native vegetation. The clearing of vegetation will result in the loss of bio sequestration capacity, with the degradation of the removed vegetation leading to stored carbon release to the atmosphere predominantly as CO_2 and CH_4 (methane).

The proposal will result in direct GHG emissions as a result of the implementation of the proposal particularly through the operation of machinery, plant equipment and power generation.

The estimated maximum total annual emissions for Scope 1 including vegetation clearing and the operation of machinery, plant equipment and power generation is 3,329 t CO_2-e and therefore well below the 100,000 tCO_2-e per year EPA threshold for major proposals. The estimated total Scope 1 GHG emissions is therefore considered acceptable, with this risk event rated ‘very low’.

7.3.3 Estimated total emissions

The estimated total Scope 1 GHG emissions associated with the proposal are estimated to total 3,329 t CO_2-e, well below the 100,000 t CO2-e per year threshold defined by the EPA.

7.3.4 Cumulative impacts

According to the Green Building Council of Australia (GBCA), buildings are responsible for approximately 28% of total global GHG emissions, with 74% of this attributed to operational carbon emissions (GBCA 2021). Within Australia, 16% (22 Metric tonnes (Mt) CO_2-e) of the total carbon emissions from building stock in 2019 (137 Mt CO_2-e) is estimated to come from embodied carbon, and 84% from operational carbon. By 2050, this is predicted to reverse, with 15% from operational carbon and 85% from embodied carbon. “Over time, as the electricity grid decarbonises, embodied carbon will become a greater percentage of a building’s emissions profile” (GBCA 2021).

The total emissions estimated throughout the life of the proposal (expected lifespan of 120 years) is approximately 3,329 t CO_2-e. Therefore, the proposal’s emissions equate to a very small fraction of WA’s overall related emissions, which were just below 100 Mt CO_2-e in 2022, with 23.1 Mt CO_2-e in the construction sector according to Australia’s National Greenhouse Accounts (DCCEEW 2024).

7.4 Mitigation

A total of 16.37 ha of native vegetation units will be avoided and retained within the conservation area.

At minimum, 10% of the residential development area is proposed for public open space and drainage areas where existing native vegetation will be retained. Further, pending final placement of useable POS along the eastern boundary of the urban development area, there may be opportunity to retain additional vegetation with the APZ. This would serve to functionally extend the conservation area and the retained vegetation therein.

Given the insignificant contribution of the clearing element of the Proposal to GHG emissions and climate change, no GHG offsets are proposed.

Following the consideration of avoidance, mitigation and management measures, a ‘very low’ risk rating is maintained for the risk event. A GHG Environmental Management Plan is not proposed.

7.5 Environmental outcome

On the basis that the total annual Scope 1 emissions are well below the 100,000 t CO2-e per year threshold defined by the EPA, no significant residual impacts associated with GHG emissions are anticipated as a result of the implementation and ongoing operation of the proposal. No Scope 2 emissions are proposed. Therefore, the EPA’s objective for Greenhouse Gas Emissions will be met.

The environmental outcomes resulting from the implementation of the proposal, with respect to greenhouse gas emissions are:

- No significant Scope 1 emissions per annum (above 100,000 t CO2-e) and no Scope 2 emissions per annum as a result of the proposal.

8 Human Health

In consideration of the risk to future residents from radiofrequency radiation emitting from the broadcasting transmitters on Lots 803 and 1, an Electro-Magnetic Emissions (EME) analysis was undertaken by the owner and operator, BAI Communications in February 2021 (BAI Communications 2021). The EME analysis assessed any potential concerns from a public health and safety risk perspective. The EME at the development envelope was both modelled, measured and assessed against the *Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) RPS S-1 Standard*. The EME analysis concluded that, a maximum building height of 15 meters for future residential housing on Lot 802 will be safe for occupants and compliant with ARPANSA RPS No. 3 Standard. To ensure appropriate enforcement of requirements, it is proposed a restrictive covenant will be lodged on the lot titles to restrict the maximum height limit of buildings to 15 m and the City of Stirling impose a building height limit as part of the applicable planning and development controls. Following the EME analysis (BAI Communications 2021), an additional modelling analysis was completed in February 2025 at four locations within Lot 802, which resulted in EME levels of 38% (31.2V/m), 37% (30.5V/m), 28% (23.1V/m) and 26% (21.8V/m) of the General Public Limit of the ARPANSA Standard RPS S-1.

A further EME measurement assessment at the same four locations was conducted on the ground in August 2025 with all current services operating. The resulting EME levels were 23% (19.4V/m), 24% (20V/m), 20% (17V/m) and 20% (16.3V/m) of the General Public Limit of the ARPANSA Standard RPS S-1.

The General Public exclusion area surrounding the transmission mast is contained withing Lot 803 and Lot 1 with approximately 195m separation from the nearest boundary of Lot 802 and the residential development area. The proposed development is no closer to the broadcast infrastructure than existing housing in the area. The EME analysis undertaken to date indicate that the levels are within a safe range and that the land is suitable for future residential housing, consistent with currently proposed amendments to the local zoning and other planning controls that apply to the land.

9 Offsets

9.1 Background context and approach

The Offset Strategy is provided in **Appendix L** and summarised below in regard to the overall restoration offset approach and contributions relevant to the EP Act offset requirements and reference to the EPBC Act offset requirements.

Based on the outcomes of the environmental impact assessment and the proponent's consideration of the mitigation hierarchy, it is anticipated that the proposal will result in significant residual impacts, triggering offset considerations for the following residual impacts:

- 12.29 ha of Banksia Woodlands PEC (and TEC pursuant to the EPBC Act)
- 12.30 ha of 'high' quality foraging habitat, comprising 12.29 ha of primary native and 0.01 ha of secondary native foraging habitat for CBC
- 7.45 ha of 'high' quality foraging habitat comprising 6.72 ha of primary native foraging habitat and 0.73 ha of secondary native foraging habitat for FRTBC
- Loss of 41 potential nesting trees, relevant to FRTBC.

Offset contributions are considered in relation to the highest value for black cockatoos, in this case CBC foraging habitat and FRTBC breeding habitat (**Appendix L**).

The Offset Strategy has been developed to satisfy the anticipated offset requirements pursuant to both the EPBC Act relevant MNES and the EP Act environmental factors, as listed above, through the identification of potential offset sites and associated proposed restoration and management to demonstrate that there are ample restoration offset opportunities available to sufficiently fulfill the offset requirements for the proposal. It should be noted that there have been surplus restoration offset gain opportunities available (i.e. multiple sites and restoration approaches) to adequately respond to the identified residual impacts, and there will be refinement of these and potentially other similar offset sites being investigated to specify the ultimate offset site (or combination of offset sites) which will be documented in an Offset Proposal during the assessment process. The offset strategy is intended to demonstrate that sufficient specific and tangible restoration offset opportunities are available (and hence reducing the risk of there being offset scarcity to respond to the residual impacts) but also enabling the ultimate Offset Proposal to be refined and finalised to support the respective assessment processes and capture a degree of flexibility for the assessment outcomes.

The Offset Strategy has been prepared in accordance with the following key policies and guidelines:

- EPBC Act Environmental Offsets Policy (Commonwealth of Australia 2012)
- WA Environmental Offsets Policy (Government of Western Australia 2011)
- WA Environmental Offsets Guidelines (Government of Western Australia 2014).

The Offset strategy provides context of the residual impacts as well as outlining the offset site identification approach and identified offset site suitability. It will inform the EPA and DCCEEW assessment of the proposal and statutory environmental approvals processes.

The proposed offset strategy has been prepared to align with the WA Government's environmental offset principles and considers EP Act environmental factors impacted by the proposed development. In accordance with the WA environmental Offsets Guidelines, a Residual Impact Significance Model has been provided in **Table 42** below.

Table 42: Residual Impact Significance Model based on Vegetation and Flora and Terrestrial Fauna Part IV Environmental factors (Government of Western Australia 2014)

Relevant EPA Factors	Flora and Vegetation			Terrestrial Fauna				All Factors
	Threatened Flora	Threatened ecological communities	Remnant vegetation	Wetlands & waterways	Conservation areas	High biological diversity	Habitat for fauna	Other
Residual impact that is environmentally unacceptable or cannot be offset	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Significant residual impacts that will require an offset	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The permanent loss of 12.30 ha of CBC foraging habitat and 7.45 ha of FRTBC foraging habitat is considered to be significant and therefore an offset is proposed.	The permanent loss of 12.29 ha of Banksia Woodland PEC is considered to be significant and therefore an offset is proposed.
Significant residual impacts that may require an offset	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Residual impacts that are not significant	No known records of 'Threatened' flora occur within the Development Envelope and therefore no direct or indirect impacts to Threatened Flora result from the Proposal.	No state listed Threatened Ecological Communities were recorded in the development envelope and therefore there are no direct or indirect impacts as a result of the proposal.	The permanent loss of 12.28 ha of native vegetation that is not considered required to maintain ecosystem services or cause a high degree of fragmentation when considered in conjunction with the 16.36 ha of native vegetation retained in the adjacent conservation area. The retention of this vegetation maintains ecosystem services and limits fragmentation, therefore impacts are not considered to be significant, and no offset is proposed.	No wetlands or waterway features occur within the vicinity of development envelope	Surrounding ecological linkages only ever provided connectivity to avian fauna as the development envelope is fenced. Reduction of native vegetation veg within the linkages is not considered significant due to the significant retention within the conservation area. The site is currently already isolated by surrounding urban areas. Further discussed in **Section 6.3.5**.	Bush Forever sites are representative of regional ecosystems and habitat and have a key role in the conservation of Perth's biodiversity. The development envelope is not designated as a Bush Forever site.	The permanent loss of 41 potentially suitable habitat trees relevant to FRTBC none of which contain suitable hollows is not considered to be significant.	DBCA-classified 'Priority' Flora Permanent loss of 80 individuals of *Acacia benthamii* (P2) and 1,559 individuals of *Jacksonia sericea* (P4) is not considered a significant residual impact and an offset is therefore not proposed. DBCA-classified 'Priority' Ecological Communities Permanent loss of up to 3.63 ha of Tuart Woodland PEC is not considered a significant residual impact and therefore an offset is not proposed. The proposal is not anticipated to result in a significant effect to any other environmental value which would result in a requirement for environmental offsets.

The proposed offset strategy has also been prepared to align with the EPBC Act Environmental Offsets Policy. Based on the current reforms to the environmental legislative and policy framework and the DCCEEW's resulting offset expectations, Emerge Associates on behalf of the proponent has investigated offset opportunities which are based on habitat restoration, including revegetation and threat abatement measures, which will provide a net-positive environmental outcome for the Banksia Woodlands TEC/PEC, CBC and FRTBC as a result of implementing the proposed development. Restoration of habitat is considered a broad term by the DCCEEW (2022) and is described as removing or managing threats such as removal of pests, weeds and disease (threat abatement), improving the general condition of existing remnant vegetation and habitat, in addition to planting specific vegetation and habitat missing from the landscape (revegetation).

9.2 Offset contributions

The total EP Act offset requirements are proposed to be fulfilled through onsite restoration and associated rehabilitation credits and offsite contributions. Onsite conservation and restoration will be achieved through a staged approach, carefully managing current operations to align with the objectives outlined in the Conservation Area Management Plan (CAMP) (Emerge Associates 2025c).

Emerge Associates (2025b) undertook a Black Cockatoo and Banksia Woodlands of the Swan Coastal Plan Threatened Ecological Community Habitat Quality Score Assessment and assigned a habitat quality score (HQS) out of 10 to further assess impacts on black cockatoos and inform associated offsets. The HQS for black cockatoos impacted by the proposed development was calculated using the *Habitat scoring system for WA black cockatoo foraging habitat* provided by DCCEEW, with inputs comprising the projected foliage cover of black cockatoo foraging plants, publicly available databases and results from (Emerge Associates 2025a).

The HQS for Banksia Woodlands TEC/PEC impacted by the proposed development was calculated using the *Banksia woodland TEC habitat quality scoring framework* based on Woodman Environmental (2018) provided by DCCEEW. Vegetation condition derived from Emerge Associates (2025e) was the key input to the Banksia Woodlands TEC/PEC scoring framework. This assessment considered the impact recent fire disturbance had on vegetation condition and the likely regeneration over time (Emerge Associates 2025e) and an adjusted HQS for Banksia Woodlands TEC/PEC was applied to account for this.

The onsite and offsite contributions will provide an increase in habitat quality for black cockatoos and Banksia Woodlands TEC/PEC through a full restoration approach including planting of native vegetation, weed control and management efforts.

9.2.1 Restoration contributions

The restoration and rehabilitation proposed to be undertaken in the conservation area will provide rehabilitation credits for environmental factors and minor onsite offset contributions applicable for each of the impacted MNES.

While under the relevant policy framework of the EP Act the conservation area has been considered an avoidance measure, the commitments associated with decommissioning (to avoid future impacts) and the establishment of a conservation covenant also represent an averted loss that could

reasonably be recognised for the purposes of offset contributions. Additionally and beyond the policy requirements for avoidance, the conservation area will be vested in a public authority for conservation purposes ensuring long-term avoidance and retention of the onsite conservation area. However, for transparency, this averted loss has not been included in the proposed offset metrics.

As a result of the differing conservation status listings for species and communities under the EP Act and EPBC Act, and the application of rehabilitation credits when using the DWER calculator, the remaining offsite contributions for EP Act environmental factors is less than that for EPBC Act MNES. To take a conservative approach, the offset strategy uses the lowest offset contribution to inform the remaining offset required. This means the offsite contributions will be driven by EPBC Act MNES and the EP Act offset requirements will be overachieved. The remaining offset required will be satisfied through offsite restoration areas.

Restoration within the conservation area provides a rehabilitation credit of 0.29 ha for EP Act offset requirements and accounts for 2.3% of the total DCCEEW offset requirement, with a minimum of 97.7% offsite contributions remaining.

9.2.2 Offsite contributions

The offsite contributions will include the restoration and rehabilitation of an offsite area (or combination of offsite areas), likely already ceded with a public authority. Four potential offsite restoration areas have been explored further and considered as part of the offset strategy to contribute to the proponent's remaining offset requirements. The proponent, and more recently Emerge Associates, have engaged with the City of Stirling to explore restoration offset area opportunities within the local government area. Three potential restoration offset areas were identified within the City of Stirling and are subject to further discussions at later stage in the assessment process. The proponent's preference is to provide restoration and offset contributions within the City of Stirling, primarily due to the proximity of the proposed development's environmental impacts and the added value of delivering localised, nature-positive outcomes.

In parallel, alternative opportunities managed and controlled by the DBCA have also been evaluated as a potential offset site. Ongoing discussions with DBCA have identified suitable DBCA managed sites that could contribute toward meeting the offset requirements. Of these, one suitable restoration area (within Jandakot Regional Park) is presented as the primary option within this strategy based on its suitability and availability aligned with progressing the assessment process, additional DBCA managed sites remain available and may be progressed in consultation with DBCA as the proposal advances.

The restoration area options presented will undergo additional on-ground ecological assessment to refine and/or confirm potential viability and suitability for implementation and success of the offset objectives. The restoration areas and approach are subject to continued liaison with both the City of Stirling and DBCA to ensure restoration outcomes and objectives are aligned with the conservation objectives specific to each reserve, while simultaneously satisfying the proposal's offset requirements. Ultimately, a single preferred site or combination of preferred sites will be selected, and restoration outcomes and management will be detailed in subsequent documentation at a later stage of the assessment process.

Four potential offsite restoration area options have been presented within the Offset Strategy, contributing holistically 329.1% of the offset requirements. One or a combination of these options will be progressed in order to meet at least 100% of the offset requirements for the proposal.

9.3 Summary

Restoration within the conservation area provides a rehabilitation credit of 0.29 ha for EP Act offset requirements. One of or a combination of the potential offsite restoration areas identified (or future opportunities, if required) will account for the remaining total offset requirements.

10 Cumulative impact assessment

10.1 Background

The development envelope and surrounds have been subject to varying degrees of historical disturbance and clearing associated with urban development of surrounding areas. Historical aerial photography available from 1953 (Landgate 2024) and onwards shows that native vegetation within the development envelope was largely cleared to support to support the installation of the broadcast transmission infrastructure (including masts, towers and antennas) and a Water Corporation Sewer easement. The development envelope is within a highly urbanised area and this is reflected through the land use zonings of the surrounding areas, the site and surrounds is mostly zoned 'Urban' under the MRS.

10.2 Historic and current environmental pressures

The Perth metropolitan region is subject to a range of environmental pressures that collectively contribute to cumulative impacts on the environment. Historically, environmental pressures relevant to the proposal included urban expansion, which led to habitat loss, fragmentation, and reduced habitat quality, as well as the spread of invasive species such as weeds, pathogens, and feral animals. These pressures have contributed to the decline of native species, reduced ecosystem resilience, and altered biodiversity patterns across the region.

The proposal is within a highly urbanised and developed area, where environmental values have been strategically selected for conservation and protection. As discussed in **Section 5.4.4** above, land parcels presently zoned as 'parks and recreation' provide an area of 1,218 ha within 6 km and 7,319 ha within a 12 km radius of the proposal, as shown on **Figure 16**. These areas are afforded protection through land use zoning, and it is therefore anticipated that any vegetation within these protected areas will remain in the future.

The primary current pressure relevant to the proposal and surrounding area is urban renewal, which has accelerated in recent years in response to population growth. Urban renewal in areas adjacent to land that has been identified for conservation and protection could result in indirect impacts from weeds, pathogens, and feral animals, which may lead to reduced habitat quality if not appropriately managed.

Consistent with the EPA's environmental principles, the proposal has adopted a precautionary and adaptive management approach to mitigate potential cumulative impacts and support long-term environmental outcomes. The proposal's design and associated management measures aim to:

- Avoid and minimise further clearing through a compact development footprint and retention of key vegetation areas within a separated conservation area
- Protect and manage existing environmental values by implementing weed and feral animal control within the conservation area
- Enhance ecological condition and connectivity through targeted restoration and revegetation activities consistent with conservation objectives

- Support intergenerational equity by maintaining and improving the condition of environmental assets that contribute to regional biodiversity through provision of the conservation area.

By implementing these measures, the proposal will not only manage its direct environmental effects but will also contribute positively to addressing cumulative pressures acting within the wider urban landscape.

10.3 Potential other proposals

From a cumulative impact assessment perspective, the reasonably foreseeable proposals will likely relate to the progressive upgrade of existing public roads and infrastructure, to accommodate traffic demands along Reid Highway and potentially aged infrastructure. Relatively minor infrastructure proposals might include upgrades to carparks, share used paths, conservation protection works (e.g. fencing, signage or toilets) and community facilities.

The assessment identified two reasonably foreseeable proposals that may contribute to cumulative impacts and have been considered further below including:

- Main Roads WA Reid Highway and Erindale Road intersection upgrade
- Water Corporation sewer easement.

These potential future works are independent works that will impact long term environmental values on Lot 802 and the adjacent lots, and are proposed by other proponents.

Separately to the proposal but in close proximity to the development envelope, Main Roads WA are progressing development of upgrading the intersection of Reid Highway and Erindale Road. Main Roads WA purchased 2.81 ha adjacent to the development envelope, on the corner of Erindale Road and Reid Highway, in 2009, formally part of the Hamersley Site, for future intersection upgrades. This intersection upgrade will occur within Lot 800 immediately adjacent to the southwest of the development envelope. This lot is approximately 2.81 ha and contiguous with the development envelope and therefore likely to contain vegetation and habitat consistent with that identified in the development envelope. The progression of this intersection upgrade will contribute to cumulative impacts in the immediate vicinity of the development envelope. The intersection upgrade does not relate to servicing the potential future residential development associated with this proposal.

Additionally, Water Corporation has a sewer easement which traverses Lot 802, which contributed to the substantial clearing of the affected land in 1975 as discussed in **Section 1.3.1**. An additional 15 m wide easement runs parallel to the existing sewer main, to accommodate a future duplicate main, as shown in **Figure 2**. This is required for broader serving needs and does not relate to servicing potential residential development on Lot 802. Consulting engineers advise that in the event the sewer main is upgraded, the proposed depth of the duplicate main will likely result in a 15 m wide clearing footprint, impacting approximately 0.6 ha. Any proposal by the Water Corporation to implement these works would be subject to a separate clearing permit, works approval/s and licence amendment process with the Water Corporation as the proponent, pursuant to Part V of the EP Act. If necessary, the EPA can assess the upgrade pursuant to Part IV of the EP Act.

The Water Corporation sewer easement also continues into Lot 803 as shown in **Figure 2**. The potential works in the easement in the conservation area have been mitigated and restricted through the implementation of the conservation covenant.

Given a decision has not been made on whether to upgrade the existing sewer or not and the intersection upgrade is in planning stages, it is not appropriate for the proponent to speculate or conduct a detailed quantitative impact assessment on a hypothetical proposal it has no knowledge, experience and expertise in or responsibility for.

Irrespective of that and from a cumulative impact perspective, these infrastructure projects might result in clearing a combined total of approximately 3.4 ha, comprising native vegetation and fauna habitat and resulting in noise and amenity impacts. The relevant environmental factors might include:

- Terrestrial flora and vegetation
- Terrestrial fauna
- Social surroundings.

10.4 Summary

The proposal is situated within a highly urbanised landscape already subject to cumulative environmental pressures from historical clearing and ongoing urban expansion. The assessment considered both existing and reasonably foreseeable infrastructure works in the area. The proposal has been designed to avoid and minimise further disturbance while enhancing on-site environmental values through conservation and restoration measures, supporting the EPA's objectives to maintain biodiversity and ecological integrity.

The proposal is not likely to result in significant cumulative impacts.

11 Holistic Impact Assessment

The current development strategy demonstrates the proponent's commitment to undertaking development in an environmentally responsible manner, with up to 60% of the site designated for the conservation area that will retain current environmental values and rehabilitate degrade areas.

This ERD provides a detailed assessment of the potential environmental impacts on each key environmental factor associated with the proposal and outlines the relevant management mitigation measures. While this ERD has assessed the impacts of the proposal against the key environmental factors and environmental values individually in the key factor assessments above, given the link between key environmental factors, the ERD must also consider the connections and interactions between parts of the environment. This requires the consideration of the environmental impacts of the proposal and the management and mitigation measures applied from a holistic perspective.

The key environmental factors identified as relevant for the proposal are flora and vegetation, terrestrial fauna greenhouse gas emissions and human health. For example, the impacts on flora and vegetation as a result of the proposed vegetation clearing within the development envelope will have multiple effects on other factors. Loss of native vegetation will reduce fauna habitat and will reduce the CO2 sequestration potential of the area. While the CO2 sequestration potential will reduce, this is not considered to be significant and the interactions between factors will be minor. Therefore, clearing activities can have multiple flow on effects across the environmental factors. **Plate 3** below depicts the relationship between each relevant environmental factor.

Table 43 outlines the connections and interactions between key environmental factors and potential impacts from activities associated with the implementation of the proposal. It also provides a summary of the relevant mitigation measures outlined in this ERD.

When the separate environmental factors and values affected by the proposal were considered together in a holistic assessment, the proposal remains aligned with the EPA's objectives and principles of the EP Act as outlined in **Section 4.**

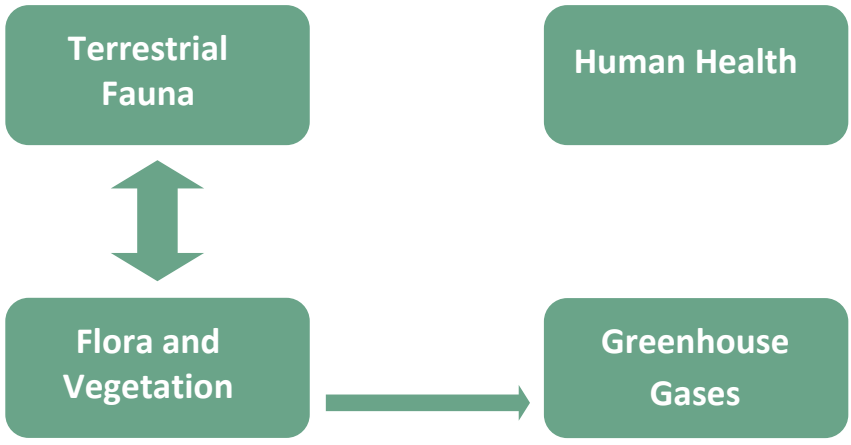

Plate 3: Relationships between key environmental factors

Table 43: Connections and interactions between key environmental factors

Relevant Factors	Connectivity and interaction pathway	Holistic impacts	Mitigation	Environmental outcome / significant residual impacts
• Flora and vegetation • Terrestrial Fauna • Greenhouse gases • Human health	The vegetation to be cleared provides the following values: • Terrestrial fauna habitat • Bio-sequestration capacity. • The fauna habitat potentially being lost provides support to the flora and vegetation through pollination and seed dispersal • Human health has no interactive pathways with any other factors.	• The flora and vegetation in the development envelope supports terrestrial fauna through habitat provision. The loss of vegetation would impact the survivability of fauna living within the residential development area. The clearing and earthworks process also poses a risk of direct fauna injury or mortality. • The flora and vegetation in the development envelope also supports bio-sequestration processes. The loss of vegetation would reduce sequestration capacity of the area. All carbon biomass of removed vegetation is also assumed to be released as CO2. • The loss of fauna habitat would reduce the capacity to support fauna providing ecosystem services such as pollination and seed dispersal.	• The avoidance of flora and vegetation in the conservation area maintains the provision of fauna habitat and the connectivity to surrounding areas. This in turn maintains the ecosystem services undertaken by fauna species including pollination and seed dispersal. • Mitigation measures associated with clearing activities will be managed in accordance with the CEMP including (but not limited to): clearly defining clearing boundaries, implementing hygiene and dust controls, buffering construction work from retained vegetation in the conservation are (through the APZ), undertaking pre-clearing fauna trapping and inspections, directional clearing toward the conservation area, having a suitably qualified fauna spotter/handler present during clearing activities and having protocols in place to manage injured fauna if encountered. • The proposal will incorporate initiatives to reduce the whole of life GHG emissions including but not limited to the selection of low carbon materials for construction, incorporation of recycled materials into the design, the use of LED lighting, the potential incorporation of solar power battery storage and solar/electric pool and water heating.	After the application of the mitigation hierarchy, there is no significant holistic impacts as a result of the proposal.

12 Conclusion

With consideration to Bush Forever (Government of WA 2000) and *State Planning Policy 2.8 - Bushland policy for the Perth Metropolitan Region* (SPP 2.8) (Government of WA 2010) the native vegetation is considered locally significant (i.e. removal is generally acceptable) and there is no Government policy which recommends that it should be acquired, conserved and reserved in the MRS as Parks and Recreation. Similarly the City of Stirling's Local Biodiversity Strategy (CoS 2010) does not identify the native vegetation as regionally significant native or recommend that it should be conserved. As such, there are planning, environmental and sustainability grounds to progress the proposal.

The proposal will involve the clearing of up to 12.29 ha of native vegetation and fauna habitat and 12.30 ha of black cockatoo foraging habitat. Overall, almost 60% of the development envelope will be conservation, achieving retention of 16.37 ha of native vegetation, fauna habitat and black cockatoo foraging habitat. The residual impacts to Banksia Woodlands PEC and CBC and FRTBC habitat are anticipated to be significant, which can be acceptably mitigated through implementation of the CAMP, CEMP and Offset Strategy. The vegetation and associated fauna habitat values are well represented and widespread in the locality and across the region. Implementation of construction management measures for flora, vegetation and fauna is proposed to be implemented including pre-clearing fauna surveys and if necessary, relocations will occur.

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Appendix A

EPA Notice Requiring Information for Assessment (July 2020)

Appendix B

Indicative Concept Plan

Appendix C

Proposal Content Document (Emerge Associates 2025)

Appendix D

Community Consultation Report

Appendix E

Detailed Flora and Vegetation Survey (Emerge Associates 2025e)

Appendix F

Black cockatoo and Banksia Woodland TEC Habitat Quality Score Assessment (Emerge Associates 2025b)

Appendix G

Risk Assessment

Appendix H

Construction Environment Management Plan
(Emerge Associates 2025d)

b

Appendix I

Basic Fauna and Targeted Black Cockatoo Habitat Assessment (Emerge Associates 2025a)

Appendix J

Short Range Endemic Desktop Assessment (Bennelongia Environmental Consultants 2021)

Appendix K

Short Range Endemic Survey Assessment (Bennelongia Environmental Consultants 2023)

Appendix L

Offset Strategy (Emerge Associates 2025f)

Appendix M

Conservation Area Management Plan (Emerge Associates 2025c)