



**Public Transport
Authority**



Response to Submissions

**Yanchep Rail Extension: Part 2 – Eglinton to
Yanchep (EPA Assessment No. 2174)**



For more information contact Public Transport Authority

Public Transport Centre, West Parade, Perth WA 6000
PO Box 8125, Perth Business Centre, Perth WA 6849

Telephone: (08) 9326 2000

Email: enquiries@pta.wa.gov.au

www.pta.wa.gov.au

Document Information

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Prepared by	L. Zimmermann, C. Baxter, S. Brown, S. Gerritzen, R. Burnell, D. Morley
Reviewed by	M. Ludlow, C. Stedman
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Distribution List

Name	Position	Organisation
Tonja Boyd	Senior Environmental Officer	Department of Water and Environmental Regulation – EPA Services
Gerard O'Brien	Environmental Officer	
Hans Jacob	Manager Infrastructure Assessment Branch	

Contents

1	Introduction.....	4
1.1.	Yanchep Rail Extension Project	4
1.2.	The Proposal.....	4
1.3.	Assessment process	7
1.4.	Purpose of this document.....	7
1.5.	Changes to the Proposal since the public comment period.....	7
1.6.	Consultation	8
2	Response to submissions.....	9
	Table 2: Responses to comments from EPA Services.....	10
	Table 3: Responses to public submissions.....	53
	Table 4: Responses to comments from Department of the Environment and Energy	78
3	References	94
4	Figures	97
5	Attachments.....	101
	Attachment 1 – Revised TEC/PEC Tables	102
	Attachment 2 – Supporting Information.....	103
	Attachment 3 – Construction Environmental Management Plan.....	104

1 Introduction

1.1. Yanchep Rail Extension Project

The Public Transport Authority of Western Australia (PTA) is developing the Yanchep Rail Extension (YRE) Project as part of the Western Australian Government's METRONET vision. The YRE Project is an extension to the Northern Suburbs Railway (also known as the Joondalup line) in Perth's northern suburbs, 40 km north of the Perth central business district. The YRE Project includes 14.5 km of railway beyond the existing Butler Station, new stations at Alkimos, Eglinton and Yanchep, and associated infrastructure.

The YRE Project is being assessed by the Environmental Protection Authority (EPA) under section 38 of the Western Australian *Environmental Protection Act 1986* in two parts:

- Part 1: Butler Station to Eglinton Station – approved by the Minister for Environment on 26 June 2019.
- Part 2: Eglinton Station to Yanchep Station – currently under assessment.

Part 2 is also being assessed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This Response to Submissions (RTS) document has been prepared as part of the assessment process for Part 2.

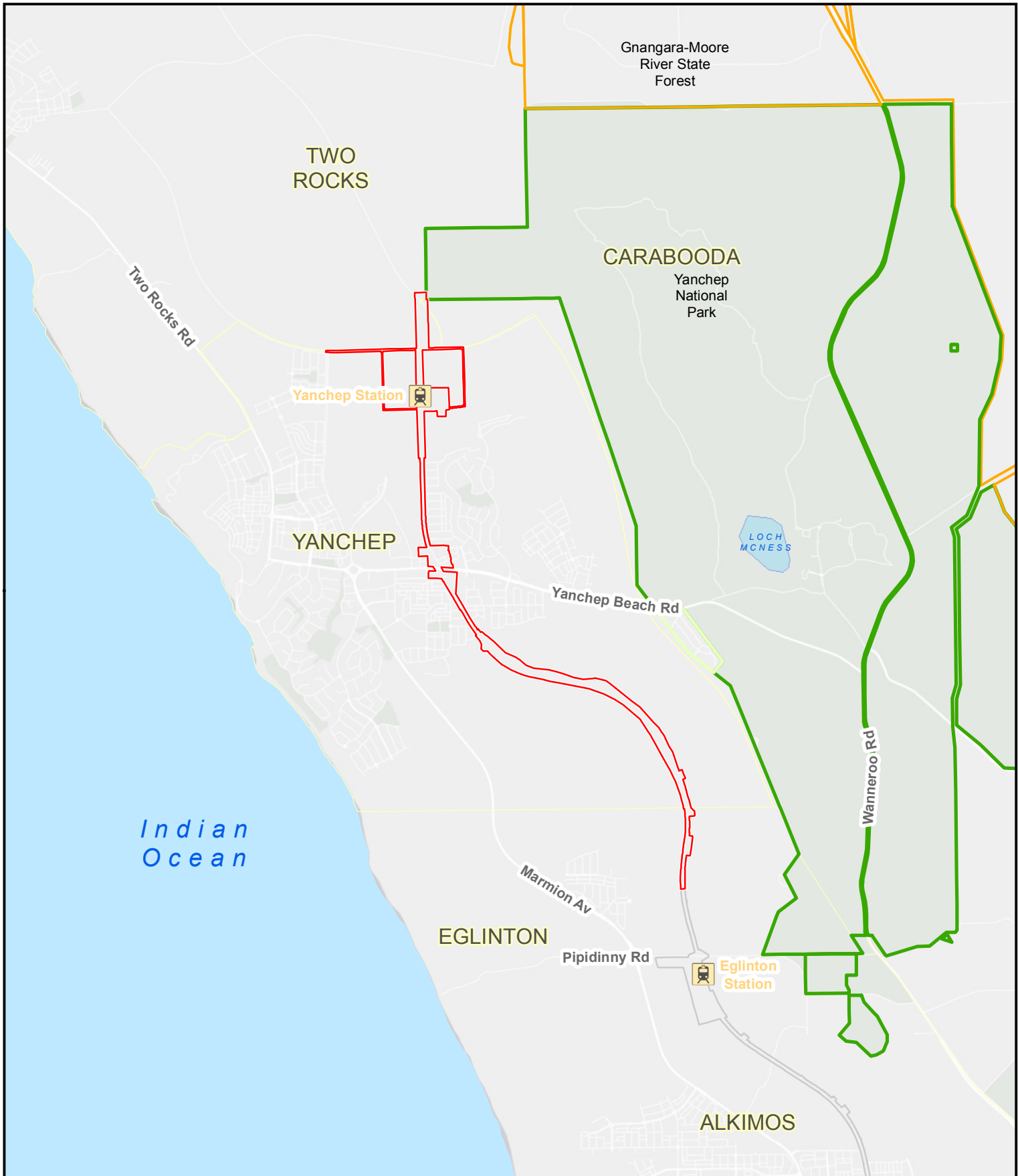
1.2. The Proposal

YRE Part 2 (the Proposal) includes the construction of approximately 7.2 km of narrow gauge dual track railway from approximately 700 m north of the future Eglinton Station, heading generally north before terminating north of the proposed Yanchep Station. The new station at Yanchep will include intermodal interchanges for bus services, 'park and ride', 'kiss and ride', active mode facilities and associated infrastructure.

The majority of the proposed railway will be constructed in cuttings averaging approximately 6 m below surrounding ground level, which will reduce noise to surrounding urban areas and provide grade separation to enable local roads to pass overhead. The PTA anticipates that the Proposal will generally be 6 m below adjacent urban developments (when completed) and at-grade in Ningana Bushland.

The Proposal also includes permanent infrastructure for maintenance and emergency vehicle access, drainage, overhead electrification for traction, signalling, communications and other services, access roads and pathways, and access control (e.g. fences and gates). A Principal Shared Path (PSP) will also be constructed alongside the railway (outside the railway corridor fencing) to provide transport facilities for pedestrians and cyclists. In Ningana Bushland, the PSP will be located on the western side of the railway, while an access track will be included on the eastern side.

The development envelope for the Proposal is 72.86 hectares (ha).



Yanchep Rail Extension (Part 2)
Figure 1 – Regional Location of Proposal

Legend

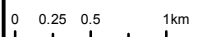
- YRE Part 2 Development Envelope
- YRE Part 1 Development Envelope
- Proposed Station
- Surface Water Feature
- DBCA Legislated Lands and Water
- National Park
- Section 5(1)(h) Reserve
- State Forest

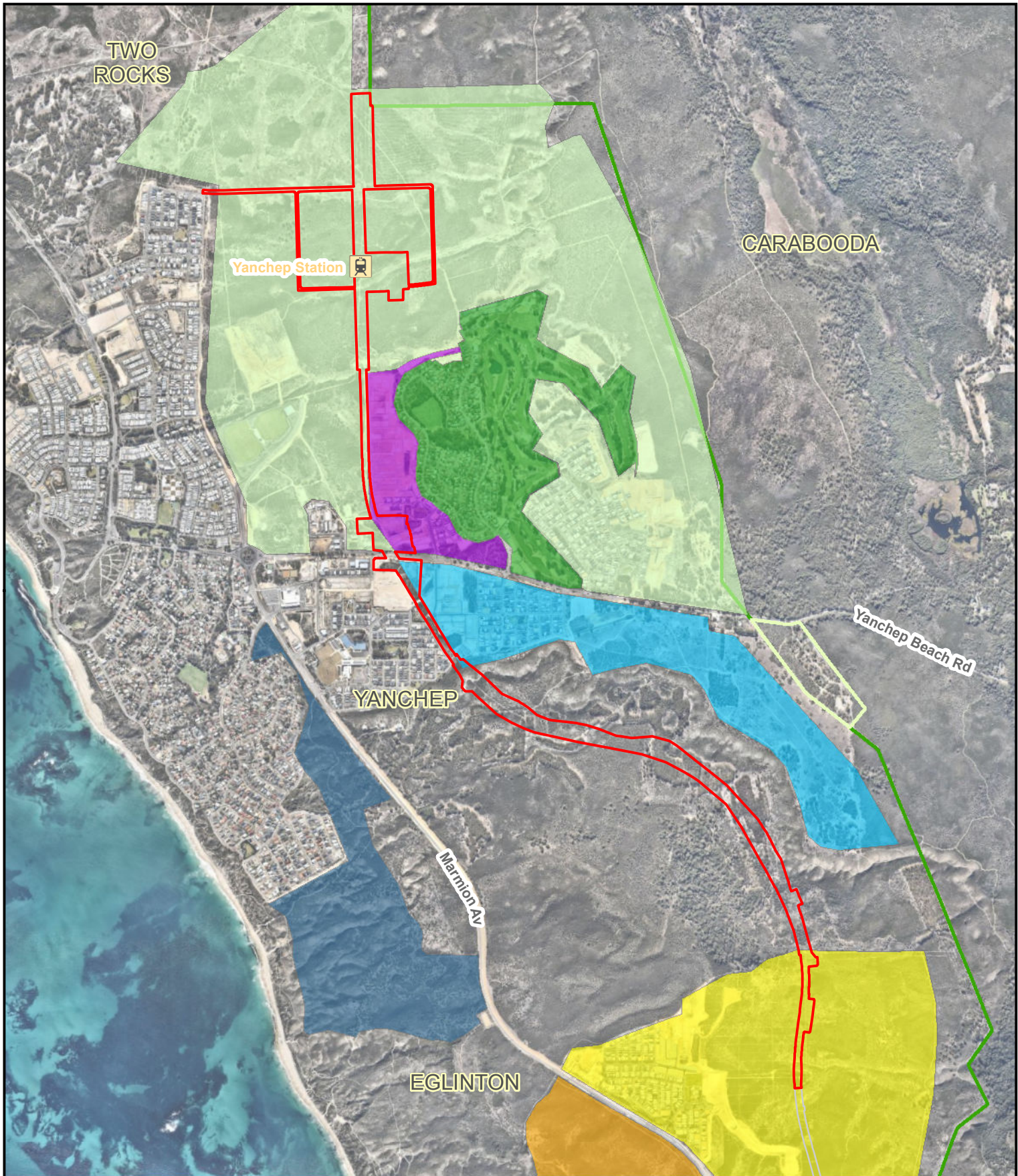


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Yanchep Rail Extension (Part 2)
Figure 2 –Proposal Development Envelope



Legend

- | | |
|--|--------------------------|
| YRE Part 2 Development Envelope | Urban Development |
| YRE Part 1 Development Envelope | Allara Estates |
| Proposed Station | Eglinton West |
| DBCA Legislated Lands and Water | Jindowie |
| National Park | South Yanchep |
| Section 5(1)(h) Reserve | St Andrew's Estate |
| | Vertex Estates |
| | Yanchep Sun City |



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0 0.25 0.5 1km

1.3. Assessment process

The PTA referred the Proposal to the EPA under section 38 of the EP Act in August 2018. The EPA determined that the Proposal would be formally assessed, with the level of assessment set as Public Environmental Review (PER). The Proposal's Environmental Review Document (ERD) (Eco Logical (ELA) 2019a) was available for public review for a period of six weeks from 27 May to 8 July 2019.

The EPA will now assess the Proposal, taking into account the ERD, submissions received and the PTA's responses to submissions provided in this RTS document. The EPA also takes into account relevant policies and guidelines and may seek advice from relevant government agencies. The EPA will prepare an assessment report recommending whether or not the Proposal should be implemented and, if recommending approval, any conditions that should apply. The EPA's report will be made public and is subject to appeal. After the appeal period has concluded, the EPA's assessment report will be provided to the Minister for the Environment, who will decide whether the Proposal may be implemented and, if so, the conditions of approval.

1.4. Purpose of this document

Submissions received during the six-week public review period were collated by the Department of Water and Environmental Regulation (DWER) EPA Services Division (EPA Services) and provided to the PTA.

A total of 13 public submissions were received, including five from individual submitters and eight from organisations and government agencies.

The following government agencies provided a submission:

- Department of Planning, Lands and Heritage (DPLH);
- Department of Biodiversity, Conservation and Attractions (DBCA);
- Commonwealth Department of the Environment and Energy (DoEE);

The following organisations provided a submission:

- The Wilderness Society WA
- Wildflower Society of Western Australia (Inc.)
- Sustainable Population Australia Inc. (WA Branch)
- Urban Bushland Council WA Inc.
- Quinns Rocks Environmental Group

EPA Services' comments on the ERD were also provided to the PTA.

This RTS document summarises the submissions and PTA's responses to the issues raised in the submissions.

1.5. Changes to the Proposal since the public comment period

The following changes have been made to the Proposal since the ERD was published for the six-week public comment period:

- Mitigation Strategy – additional work has been undertaken to investigate construction options for fauna crossings (green bridges). This is summarised in **Attachment 2 – Supporting Information**.

- Offsets Strategy – a draft Offsets Strategy is under development which considers information provided within the ERD, submissions and further consultation with stakeholders.

1.6. Consultation

The PTA has consulted extensively with key stakeholders during planning for the YRE Project and in the development of the Proposal. Key stakeholders have included government and community organisations. Consultation is continuing as the Proposal is progressed, particularly with the Western Australian Planning Commission (WAPC), Department of Biodiversity, Conservation and Attractions (DBCA), DPLH and Quinns Rocks Environmental Group regarding impacts to Bush Forever Site 289 (Ningana Bushland) and the Draft Offsets Strategy.

The dedicated METRONET website at <http://www.metronet.wa.gov.au> has been established to provide a detailed overview of the YRE Project, including the Proposal. Interested parties may enquire about METRONET and register for project updates.

2 Response to submissions

EPA Services has collated all submissions and produced a consolidated summary. The PTA was requested to respond to the submissions summary, and was provided copies of the original submissions for context.

The issues raised in the submissions are generally related to the following key environmental factors:

- Flora and Vegetation.
- Terrestrial Fauna.
- Subterranean Fauna.
- Inland Waters.
- Landforms.
- Social Surrounds.

The PTA's responses to the EPA Services consolidated summary of agency submissions are provided in **Table 2**. Responses to public submissions are provided in **Table 3**. Responses to comments from DoEE are provided in **Table 4**.

As there was a common theme between some of the submissions and comments regarding Ningana Bushland (Bush Forever Site No. 289), the PTA has compiled additional information to holistically address the issues raised (**Attachment 2 – Supporting Information**). Further information has also been prepared on the topics listed in **Table 1** and included as attachments to this document and cross-referenced from the response tables as required.

Table 1: Additional information prepared to support PTA's responses to submissions

Additional information	Attachment to this RTS document
Revised Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC) Tables from ERD (ELA 2019)	Attachment 1
Supporting Information – Alignment through Ningana Bushland	Attachment 2
Construction Environmental Management Plan (CEMP)	Attachment 3

Table 2: Responses to comments from EPA Services

No.	EPA Services comment	PTA's response
Proposal		
1.	<p>The Environmental Review Document (ERD) needs to better address the Proposal's mitigation hierarchy by identifying further measures to avoid and minimise environmental impacts for Bush Forever Site (BFS) 289 Ningana Bushland.</p> <p>Further comments regarding this issue is set out below under the heading <i>Fragmentation and severing of regional ecological linkage</i>.</p>	<p>Further discussion of the Proposal's mitigation hierarchy in relation to Bush Forever Site 289 (Ningana Bushland) is provided in Attachment 2 – Supporting Information.</p>
Flora and Vegetation		
2.	<p>Please review and revise the extent all vegetation information within the ERD, in particular conservation significant flora, Priority Ecological Communities (PECs) and Threatened Ecological Communities (TECs). For example, the two figures of 13.81ha and 13.68ha are used interchangeably for SCP24 throughout the ERD; Page 69 refers to 13.81 ha and Tables ES 3 and 5-5 state 13.68 ha, and the information presented in Table 5-4 calculates the total area of SCP24 as 13.81ha within the development envelope, or 13.68ha in degraded or better condition.</p>	<p>See Attachment 1 – Revised TEC/PEC Tables summarising the extent of vegetation information for the Proposal.</p>
3.	<p>Please confirm/revise the area of Banksia TEC and PEC within the development envelope, and describe/quantify the method used to determine the final Banksia TEC and PEC area.</p> <p>The ERD and the RPS 2018 Environmental Impact Assessment documents state 8.03ha and 12.10ha of Banksia TEC is within the development envelope, respectively, with 8.76ha Banksia PEC. This is a difference of 0.73 hectares that appears to be based on vegetation condition.</p> <p>The Department of the Environment and Energy 2016 Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community,</p>	<p>The PTA confirms the following area of the Banksia TEC and PEC within the development envelope:</p> <ul style="list-style-type: none"> • 8.13 ha of Banksia dominated woodlands of the Swan Coastal Plain (SCP) TEC (Banksia TEC) • 8.76 ha of Banksia dominated woodlands of the SCP IBRA region PEC (Banksia PEC) <p>The areas of Banksia TEC and PEC presented in the RPS Environmental Impact Assessment (2018) were incorrect.</p>

No.	EPA Services comment	PTA's response
	<p>states that a patch is a discrete and mostly continuous area of the ecological community which may include small-scale (<30m) variations, gaps and disturbances. Average canopy cover and quality across the broadest area that meets the general description of the ecological community should be used initially in determining overall canopy cover and vegetation condition.</p>	<p><u>Updated Banksia TEC</u></p> <p>The Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the SCP TEC (Threatened Species Scientific Committee (TSSC) 2016) defines a patch as:</p> <p><i>'a discrete and mostly continuous area of the ecological community that may include small-scale (<30m) variations, gaps and disturbances such as tracks, paths or breaks, or localised variations in vegetation that do not significantly alter the overall functionality of the ecological community.'</i></p> <p>The PTA has undertaken a review of the areas of Banksia TEC and PEC within the development envelope based on the Approved Conservation Advice TSSC 2016. The majority of the patches of Banksia PEC are in Degraded or worse condition (i.e. do not meet the minimum condition threshold of at least Good as per page 22 of TSSC 2016) or the minimum patch size (at least 2 ha for vegetation in Good condition (as per page 23 of TSSC 2016) for the Banksia Woodlands TEC. In addition, the patches of Banksia PEC are separated by a distance greater than 30 m from patches of Banksia TEC.</p> <p>Following consideration of section 2.2.4 of the Approved Conservation Advice (TSSC 2016) one small area of VT09 (in Good-Degraded condition) is surrounded by a larger area of TEC. This small area is shown in Figure 3 and has been revised to Banksia TEC.</p>
4.	<p>Vegetation condition mapping should be provided across vegetation units. The current vegetation condition maps (Figure 5-3, Pages 1 and 4) only represent areas of vegetation that intersect the development envelope. This is an inappropriate representation of vegetation condition across a site as this does not reflect overall condition of vegetation units.</p>	<p>The PTA understands that this submission relates to consistency with the EPA's <i>Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment</i>, which states that surveys of linear infrastructure should incorporate vegetation characterisation of an area from 500 to 1,000 m on both sides of the infrastructure corridor to provide context for the assessment.</p> <p>The PTA has undertaken further consultation with DWER EPA Services who advised that in this instance EPA Services does not think it necessary for the PTA to provide further vegetation condition mapping.</p>

No.	EPA Services comment	PTA's response
5.	<p>Please confirm the size of BFS 289 Ningana Bushland, the area containing remnant vegetation, how much of the development envelope is within BFS 289, and how much vegetation will be cleared from BFS 289. ERD Tables ES 3, 12-3, 12-4 and ERD Appendix O appear to have conflicting values regarding BFS 289 and the Proposal.</p>	<p>The PTA confirms the area of Bush Forever Site 289 (Ningana Bushland) is 640.84 ha. Based on desktop review of the 2019 Native Vegetation Extent (DPIRD-005) dataset, it is estimated that the area of remnant vegetation in Ningana Bushland is approximately 564.08 ha.</p> <p>As outlined in Table 5-16 of the ERD, approximately 28.82 ha of the development envelope intersects BFS 289 Ningana Bushland. Of this, 27.72 ha comprises native vegetation in Degraded or better condition which will be cleared. The remaining 1.10 ha comprises Completely Degraded areas and cleared areas.</p> <p>Appendix O of the ERD <i>Environmental (Bush Forever site 289) Candidate Offset Site Investigation, Yanchep Railway Extension (ELA 2018)</i> presented the field assessment results of a 437.27 ha portion of Ningana Bushland (Lot 105 Marmion Avenue). This portion is shown in Figure 1 of Appendix O.</p>
6.	<p>The ERD states that residual impacts of the Proposal to flora and vegetation are 'as low as reasonably practicable', however it is not adequately demonstrated how impacts to flora and vegetation have been avoided or minimised. Information provided in Table 5-17 discusses the application of mitigation and management strategies to address the key potential residual impacts to flora and vegetation. Where possible provide further information to describe the significance of the residual impacts.</p>	<p>Further consideration of how impacts to flora and vegetation have been avoided or minimised is provided below.</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> • The northern extent of the development envelope was modified to reduce clearing of native vegetation and avoid direct impacts to Bush Forever site 288 (Yanchep National Park and Adjacent Bushland). • Previous MRS amendments 1192/57 and 1248/57 have determined the points of entry into Ningana Bushland for the 'Railways' reservation, however the development envelope has been positioned to: <ul style="list-style-type: none"> ○ Minimise impacts to the Quindalup dune system; and ○ Maximise the size and viability of the two remaining portions of Ningana Bushland. <p>See Attachment 2 – Supporting Information.</p> <ul style="list-style-type: none"> • To construct the Proposal the volumes of material required to balance the cut/fill ratios for the entire alignment have been minimised. This process has limited the width of the

No.	EPA Services comment	PTA's response
		<p>development envelope, thereby avoiding further clearing of native vegetation and associated impacts to conservation significant flora and ecological communities.</p> <ul style="list-style-type: none"> • Alternative alignments through Ningana Bushland were considered however the other options would have resulted in greater impacts to native vegetation, landforms (parabolic dunes) and karst systems (caves and voids) which may be habitat for subterranean fauna. • Through selection of the final alignment (Option 1) as described in Attachment 2 – Supporting Information) the amount of clearing for the Proposal has been reduced, and further native vegetation impacts avoided. <p><u>Minimisation</u></p> <ul style="list-style-type: none"> • Where practicable, the size of the development envelope has been reduced to minimise vegetation clearing. For example, the section of the development envelope north of Yanchep Beach Road (Figure 2) is an average width of 40 m which is the minimum width required to construct and operate the railway. Another section is between Ningana Bushland and Yanchep Beach Road. • The PTA proposes to utilise two key sections of the development envelope for temporary construction laydown, stockpiling and other construction activities: <ul style="list-style-type: none"> ○ The footprint for Yanchep Station. ○ The section north and south of Yanchep Beach Road (Figure 2). <p>This has minimised the width of the development envelope and associated native vegetation clearing in other sections (e.g. within Ningana Bushland).</p> • The development envelope for the Proposal was determined based on the minimum construction and operational

No.	EPA Services comment	PTA's response
		<p>requirements for the Proposal. The development envelope therefore has been reduced as far as practicable.</p> <p>The following construction and operational aspects have been captured in the development envelope (shown in Figure 2):</p> <ul style="list-style-type: none"> ○ Railway extension - dual track railway and associated construction requirements (e.g. batters) ○ Yanchep Station – at grade railway station, car park and associated facilities ○ Three road bridges ○ Construction activity areas – operation of plant and machinery for earthworks and construction of infrastructure. ○ Site offices ○ Construction laydown areas ○ Stockpiling areas ○ Drainage infrastructure, including drainage basins ○ Fencing ○ Access roads ○ Principal Shared Path <ul style="list-style-type: none"> ● In particular, the PTA investigated opportunities to minimise the size of the development envelope through Ningana Bushland, due the high environmental value. As shown in Attachment 2 – Supporting Information, the size of the development envelope is the minimum required to construct and operate the Proposal through Ningana Bushland. The width of the development envelope, between 80 m and 130 m, is needed for construction access and working room, earthworks, access tracks, PSP and drainage. .

No.	EPA Services comment	PTA's response
		<ul style="list-style-type: none"> • Within Ningana Bushland, the development envelope intersects three patches of Banksia Woodland TEC (as shown in Figure 3). The PTA investigated opportunities to minimise the width of the development envelope through these three patches, however construction methods are highly constrained at these locations. Therefore, the size of the development envelope has not been reduced. <p><u>Residual Impacts</u></p> <p>The residual impacts of the Proposal in relation to flora and vegetation are:</p> <ul style="list-style-type: none"> • Permanent loss of: <ul style="list-style-type: none"> ○ 49.17 ha of native vegetation in Excellent to Degraded condition. ○ 28.82 ha of Ningana Bushland. ○ Threatened and Priority ecological communities, including: <ul style="list-style-type: none"> ▪ 0.05 ha of <i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands on limestone ridges (Gibson et al. 1994 type 26a) TEC; ▪ 8.76 ha of Banksia dominated woodlands of the Swan Coastal Plain IBRA Region PEC, including 8.13 ha of Banksia dominated woodlands of the SCP TEC; ▪ 13.68 ha of Northern Spearwood shrublands and woodlands ('community type 24') PEC; and ▪ 2.13 ha of Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP PEC. • Fragmentation of a regional ecological linkage. • Indirect impacts relating to the risk of introduction and/or spread of weeds or <i>Phytophthora</i> dieback into vegetation adjacent to the development envelope.

No.	EPA Services comment	PTA's response
		<p>Through the implementation of the EPA's mitigation hierarchy (see Section 5.6 of the ERD (ELA 2019a), the residual impacts of the Proposal to flora and vegetation are as low as reasonably practicable. The below residual impacts of the Proposal are not considered significant:</p> <ul style="list-style-type: none"> • Permanent loss of 49.17 ha of native vegetation in Excellent to Degraded condition. • Permanent loss of the two PECs: <ul style="list-style-type: none"> ○ 13.68 ha of Northern Spearwood shrublands and woodlands ('community type 24') PEC ○ 2.13 ha of Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP PEC ○ 8.76 ha of Banksia dominated woodlands of the Swan Coastal Plain IBRA Region PEC • Fragmentation of a regional ecological linkage. • Indirect impacts. <p>Offsets are proposed to counterbalance the following significant residual impacts:</p> <ul style="list-style-type: none"> • Permanent loss of: <ul style="list-style-type: none"> ○ 0.05 ha of <i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands on limestone ridges (Gibson et al. 1994 type 26a) TEC. ○ 8.13 ha of EPBC Act listed Banksia dominated woodlands of the SCP TEC. ○ 28.82 ha of regionally significant bushland within Ningana Bushland (Bush Forever Site 289). <p>The appropriateness of offsets to achieve the objective of counterbalancing the significant residual impacts is discussed in the Draft Offsets Strategy that is currently under development.</p>
7.	Please provide a justification for why targeted significant flora surveys were not undertaken.	<p>For the Proposal, a survey area of 147.80 ha was surveyed for flora and vegetation. The development envelope is 72.86 ha.</p> <p>Significant survey effort has been completed over a number of years</p>

No.	EPA Services comment	PTA's response
		<p>within and in the vicinity of the survey area (spring 2010, spring 2012, spring 2016, and autumn, winter and summer 2017, and spring 2018) to inform the Proposal planning and support the environmental impact assessment. Targeted survey effort was completed as part of all of these surveys, with large parts of the survey area traversed by foot. Previous Threatened and Priority flora record locations within the survey area were revisited multiple times during the various surveys (years and seasons). At these locations, and in suitable vegetation types (e.g. VT01, VT02, VT03, VT03a, VT04, VT05, VT06, VT07, VT08, VT09, VT10) targeted and opportunistic searches were undertaken. The survey effort undertaken across the survey area is considered adequate to identify Threatened and Priority flora if present, with nil constraints reported with respect to survey intensity, timing or resources applied.</p>
8.	<p>The ERD has discussed some of the potential indirect impacts but has not quantified these impacts to vegetation adjacent to the development envelope. The following should be quantified:</p> <ul style="list-style-type: none"> • the potential areas prone to weed infestation or spread of existing weed species • areas mapped that may be sensitive to Phytophthora dieback • the potential for erosion/blowouts in the adjacent Quindalup dune system, which may impact upon the Banksia Woodlands TEC • areas of native vegetation that may be subject to altered surface water regimes, availability and water quality • information on fire risk, fire age, and mitigation measures for the Proposal area and its surrounds. 	<p>Further consideration of the potential indirect impacts to flora and vegetation is provided below.</p> <p><u>Introduction of weeds to adjacent vegetation</u></p> <p>Sixty-two introduced flora taxa were recorded in the development envelope (GHD 2018). Of the 62 introduced flora species, six are Declared Pests as defined by the <i>Biosecurity and Management Act 2007</i> (BAM Act) and/or Weeds of National Significance (WoNS):</p> <ul style="list-style-type: none"> • <i>Gomphocarpus fruticosus</i> (narrowleaf cottonbush) – Declared Pest • <i>Moraea flaccida</i> (One-leaf Cape Tulip) – Declared Pest • <i>Solanum linnaeanum</i> (apple of Sodom) – Declared Pest • <i>Zantedeschia aethiopica</i> (Arum Lily) – Declared Pest • <i>Lantana camara</i> (common lantana) – Declared Pest and WoNS • <i>Asparagus asparagoides</i> (bridal creeper) – Declared Pest and WoNS. <p>The remaining introduced taxa are considered environmental weeds and have been previously recorded on the Swan Coastal Plain.</p> <p>During the construction and operation of the Proposal, native vegetation</p>

No.	EPA Services comment	PTA's response
		<p>areas immediately adjacent to the development envelope have the potential to be impacted by the introduction of weeds. These sections of the Proposal include:</p> <ul style="list-style-type: none"> • Surrounding and north of Yanchep Station • Within Ningana Bushland • North of Eglinton Station to Ningana Bushland <p>Of these sections, the portion where the development envelope intersects Ningana Bushland is considered to have a higher risk of impacts to adjacent vegetation due to the high environmental values of Ningana Bushland. Within Ningana Bushland there is a risk of weed introduction within 10 m of the development envelope.</p> <p>This 10 m length is provided as the zone of influence for edge effects. In the Perth metropolitan region there are limited studies on the edge effects along railways. As a proxy, there have been a number of studies undertaken by Byron Lamont on roadside edge effects through Banksia woodlands along the Brand Highway just north of Perth (Lamont et al. 1994a; Lamont et al. 1994b, Groom and Lamont, 2011). The findings of these studies are consolidated in the report <i>Assessment of Edges Effects and Other Indirect Impacts of the Proposal Keane Road Strategic Link</i> (van Etten 2014) and have been referenced to determine the maximum zone of influence for weed introduction (based on adjacent Banksia woodland).</p> <p>The PTA will undertake control measures to limit weed infestation to the immediate edge of vegetation through Ningana Bushland (e.g. weed management) and fences will be erected to minimise access between the rail reserve and surrounding bushland. Therefore the maximum zone of influence for risk of weed introduction is predicted to be 10 m.</p> <p>Other sections of the Proposal are adjacent to developed areas within the suburb of Yanchep, including existing residential areas, commercial businesses and Jindowie and Vertex housing estates which are currently under construction.</p> <p>The CEMP details measures to minimise the risks of weeds spreading</p>

No.	EPA Services comment	PTA's response
		<p>into the adjacent vegetation (Attachment 3 – Construction Environmental Management Plan).</p> <p>Following construction of the Proposal, the section north of Eglinton Station is planned to be cleared and developed as outlined in the Eglinton Activity Centre Structure Plan (under preparation). The section around and north of Yanchep Station is also proposed to be developed as described in the Yanchep Activity Centre Structure Plan (2017).</p> <p><u>Introduction of <i>Phytophthora</i> dieback to adjacent vegetation</u></p> <p>No dieback infestation has been identified within the development envelope. More than half of the development envelope was uninterpretable due to a lack of sufficient indicator species (Glevan Consulting 2017). The presence of calcareous soils and limestone throughout most of the development envelope area reduces the likelihood of <i>Phytophthora</i> dieback being present, as the pH of such soils is hostile to the pathogen (Glevan Consulting 2017).</p> <p>The contractor will be required to ensure that all vehicles and equipment is clean on entry and any imported materials have been certified dieback free prior to transport to site. Additional management measures during construction are addressed in the CEMP. Once the crushed limestone maintenance access track has been constructed it is considered unlikely that dieback will spread during railway operations as any dieback contaminated material on vehicle tyres will be inhibited from spread by the high pH of the crushed limestone.</p> <p><u>Erosion or blowouts in adjacent Quindalup dune system</u></p> <p>An approximate 200 m length of the development envelope is adjacent to areas of Banksia Woodlands TEC on the Quindalup dune system (Q1 and Q2) (Figure 3). To minimise the risk of erosion or dune blowout impacting areas of adjacent Quindalup dune system, the contractor will be restricted to the development envelope. Fencing will be erected to reduce the potential of interaction between construction activities and the adjacent dunes.</p> <p>Where earthworks intersect dunes, monthly visual inspections will be</p>

No.	EPA Services comment	PTA's response
		<p>undertaken, and following completion of construction activities within the development envelope dunes will be stabilised through the planting of locally endemic flora species or bioengineering controls.</p> <p>In the event of Proposal attributable activities causing a dune blowout, a coastal rehabilitation specialist will be engaged to stabilise the landform to prevent further erosion.</p> <p><u>Altered hydrology affecting water availability for vegetation or water quality</u></p> <p>No surface water features or drainage lines are located within the development envelope and no groundwater dewatering or abstraction is anticipated for this Proposal.</p> <p>Stormwater drainage will be directed to infiltration basins/swales within the development envelope to minimise the potential for altering the hydrology outside the development envelope. There is the potential for changes to the landform to result in permanent changes to the hydrology outside the development envelope. The PTA will undertake vegetation monitoring of a 10 m buffer within Ningana Bushland to identify any observable decline in vegetation health. Observed declines in vegetation health will be reported and possible causes investigated.</p> <p><u>Bushfire risk to adjacent vegetation</u></p> <p>A Bushfire Risk Management Plan (BRMP) (refer sections 10.3.3 and 10.5.2 of the ERD (ELA 2019b)) has been prepared for the Proposal which assesses potential bushfire scenarios in the landscape adjacent to the Proposal as well as potential ignition scenarios as a result of works undertaken during construction. The BRMP is to be implemented for the duration of construction of the Proposal.</p> <p>One particular scenario in the risk assessment quantified the impacts to vegetation directly adjacent to the development envelope, noting that the Proposal intersects Ningana Bushland vegetation comprising predominantly of scrub fuel. The greatest level of impact would occur under adverse fire weather conditions. The inherent risk was rated as “high” however with the implementation of management measures the</p>

No.	EPA Services comment	PTA's response
		<p>residual risk could be downgraded to “medium”. The risk assessment concluded that this scenario would result in a short-term impact on the environment, based on the analysis of assets.</p> <p>The PTA's overarching bushfire management and mitigation approach is governed by their Bushfire Management Strategy document that outlines bushfire risk reduction strategies across all PTA owned, managed or leased land (PTA 2018).</p> <p>A suite of controls applicable to construction works have been developed for the Proposal, triggered by: Fire Danger Ratings, Total Fire Bans, Hot Works, Harvest and Movement of Vehicles in paddocks ban, and Bushfire Warnings. The mitigation measures and controls are outlined in the BRMP.</p> <p>The bushfire mitigation measures and controls will be incorporated into all relevant construction site safety plans, standard operating procedures, safe work method statements, emergency / evacuation plans etc. If required, engagement with DFES and / or bushfire consultants will be sought for support and clarification. Through correct implementation of the bushfire mitigation measures outlined in the BRMP, inherent bushfire risk to environmental values can be reduced.</p>
9.	<p>Where information is available please provide further detail regarding how the Proposal will not adversely impact flora and vegetation in the long term, including details of monitoring locations and frequency, trigger/threshold criteria or management measures for action. Please include specific, measurable and appropriate objectives (pre and post development) and include monitoring designs and mitigation strategies.</p>	<p><u>Construction phase</u></p> <p>During construction and operation of the Proposal, potential impacts to flora and vegetation will be managed through a CEMP (Attachment 3 – Construction Environmental Management Plan).</p> <p>Management measures will include:</p> <ul style="list-style-type: none"> • The development envelope will be demarcated to prevent clearing outside approved areas. • Monitoring to manage indirect impacts to surrounding vegetation. • Minimise clearing to as low as reasonably practicable. • Should batters be of a suitable gradient and material and not required for operational infrastructure purposes, they will be stabilised with planting of locally endemic species where

No.	EPA Services comment	PTA's response
		<p>possible and/or bioengineering controls.</p> <ul style="list-style-type: none"> • Measures to prevent the distribution of Declared Pests under the <i>Biosecurity and Agriculture Management Act 2007</i> (BAM Act) and other weed species offsite as detailed below. • Measures to prevent introduction of <i>Phytophthora</i> dieback to the surrounding vegetation as detailed below. • Inspection of all vehicles and machinery at exit and entry locations to be free of weeds and soil prior to entering the development envelope. • Manage any newly identified Declared Pests within the development envelope in accordance with the BAM Act and subsidiary regulations. • Require all personnel to complete a site induction that will include hygiene training with regards to weed management requirements • Site inspections to identify the presence of weeds and implementation of weed control as necessary. • If practicable, conduct ground disturbance activities in dry months to reduce the risk of spreading disease. • Avoid topsoil movement from areas identified as uninterpretable for dieback or uninfested. • Require that any materials brought into the development envelope are dieback free. • Install a temporary fence or appropriate buffer to prevent access to surrounding vegetation. • Any areas not required for the continual operation of the rail will be rehabilitated using local plant species or seeds collected prior to disturbance. If collected seed species and quantities are insufficient any additional seed used will be representative of the adjacent bushland.

No.	EPA Services comment	PTA's response
		<p data-bbox="1167 209 1413 236"><u>Ningana Bushland</u></p> <p data-bbox="1167 256 2085 453">For the section of the development envelope intersecting Ningana Bushland, potential impacts to flora and vegetation will be managed through a management plan. The management plan will include details of the pre and post development objectives, monitoring locations and frequency, trigger/threshold criteria or management measures for action.</p> <p data-bbox="1167 474 2085 638">The highest risk of indirect impacts to flora and vegetation adjacent to the development envelope is during the construction phase of the Proposal. As described above, the PTA will implement strict controls to minimise the risk of indirect impacts (e.g. spread of weeds) during construction.</p> <p data-bbox="1167 659 1413 686"><u>Operational phase</u></p> <p data-bbox="1167 707 1995 770">During the operation of the Proposal the following management measures will be undertaken:</p> <ul data-bbox="1211 791 2107 1404" style="list-style-type: none"> <li data-bbox="1211 791 2107 855">• Weed control measures (e.g. weed spraying) within the fenced rail corridor and to maintain both the PSP and access track. <li data-bbox="1211 866 2107 1094">• Monitoring of landscaped and revegetated areas will occur for a maximum of 24 months by the Contractor following Practical Completion of the Proposal. The Contractors CEMP will provide details on success and survival rates that will be established and used as monitoring criteria. The Contractor will be required to submit an annual monitoring report to the PTA, detailing the monitoring undertaken and results. <li data-bbox="1211 1106 2107 1233">• The PTA will continue to monitor landscaping and revegetated areas for an additional 3 years beyond the Contractor's obligations. Weed control and/or infill planting will be undertaken as required where the monitoring criteria have not been met. <li data-bbox="1211 1244 2107 1404">• Within Ningana Bushland, monitoring will be undertaken within vegetation in a 10 m buffer of the development envelope. Monitoring parameters will include both qualitative and quantitative measures: <ul style="list-style-type: none"> <li data-bbox="1312 1377 1626 1404">○ Vegetation structure

No.	EPA Services comment	PTA's response
		<ul style="list-style-type: none"> ○ Vegetation condition ○ Weeds ○ Site condition <ul style="list-style-type: none"> ▪ Evidence of changes in hydrology and water surface flows ▪ Fire history ▪ Erosion evidence ▪ Evidence of diseases (e.g. dieback) ▪ Evidence of edge effects (e.g. weed invasions from development envelope or disturbance spread) ▪ Evidence of clearing ▪ Other disturbances (e.g. rubbish dumping, unauthorised access, tracks, feral fauna activity) <p>Details of the above operational management measures will be provided in the management plan for Ningana Bushland.</p>
10.	<p>Regarding the <i>Phytophthora</i> dieback testing undertaken, more than half of the development envelope was uninterpretable due to a lack of sufficient indicator species. Areas that could be susceptible to the spread of dieback should be mapped, with routine soil testing for the pathogen undertaken. Please provide information regarding how <i>Phytophthora</i> dieback will be managed including hygiene and preventative measures.</p>	<p>The PTA does not believe that routine soil testing is warranted for this Proposal as there are no confirmed <i>Phytophthora</i> species occurrences in the Eglinton to Yanchep area (DBCA 2019). Dieback is reported as being restricted to the south-west of WA in areas that receive more than 400mm of annual rainfall but it has also been noted that dieback does not establish on coastal limestone soils of high pH (DEC 2012a). It is therefore unlikely to occur within the development envelope.</p> <p>During construction the contractor will be required to ensure that all vehicles and equipment is clean on entry and any imported materials have been certified dieback free prior to transport to site. Additional management measures during construction are addressed in the CEMP. Once the crushed limestone maintenance access track has been constructed it is considered unlikely that dieback will spread during railway operations as any dieback contaminated material on vehicle tyres will be inhibited from spread by the high pH of the crushed limestone.</p>

No.	EPA Services comment	PTA's response
11.	<p>Please provide current weed mapping in the development envelope, and the location and frequency of weed monitoring, dependent on species of weed. Priority areas such as good condition native vegetation and Bush Forever remnants should be protected from potential weed invasion. Please provide further information addressing the potential introduction and spread of weeds, pre and post construction, including operation.</p>	<p>The PTA has undertaken further consultation with DWER EPA Services who advised that in this instance that weed mapping isn't required of the entire development envelope.</p> <p><u>Construction phase</u></p> <p>During the construction phase of the Proposal the following measures will be undertaken to manage the potential for introduction and spread of weeds:</p> <ul style="list-style-type: none"> • Measures to prevent the distribution of Declared Pests under the <i>Biosecurity and Agriculture Management Act 2007</i> (BEM Act) and other weed species offsite as detailed below. • Inspection of all vehicles and machinery at exit and entry locations to be free of weeds and soil prior to entering the development envelope. • Manage any newly identified Declared Pests within the development envelope in accordance with the BAM Act and subsidiary regulations. • Require all personnel to complete a site induction that will include hygiene training with regards to weed management requirements • Site inspections to identify the presence of weeds and implementation of weed control as necessary. • Install a temporary fence or appropriate buffer to prevent access to surrounding vegetation. • The PTA will undertake quarterly visual inspections for weeds. Annual weed monitoring will also be undertaken in high risk locations or adjacent to areas with high environmental value. • Annual weed spraying will be undertaken, informed by the baseline monitoring results (i.e. where to target).

No.	EPA Services comment	PTA's response
		<p data-bbox="1167 209 1413 236"><u>Operational phase</u></p> <p data-bbox="1167 256 2092 387">The operation of the Proposal has the potential to introduce weeds into adjacent native vegetation. During the operation of the railway the following management measures will be undertaken to minimise the potential for weed introduction to as low as reasonably practicable:</p> <ul data-bbox="1216 408 2107 611" style="list-style-type: none"> <li data-bbox="1216 408 2107 475">• Weed control measures (e.g. weed spraying) within the fenced rail corridor and to maintain both the PSP and access track. <li data-bbox="1216 480 2107 611">• Within Ningana Bushland, monitoring will be undertaken within vegetation in a 10 m buffer of the development envelope. Monitoring parameters will include those described in the response to comment 9 above.
12.	Please provide information to demonstrate that fire management activities to protect infrastructure will not result in a decline in condition in surrounding native vegetation.	<p data-bbox="1167 647 2092 842">The PTA will undertake fire management activities only within the development envelope. These will include maintenance of firebreaks (e.g. clearing, slashing, weed spraying) and providing adequate access for the Department of Fire and Emergency Services (DFES) in the case of an emergency. Within Ningana Bushland, the PSP and access track will both be maintained as firebreaks.</p> <p data-bbox="1167 863 2063 1031">Weed spraying within the rail corridor and along the PSP and access may result in the potential for edge effects into areas of adjacent bushland. The PTA will implement measures to minimise the risk of weed spraying techniques causing impacts to adjacent bushland, in particular through Ningana Bushland.</p> <p data-bbox="1167 1051 2051 1182">Within Ningana Bushland, monitoring will be undertaken within vegetation in a 10 m buffer of the development envelope. Monitoring parameters will include those described in the response to item 9 above.</p> <p data-bbox="1167 1203 2040 1302">The PTA is liaising with both DFES and DBCA regarding fire management activities and emergency access requirements for the Proposal.</p>

No.	EPA Services comment	PTA's response
13.	<p>Based on direct impact figures provided in the ERDs, a total of 124.4 hectares (ha) of native vegetation is proposed for clearing for Thornlie-Cockburn Link and Yanchep Rail Extensions Parts 1 and 2. Bush Forever sites make up 46% of the native vegetation proposed to be cleared for these Metronet projects. The ERD has not discussed in detail the significance of the cumulative impacts on Bush Forever sites.</p>	<p>The PTA has provided an assessment of the cumulative impacts to flora and vegetation from the Proposal at a local and sub-regional scale. See section 5.5 of the ERD (ELA 2019a). The PTA considers it appropriate to assess the cumulative impacts of the Proposal at a local and regional scale, rather than in the context of the METRONET program.</p> <p>The Proposal will result in the loss of 49.17 ha of native vegetation. Based on a review of the Perth to Peel Urban Land Development Outlook (ULDO) 2016/17 data, there will be substantial pressure on the remaining vegetation at a local and regional scale, primarily due to future residential, commercial and industrial development (GHD 2019).</p> <p>The ULDO 2016/17 data is based on an assessment of future land supply at all stages of the planning, zoning, approval, development and redevelopment pipeline. The ULDO output covers Perth to Peel and includes scheme amendments, developer intentions, structure planning in progress, subdivision applications/approvals (WAPC) and local government development applications/approvals. There have been a number of local and regional scheme amendments in the vicinity of the Proposal, with these largely associated with rezoning and subsequent urban development.</p> <p>The ULDO 2016/17 data indicates that within the Northwest Subregion approximately 1,350 ha will support likely future residential/commercial development within the next 5 years. Of this, approximately 848 ha (62.8%) has current conditional approval. Similarly, the data indicates that within 1 km of the Proposal approximately 366 ha will support likely future residential/ commercial development within the next 5 years, with approximately 160 ha (43.65 %) having current conditional approval (GHD 2019) (see table below).</p> <p>The ULDO 2016/17 data indicates across the Swan Coastal Plain Perth IBRA sub-region (SWA02) approximately 19,501 ha will likely support future residential, commercial and industrial development (see table below). Of this, 6,739 ha (34%) is mapped as native vegetation (based on the DPIRD-005 dataset).</p>

No.	EPA Services comment	PTA's response																										
		<p>For the Proposal, clearing of 49.17 ha of native vegetation represents 0.7% of the cumulative impact predicted for future residential, commercial and industrial development across the Swan Coastal Plain Perth IBRA sub-region (over 10+ years, see table below).</p> <p>Future residential, commercial and industrial development on the Swan Coastal Plain</p> <table border="1" data-bbox="1182 483 2056 1246"> <thead> <tr> <th data-bbox="1182 483 1379 655">Development type</th> <th data-bbox="1379 483 1644 655">Staging</th> <th data-bbox="1644 483 1888 655">Swan Coastal Plain IBRA sub-region extent SWA02 (ha)</th> <th data-bbox="1888 483 2056 655">Native Vegetation (DPIRD-005) within SWA02 (ha)</th> </tr> </thead> <tbody> <tr> <td data-bbox="1182 655 1379 979" rowspan="4">Residential/ Commercial</td> <td data-bbox="1379 655 1644 767">Short term (0-5 years) with current conditional approval</td> <td data-bbox="1644 655 1888 767">3,309</td> <td data-bbox="1888 655 2056 979" rowspan="4">5,409</td> </tr> <tr> <td data-bbox="1379 767 1644 831">Short term (0-5 years)</td> <td data-bbox="1644 767 1888 831">1,067</td> </tr> <tr> <td data-bbox="1379 831 1644 919">Medium term (6-10 years)</td> <td data-bbox="1644 831 1888 919">2,923</td> </tr> <tr> <td data-bbox="1379 919 1644 979">Long term (10+ years)</td> <td data-bbox="1644 919 1888 979">7,980</td> </tr> <tr> <td data-bbox="1182 979 1379 1190" rowspan="3">Industrial</td> <td data-bbox="1379 979 1644 1038">Short term (0-5 years)</td> <td data-bbox="1644 979 1888 1038">1,039</td> <td data-bbox="1888 979 2056 1190" rowspan="3">1,330</td> </tr> <tr> <td data-bbox="1379 1038 1644 1126">Medium term (6-10 years)</td> <td data-bbox="1644 1038 1888 1126">1,183</td> </tr> <tr> <td data-bbox="1379 1126 1644 1190">Long term (10+ years)</td> <td data-bbox="1644 1126 1888 1190">2,000</td> </tr> <tr> <td data-bbox="1182 1190 1379 1246">Total</td> <td data-bbox="1379 1190 1644 1246"></td> <td data-bbox="1644 1190 1888 1246">19,501</td> <td data-bbox="1888 1190 2056 1246">6,739</td> </tr> </tbody> </table> <p data-bbox="1167 1251 2063 1299">Data sources: Perth and Peel Urban Land Development Outlook 2016/17 - staging (DOP-096), Perth and Peel Urban Land Development Outlook 2016/17 - Industrial (DOP-097)</p>	Development type	Staging	Swan Coastal Plain IBRA sub-region extent SWA02 (ha)	Native Vegetation (DPIRD-005) within SWA02 (ha)	Residential/ Commercial	Short term (0-5 years) with current conditional approval	3,309	5,409	Short term (0-5 years)	1,067	Medium term (6-10 years)	2,923	Long term (10+ years)	7,980	Industrial	Short term (0-5 years)	1,039	1,330	Medium term (6-10 years)	1,183	Long term (10+ years)	2,000	Total		19,501	6,739
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No.	EPA Services comment	PTA's response
Terrestrial Fauna		
14.	<p>The ERD does not specify the measures that will be used to manage fauna prior to, during and post construction along the alignment. EPA Services understands that a fauna underpass and an overpass will be incorporated into the design. However, details are missing in relation to:</p> <ol style="list-style-type: none"> trapping and relocation of fauna species the need for fauna spotters during clearing activities the appropriate timing of clearing works the installation of fauna fencing. <p>EPA Services further notes that no management is proposed in relation to fauna becoming trapped in trenches or within the development envelope. Further, the ERD has not adequately addressed potential impacts to terrestrial fauna during operation of the Proposal.</p> <p>Please provide details of the measures that will be used to manage fauna prior to, during and post construction including the type of fencing that will be used and discuss whether the fencing used will prevent fauna movement.</p>	<p><u>Fauna management during construction phase</u></p> <p>As outlined in the Attachment 3 – Construction Environmental Management Plan:</p> <ul style="list-style-type: none"> Progressive clearing will be implemented over a maximum of 3 months to allow fauna to move away from clearing activities. Fauna spotters are to be present during clearing of native vegetation to supervise dispersal/relocation of remnant fauna and to provide identification of potential injured fauna. Within seven days prior to clearing of native vegetation, a qualified fauna expert will undertake a trapping and relocation program for conservation significant vertebrate fauna in accordance with a licence to take fauna for education or public purpose issued under Part 4 of the <i>Biodiversity Conservation Act 2016</i> (BC Act) Conduct fauna trapping and relocation in accordance with DBCA's Standard Operating Procedures (SOPs) or permit conditions. Contact DBCA prior to the trapping and relocation program to assist with identifying suitable relocation sites. Implement the trapping and relocation for five consecutive nights prior to clearing activities in areas containing native vegetation. Daily inspection for fauna species at clearing boundaries and in the construction area during native vegetation clearing activities. Twice daily monitoring (early morning and late afternoon) of trenches that have been left open overnight, with recording, removal and release of macrofauna. Soil ramps will be installed in open trenches (e.g. if open overnight) at 500 m intervals. Within seven days following clearing activities, temporary fencing will be erected to limit fauna re-entering the cleared area. If any fauna are encountered during construction works the site environment team will remove them from the area. If

No.	EPA Services comment	PTA's response
		<p>rehabilitation is required, a wildlife carer and/or DBCA will be contacted.</p> <ul style="list-style-type: none"> • During construction (where practicable), temporary fencing will be replaced by the permanent fencing to PTA standard (1.8m chainmesh with 3 strands of barbed wire along the top). • Permanent fauna fencing will be installed within areas of the alignment that intersect with Ningana Bushland. Fauna fencing involves wire mesh being installed below ground level to inhibit fauna being able to dig below the fencing. <p><u>Fauna management during operational phase</u></p> <ul style="list-style-type: none"> • Train drivers will be reminded to report any fauna kills or sightings within the fenced rail reserve immediately to Train Control for removal. • Fauna within the fenced rail reserve will be lured towards open gates or gaps in fencing. If they can not be lured, then an appropriately licenced fauna handler will be called to trap and relocate. • Fauna kills and sightings will be monitored and reported quarterly in the PTA's Health, Safety and Environment Committee and any trends investigated and remedial action undertaken if required.
15.	<p>Please provide additional information to allow the EPA to determine whether the proposed mitigation (fauna crossings) is adequate to mitigate the impacts to terrestrial fauna.</p> <p>Further, mitigation should consider the indirect impacts to Black Cockatoos from mortality as a result of collision with trains, including identifying areas where there is a potential risk of train strike and monitoring of any incidents of mortality. Please include a full assessment of the potential impacts to Black Cockatoos from collision with trains. Please include any proposed mitigation measures.</p>	<p><u>Proposed mitigation</u></p> <p>Attachment 2 – Supporting Information provides additional information in regards to the proposed mitigation strategies (fauna crossings/green bridges) within Ningana Bushland.</p> <p><u>Indirect impacts to Black Cockatoos</u></p> <p>During the operational stage of the Proposal, daily train movements within the rail reserve have the potential to impact Black Cockatoos as a result of collisions with trains. Black Cockatoos are slow to take off from the ground and they initially fly low before sweeping up higher. This take off pattern places them at greater risk of colliding with a fast moving vehicle such as a train if they forage or seek water in close</p>

No.	EPA Services comment	PTA's response
		<p>proximity to the rail.</p> <p>In general, passenger trains travel at faster speeds than road vehicles which represents a greater risk of collision with avifauna. The PTA does not have data on Black Cockatoo mortality resulting from direct collisions along its current rail assets, however the likelihood is considered low. The PTA has focused on managing the risk of interaction between the birds and passenger trains.</p> <p>Drainage infrastructure will be installed in the rail reserve to minimise the risk of water pooling in close proximity to the railway tracks, and therefore minimising the risk of Black Cockatoos seeking water and colliding with trains. Foraging species will also not be planted in close proximity to the railway tracks, to minimise the risk of Black Cockatoos foraging close to the rail and colliding with trains.</p> <p>In the event of a train striking a Black Cockatoo, the incident will be reported to the PTA Environmental Manager within 24 hours. If the bird is injured it will be taken to an authorised veterinarian or wildlife carer.</p> <p>With the abovementioned management measures, the risk of train strike to Black Cockatoos is as low as reasonably practicable.</p>
16.	<p>Please provide additional information to demonstrate that the level of survey undertaken meets the requirements of the ESD and EPA guidance and to increase confidence in the proponent's assessment of the impacts and conclusions relating to terrestrial fauna.</p> <p>Please discuss the limitations of the current level of survey and how this has influenced the conclusions of the assessment within the ERD.</p> <p>Please justify the level of survey undertaken and demonstrate that this meets the requirements of the ESD and EPA guidance. Item 13(c) of the ESD includes <i>“Undertake Level 2 (targeted) surveys for identified significant fauna species that may be impacted directly and indirectly by the implementation of the Proposal. This should include sampling inside and outside the</i></p>	<p><u>Terrestrial vertebrate fauna</u></p> <p>Significant survey effort has been completed over a number of years within and in the vicinity of the survey area (spring 2010, spring 2012, spring 2016, and autumn, winter and summer 2017, and spring 2018). Targeted survey effort through opportunistic fauna searches and a targeted Black Cockatoo assessment was completed as part of all of these surveys, with large parts of the survey area traversed by foot.</p> <p>The fauna surveys recorded 78 vertebrate fauna species, including 59 birds, ten reptiles and nine mammals. Two fauna species of conservation significance was recorded during the field surveys, Carnaby's Black Cockatoo and the Western Brush Wallaby. A likelihood of occurrence assessment based on species biology, habitat requirements, the quality and connectivity of available habitat, and local and regional occurrence of species records was completed following</p>

No.	EPA Services comment	PTA's response
	<p><i>impact areas and consider cumulative impacts.</i>" The desktop assessment identified regionally significant species were likely to occur within the development envelope, including vertebrates, invertebrates and short-range endemic species.</p> <p>With the exception of Carnaby's cockatoo, targeted surveys have not been undertaken to confirm the presence of these species within the development envelope or outside the impact areas in the adjacent Ningana bushland.</p> <p>EPA Services notes that three of the five survey rounds for Carnaby's cockatoo were conducted at a suboptimal time to detect cockatoo activity on the Swan Coastal Plain. The ERD makes assumptions as to the likely occurrence of species within the development envelope and Ningana Bushland that are not supported by evidence.</p>	<p>the field survey, which identified a further four species that are considered likely to occur in the survey area: Southern Brown Bandicoot / Quenda, Peregrine Falcon, Jewelled South West Ctenotus and Black Striped Snake. These species are also considered likely to occur in the Ningana Bushland (as reported by ELA 2018). In the absence of additional information, it could be assumed they occur within and in the vicinity of the development envelope.</p> <p><u>Carnaby's Black Cockatoo</u></p> <p>Significant survey effort for Carnaby's Black Cockatoo has been completed during the 2016-2018 period across multiple seasons.</p> <p>It is assumed the EPA Services comment with respect to three of the five Carnaby's Black Cockatoo survey rounds being completed at suboptimal times for detection of cockatoo activity was primarily linked to breeding. Given the limited extent of available breeding habitat within the development envelope (45 potential breeding trees) and that no hollows were observed, the timing of all surveys during the breeding season was considered less relevant. There is 56.31 ha of Carnaby's Black Cockatoo foraging habitat present within the development envelope and the Black Cockatoo surveys focused on traversing these areas to record evidence of Black Cockatoos (i.e. sightings, foraging evidence etc.).</p> <p>The survey recorded Carnaby's Black Cockatoo foraging and presence within the survey area. The biological assessments for the Proposal recorded Carnaby's Black Cockatoo as present within the survey area and section 6.5.1 of the ERD (ELA 2019a) provides a breakdown of habitat types and habitat value for the species.</p> <p>The PTA is confident that the results presented in the Biological Assessment report (GHD 2018) would not have changed if all five Carnaby's Black Cockatoo survey rounds had been completed at an alternative time.</p> <p>There are buffers of two confirmed roosting sites and one unconfirmed roosting site located within 1 km of the development envelope. A known breeding record is also located approximately 3 km east of the</p>

No.	EPA Services comment	PTA's response
		<p>development envelope. Therefore, the PTA acknowledges that Carnaby's Black Cockatoo is known to occur in the local area, and the foraging habitat present within the development envelope may potentially support local roosting and breeding activities.</p> <p><u>Short-range endemic (SRE) fauna</u></p> <p>The PTA commissioned a detailed SRE desktop assessment (Invertebrate Solutions 2018). Following review of the conclusions of the SRE desktop assessment in accordance with the Technical Guidance – Sampling of short range endemic invertebrate fauna (EPA2016) Section 3.1.4, the PTA does not intend to undertake SRE surveys within the development envelope or surrounding areas for the following reasons:</p> <ul style="list-style-type: none"> • No habitat isolates were identified from vegetation type mapping; • Vegetation units within the development envelope are the same as immediately adjacent areas, thus indicating no restricted habitat or isolates are likely to occur within the Proposal area; and • There is a high degree of certainty as to which SRE species are highly likely and likely to occur within the development envelope and their distributions beyond the proposed impact areas. <p>Based on these reasons, the PTA has adopted a risk based approach in accordance with Technical Guidance – Sampling of short range endemic invertebrate fauna (EPA 2016) without the need for survey. See below for an extract from Section 3.1.4 of the Technical Guidance:</p> <p><i><u>“The EPA expects initial assessments to provide a review of the potential for SRE fauna to occur, especially if these are used to justify a risk-based argument for not proceeding to field survey. Field sampling will be expected <u>where high levels of uncertainty remain, or the WA Museum or the DEC advise that field survey is still required.</u>”</u></i></p>

No.	EPA Services comment	PTA's response
		<p><i>In the context of most assessments, habitat isolates can be identified from vegetation type mapping (assuming this is available at sufficient scale of resolution early in the assessment), as this represents the smallest thematic unit. If vegetation units are restricted to the potential impact area, and are especially different from adjoining units, then there is the potential for some SREs to be similarly confined (an example might be a granite outcrop in an otherwise sandy environment)."</i></p> <p>In addition, a recent Level 2 SRE survey was undertaken for the Mitchell Freeway Extension (Hester Av to Romeo Rd) project in July and November 2018 by Invertebrate Solutions for Main Roads WA. This survey identified no additional SRE species to what was previously identified by the desktop assessment as highly likely or likely to occur in the Proposal's development envelope. The results of this survey also confirms the premise outlined in the Proposal's SRE desktop assessment report (Invertebrate Solutions 2018) that all potential SRE species (including the millipede <i>Antichiropus whistleri</i> and the trapdoor spider <i>Idiosoma sigillatum</i>) are also present in adjacent bushland and conservation estates (Neerabup National Park) within the local area.</p>
17.	<p>The ERD has not adequately acknowledged the significance of the cumulative impacts to Carnaby's cockatoo as it does not include the planned harvesting of more than 6,000 ha of pine roosting and foraging habitat in the Gngangara/Yanchep-Pinjar plantations. Further, EPA Services notes that no targeted surveys were undertaken within Ningana Bushland to assess the value of the site for Carnaby's cockatoo.</p> <p>Please include pine in the calculations of cumulative impacts to Carnaby's cockatoo foraging habitat in the northwest subregion and discuss the significance of the removal of pine plantations in a regional context as it relates to the Proposal area and Ningana Bushland.</p>	<p>As outlined in the response to comment 16 above, significant targeted survey effort for Carnaby's Black Cockatoo has been completed during the 2016-2018 period across multiple seasons within and adjacent to the development envelope. Within Ningana Bushland, one targeted survey was undertaken within a 100 m buffer of the development envelope (GHD 2019) and a broad habitat assessment was undertaken of a 437.27 ha portion of Ningana Bushland (ELA 2018).</p> <p><u>Ningana Bushland – foraging habitat</u></p> <p>As outlined in the ERD (ELA 2019a) Ningana Bushland contains a considerable amount of suitable foraging habitat for Carnaby's Black Cockatoo, and evidence of foraging on pine and Banksia cones was recorded during the various surveys outside of the development envelope (ELA 2018; GHD 2018). The area of pine is a small patch of less than one hectare to the east of the development envelope. The development envelope is located approximately west 1 km of the buffer</p>

No.	EPA Services comment	PTA's response
		<p>of the nearest confirmed roost site within Yanchep National Park Figure 4. As per EPA (2019) foraging habitat located within 6 km of a known roosting site is important to support roosting.</p> <p><u>Ningana Bushland – potential breeding habitat</u></p> <p>Based on the vegetation types present, it is considered that less than 100 ha of Ningana Bushland could be potential breeding habitat. During the high level assessment by ELA (2018), some of the Tuarts had a diameter at breast height (DBH) greater than 500 mm (considered suitable for breeding) however lacked observable hollows to support current breeding. These trees are considered to require further development over a number of years to start to produce suitable hollows. A known breeding record is also located approximately 3 km east of the development envelope (GHD 2019).</p> <p><u>Ningana Bushland – roosting habitat</u></p> <p>Ningana Bushland also supports vegetation considered to be suitable for roosting habitat for Carnaby's Black Cockatoo. There is approximately 100 ha of planted Eucalyptus woodlands located within Lot 105 in Ningana Bushland (ELA 2018). Planted Eucalyptus woodlands generally lack the emergent height above surrounding habitat to be deemed as potential roosts (GHD 2019).</p> <p>There are buffers of two confirmed roosting sites and one unconfirmed roosting site located within 1 km of the development envelope (Figure 4).</p> <p><u>Cumulative impacts</u></p> <p>The PTA acknowledges the significance of the removal of more than 6,000 ha of pine roosting and foraging habitat for Carnaby's Black Cockatoo in the Gnaragara/Yanchep-Pinjar plantations in a regional context.</p> <p>The Proposal will result in the loss of 56.31 ha of foraging habitat and 2.13 ha of suitable roosting habitat (comprising Eucalyptus woodland). The ULDO 2016/17 data indicates across the Swan Coastal</p>

No.	EPA Services comment	PTA's response														
		<p>Plain Perth IBRA sub-region (SWA02) approximately 19,501 ha will likely support future residential, commercial and industrial development (see table below). Of this, 5,077 ha (26%) is mapped as Carnaby's Cockatoo foraging habitat (based on the Native Vegetation DPIRD-005 dataset).</p> <p>As per the table below, based on the "Areas Requiring Investigation as Feeding Habitat in the Swan Coastal Plain" (DBCA-057) (dataset available on SLIP) there is approximately 423,762 ha currently mapped as Carnaby's Cockatoo foraging habitat. For the Proposal, clearing of 56.31 ha of Carnaby's Cockatoo foraging habitat represents 0.01% of the currently mapped extent. When combined with the cumulative impact predicted for future residential, commercial and industrial development across the Swan Coastal Plain Perth IBRA sub-region (over 10+ years), overall cumulative impact across the Swan Coastal Plain Perth IBRA sub-region is 5,181 ha (1.2%).</p> <p>When removal of the 6,000 ha of pine roosting and foraging habitat is added to the above, the cumulative impact is a loss of 11,181 ha (2.6%).</p> <p>Cumulative impacts to Carnaby's Cockatoo foraging habitat at local and regional scale</p> <table border="1" data-bbox="1182 938 2101 1289"> <thead> <tr> <th>Scale</th> <th>Current extent (ha)</th> <th>Extent in within YRE Part 2</th> <th>Extent in within YRE Part 1</th> <th>Extent and proportion in ULDO areas</th> <th>Cumulative extent (ha) (%)</th> <th>Removal of pine plantations (ha)</th> </tr> </thead> <tbody> <tr> <td>Swan Coastal Plain IBRA sub-region</td> <td>423,762</td> <td>56.31 (0.01%)</td> <td>48.21 (0.01%)</td> <td>5,077 (1.20%)</td> <td>5,181 (1.22%)</td> <td>6,000</td> </tr> </tbody> </table> <p>There is likely to be substantial pressure on the remaining foraging and roosting habitat at a local and regional scale primarily due to the removal of the pine plantations and future residential, commercial and</p>	Scale	Current extent (ha)	Extent in within YRE Part 2	Extent in within YRE Part 1	Extent and proportion in ULDO areas	Cumulative extent (ha) (%)	Removal of pine plantations (ha)	Swan Coastal Plain IBRA sub-region	423,762	56.31 (0.01%)	48.21 (0.01%)	5,077 (1.20%)	5,181 (1.22%)	6,000
Scale	Current extent (ha)	Extent in within YRE Part 2	Extent in within YRE Part 1	Extent and proportion in ULDO areas	Cumulative extent (ha) (%)	Removal of pine plantations (ha)										
Swan Coastal Plain IBRA sub-region	423,762	56.31 (0.01%)	48.21 (0.01%)	5,077 (1.20%)	5,181 (1.22%)	6,000										

No.	EPA Services comment	PTA's response
		<p>industrial development. The implementation of the Proposal will result in a minor incremental contribution to the impact to foraging and roosting habitat for Carnaby's Cockatoo in the Swan Coastal Plain IBRA sub-region.</p>
18.	<p>Please provide the proposed fauna crossing design, including maps with indicative locations at a scale that allows a consideration of surrounding vegetation, to justify the number and location of the fauna crossings proposed. The placement of fauna crossings should consider connecting areas of similar habitat for the species intended to use the crossings and that achieves the purpose of the crossings as outlined in the ERD that is, maintaining genetic diversity and ecological integrity.</p> <p>EPA Services notes that the proposed design principles do not consider the placement of fauna crossings in relation to fauna habitat (Appendix 1 of Bamford 2019d as referenced in the ERD). While no fauna movement corridors were identified during surveys, this may be representative of the current extent of habitat available rather than the lack of movement across the area. The area may become increasingly important as an ecological connection as land is further developed in the area.</p>	<p>See Attachment 2 – Supporting Information for discussion of the design of the proposed green bridges.</p>
19.	<p>The proposed placement of Yanchep Station, within an area of consolidated native vegetation, is likely to facilitate further urban development, and additional clearing of fauna habitat. The areas adjacent Yanchep Station and the rail alignment have MRS Zoning as 'urban' and 'central city' areas (Figure 1-2).</p> <p>Please discuss the alignment options (Figure 2-1) in relation to terrestrial fauna. The ERD states that "Option 2 has slightly more favourable environmental outcomes than Option 1", but was "estimated to be slightly more expensive than Option 1, as well as having unfavourable planning outcomes" (Page 13).</p> <p>Please include a comparison of the alignment footprint options to demonstrate that impacts to terrestrial fauna have been</p>	<p>The location of Yanchep City was earmarked as early as the 1970s with planning documents such as the 1970 Corridor Plan, 1977 Planning Structure for the North West and the 1992 North-West Corridor Structure Plan providing guidance on the development. The 2010 Yanchep-Two Rocks District Structure Plan confirmed the location of the Yanchep Strategic Metropolitan Centre. It is acknowledged that the placement of Yanchep Station will facilitate further urban development however there has already been significant development in this area over the last 5-10 years. The station is part of wider precinct development planning on a similar scale to what Joondalup is now. It is acknowledged that construction of the Proposal is likely to facilitate further development which will result in additional clearing of fauna habitat. Refer to Figure 2 – Proposal Development Envelope. The</p>

No.	EPA Services comment	PTA's response
	<p>minimised. Describe the quality of the adjacent fauna habitat and provide a map of planned future development adjoining the rail alignment and Yanchep Station that has been proposed in the Urban Land Development Outlook in relation to the fauna habitats.</p>	<p>PTA notes however that the Proposal is in large measure a sustainable planning response to the development that has and will occur in the area with or without the implementation of the Proposal.</p> <p>Impacts to terrestrial fauna have been minimised by implementing the Option 1 (final) alignment through Ningana Bushland, which results in large enough areas of vegetation to provide long term viable fauna populations (Bamford Consulting Ecologists 2019a). The proposed green bridges will facilitate fauna movements between the fragmented portions of Ningana Bushland.</p> <p>As outlined in Attachment 2 – Supporting Information, Option 2 through Ningana Bushland would result in the retention of a larger portion of bushland to the west of the railway, however it aligns directly with the parabolic dunes it would impact an additional two ha of parabolic dunes. In addition Option 2 would require a wider development envelope due to the amount of additional cut required, and would also require additional native vegetation clearing Attachment 2 – Supporting Information.</p>
Inland Waters		
20.	<p>In relation to items 46 and 49 of the Environmental Scoping Document:</p> <p>a. Please provide information on the types of activities, hazardous materials and substances to be stored (including fuel and chemicals), or the proposed locations of construction laydown areas, refuelling areas and other required hard-stand areas in order for the EPA to assess the potential impacts to environmental values and whether the proposed management and mitigation measures are appropriate.</p> <p>b. Please provide information or evidence to support the statements in section 9.5.3 that there is a low risk that groundwater could be contaminated during construction and in section 9.6 that the Proposal has no potential to impact on groundwater.</p> <p>Please review and consider water quality protection notes 44 and</p>	<p>Construction laydown areas will be sited at the two bridge construction areas at Yanchep Beach Road and Torepango Avenue. In addition to this, there will be a construction laydown area with potential for a site compound at the Yanchep Station area. Activities relating to fuel and chemical usage for the Proposal will be undertaken in designated areas within the construction laydown areas including:</p> <ul style="list-style-type: none"> • Chemical storage area – bunded and self-contained storage area for chemicals, tools and equipment. Limited hydrocarbon storage (no bulk storage) is anticipated. • Refuelling area –designated refuelling areas will be demarcated within the Proposal, with all fuel supplied via a mobile fuel supply truck (i.e. no bulk fuel storage onsite). • Management measures for fuel and chemical storage and use will be implemented in accordance with the Contractor's

No.	EPA Services comment	PTA's response
	56 as part of the response.	<p>overarching CEMP.</p> <ul style="list-style-type: none"> • Measures to be implemented to manage contamination of soil, or groundwater due to spills and or infiltration of run-off, include: <ul style="list-style-type: none"> ○ Spill kits retained on site ○ Site personnel inducted and train in spill response procedures for immediate response ○ Minimising volume of fuel/chemicals stored on site. <p>As per Water Quality Protection Note 65, in priority 3 (P3) areas, above and below ground toxic and hazardous storage tanks are compatible with the conditions. This means they are compatible with water resource protection objectives, providing the proponent installs and maintains high quality tank systems with effective water contamination barriers and employs approved site management practices to prevent loss of toxic and hazardous substances from the Proposal.</p> <p>Only above-ground tanks are to be utilised as part of the Proposal and will comply (where practicable) with the conditions listed in WQPN 56.</p> <p>Infrastructure corridors pose the following water contamination risks (from WQPN 44 and 83):</p> <ul style="list-style-type: none"> • Soil erosion and resultant turbidity in surface water bodies. There are no surface water bodies within the project development envelope. All stormwater will be controlled by the installation of V drains and drainage basins along the network. • Disturbance of contaminated sites and acid sulphate soils. There are no known contaminated sites and acid sulphate soils • Contaminant emissions during corridor construction. All spills will be contained and cleaned up, with any potential contaminated soil to be removed from site. Any chemicals/hydrocarbons will be stored on site within one of the three construction compounds (Alkimos, Eglinton and Yanchep station footprints) within covered chemical cages or banded pallets as required to meet the 110% capacity of the container. • Pollution resulting from equipment malfunctions and conduit

No.	EPA Services comment	PTA's response
		<p>damage. All spills will be contained and cleaned up, with any potential contaminated soil to be removed from site.</p> <ul style="list-style-type: none"> • Waste dumping and vandalism resulting from increased catchment access. There will be fences erected to minimise access, however the PSP will enable some amount of increased access. • Use of chemicals including paints, solvents and pesticides for service maintenance. All spills will be contained and cleaned, with any potential contaminated soil to be removed from site. Bulk chemicals will not be stored on site during the operation/maintenance of the rail. Herbicide use will not occur when rain is likely or during high winds. All herbicide use will be conducted under a fully licenced professional.
21.	<p>EPA Services has received advice that Table 9-1 contains incorrect information and incorrect design criteria. By way of example, the bunding requirements for fuel or chemical storage should be 110 per cent of the largest storage tank plus sufficient volume to contain the 100-year rainfall event.</p> <p>Please review and reference the appropriate water quality protection notes and seek clarification from the DWER Swan Avon Region as required and appropriate. EPA Services notes that management measures include chemical and fuel storage measures such as bunds that can capture 110 per cent of the volume of the container and does not reference containment of the 100-year rainfall event.</p>	<p>Only above-ground tanks are to be utilised onsite and will comply (where practicable) with the requirements listed in WQPN 56 and WQPN 65.</p> <p>Bunding requirements for fuel or chemical storage required as part of the Proposal will be designed to allow 110 per cent of the largest storage tank as per AS 1940-2017 <i>The storage and handling of flammable and combustible liquids</i>.</p> <p>All storage areas will be covered and protected from rainwater inflow and therefore will not be required to also contain the 100-year rainfall event.</p> <p>The PTA will continue to consult with the DWER Swan Avon Region on this issue.</p>
22.	<p>EPA Services notes that there is some concern regarding potential impacts to Aquatic Root Mat Communities of the SCP from groundwater drawdown.</p> <p>Further, if any lowering of groundwater levels by dewatering were to occur in the area, even by a relatively small amount, EPA Services has received advice that there is a high likelihood of further significant drying of Lake McNess and Lake Yonderup</p>	<p>No groundwater abstraction is proposed for the Proposal due to uncertainties on the potential impact to Aquatic Root Mat Communities. The Proposal if implemented will require substantial quantities of water for dust suppression and compaction. PTA will seek an alternative to new groundwater abstraction wells which may consist of utilising groundwater sourced from outside the development envelope or purchased from Water Corporation supplies.</p>

No.	EPA Services comment	PTA's response
	<p>in Yanchep National Park. This includes drawdown of as little as 0.5 cm.</p> <p>Please discuss the potential indirect impacts from the Proposal on the nearby values including but not limited to the Aquatic Root Mat Communities of the SCP and the lakes within Yanchep National Park.</p>	
Subterranean Fauna		
23.*	<p>Additional information is required in relation to subterranean fauna to support the conclusions of the ERD. Figure 7-2 illustrates that the alignment is within 1 km of “high likelihood habitat” for subterranean fauna. However, the desktop review and risk assessment has concluded that there is a low likelihood of subterranean fauna habitat occurring within the development envelope.</p> <p>To support this conclusion, please state the proximity of the development envelope, and provide maps, of the known locations or likely extent of subterranean fauna habitat, specifically the location of caves and troglofauna habitat.</p> <p>Please clarify the predicted distance of vibration expected during construction (from compaction activities) and during operation of the Proposal in relation to the locations of the cave system. This information is required in order to determine whether the conclusion that there will be no significant residual impact to subterranean fauna due to implementation of the Proposal is accurate.</p>	<p><u>Subterranean fauna habitat</u></p> <p>The Proposal's development envelope intersects the mapped medium risk karst areas and is 380 m away from the mapped high risk karst areas. The development envelope is composed broadly of Safety Bay Sand, Tamala Sand and Tamala Limestone, however, the Safety Bay Sand and the Tamala Sand provide limited habitat potential for subterranean fauna due to their unconsolidated nature and lack of interstitial voids (Invertebrate Solutions 2018). Whilst the development envelope is located within 380 m of a high karst risk area (Tamala Limestone) the development envelope is located within the low risk Safety Bay and Tamala Sand units that have a low likelihood of subterranean fauna (Invertebrate Solutions 2018).</p> <p>The location of caves does not provide an accurate representation of available troglofauna habitat. It is mostly the smaller, micro and meso (1 mm – 20 cm) caverns that often provide habitat for subterranean fauna, due to their higher and constant humidity. Micro and meso-caverns can occur throughout the Tamala Limestone, thus all consolidated Tamala Limestone should be considered to have high habitat value for subterranean fauna despite an absence of human sized voids in many areas (Invertebrate Solutions 2018).</p> <p><u>Potential vibration impacts</u></p> <p>The soil and ground type for the Proposal is anticipated to be the same as for the Butler Rail Extension. Vibration measurements were undertaken during the operation of the Butler Rail Extension with</p>

No.	EPA Services comment	PTA's response
		<p>vibration generally imperceptible at 30 m from the operating railway.</p> <p>During construction, the use of vibratory rollers and pile driving are likely to generate vibration at the greatest distances from the construction zone. There are no Australian standards which estimate vibration from construction techniques, however the British Standard BS 7385-2:1993 has been used to estimate vibration emissions for the Forrestfield-Airport Link project. Based on BS 7385, the suggested safe working distance to prevent cosmetic damage to any structure is 25 m.</p> <p>The closest high risk karst area from the Proposal 2 is 380m away. Therefore it is anticipated that at this distance vibration will not be perceptible and will not pose any significant risk to subterranean fauna habitat including caves and troglofauna habitat.</p>
Landforms		
25.*	<p>Please confirm the area of direct impact on parabolic dunes. Section 8.5.1 states differing figures of 17.54ha and 12.59ha are the area of direct impact.</p>	<p>The Proposal's direct impact on parabolic dunes is 17.54 ha. This direct impact is to the Q1 (first) and Q2 (second) dune phases.</p> <p>It is estimated that approximately 7% of the mapped parabolic dunes intersecting the development envelope have currently been developed or altered through human activity.</p> <p>The 12.59 ha value stated in section 8.5.1 is incorrect.</p>
Offsets		
26.	<p>Table 12-3 of the ERD indicates that vegetation condition is the measure used to determine the conservation significance of the Bush Forever site for the purposes of determining offsets. EPA Services has received advice that other matters should be considered to determine the conservation significance of the Bush Forever site including the presence of Threatened and Priority Ecological Communities, Threatened species habitat and landforms.</p> <p>Please note that the EPA will consider all environmental values when assessing impacts from the Proposal and this will have</p>	<p>Offsetting impacts to Bush Forever sites is a State requirement. As such, there is no mechanism within the Commonwealth Offsets Calculator to calculate the direct offset requirement based on evaluation of significant residual impacts and the condition of the proposed offset site. The WA Environmental Offset Guidelines (Government of WA, 2014) also does not provide guidance on how impacts to Bush Forever sites should be assessed and offset. Therefore, the PTA has based its initial Bush Forever offset calculations on guidance provided within SPP 2.8 (WAPC, 2010). SPP 2.8 (WAPC, 2010) ranks vegetation according to its conservation significance based on vegetation condition.</p>

No.	EPA Services comment	PTA's response
	<p>some bearing on any proposed offset ratio.</p> <p>Please review and revise the proposed offset for the significant residual impacts to Bush Forever 289 with consideration of State Planning Policy 2.8 as well as the WA Offset guidelines.</p>	<p>After considering initial calculations in accordance with SPP 2.8, the environmental values of Bush Forever Site 289 and the Proposal's potential impacts, the PTA is proposing to provide funding to the DBCA to manage the entire of Bush Forever Site 289.</p> <p>Details of the proposed offset package and applicability in accordance with WA Offset guidelines will be provided within the standalone Draft Offset Strategy (PTA, 2019), which is under development.</p>
27.	<p>It is unclear what is meant by 'High' in Table 12-4 in relation to post-offset vegetation condition and post offset significance. EPA Services is not aware of 'High' being a recognised vegetation condition rating. Please clarify or revise.</p>	<p>Appendix 4 of the State Planning Policy 2.8 (SPP 2.8) (WAPC 2010) provides offsets criteria and guidance grading the conservation significance of Bush Forever sites for the purpose of calculating offsets. Terminology in this guidance includes a conservation significance scale rating native vegetation on a "Low" to "Very High" scale. "High" referred to in Table 12-4 was a direct reference to this scale within SPP 2.8 (WAPC, 2010).</p> <p>A Draft Offsets Strategy is currently under development which will elaborate on the use of SPP 2.8 in quantifying offsets.</p>
28.	<p>PTA proposes to increase the conservation significance of an area within Ningana Bushland (p. xi). It is unclear how the PTA proposes to do this or what this means. Please provide further details of what this means and how the PTA proposes to increase the conservation significance of the area.</p>	<p>The PTA proposes to provide funding to the DBCA to manage the entire Ningana Bush Forever Site 289 for a period of seven years. Consultation regarding this offset is ongoing. Management measures are being developed by the DBCA and are likely to include on-ground works to maintain the site's environmental values. Additional information regarding the Ningana Bushland Bush Forever Site 289 offset proposal will be provided within the standalone Draft Offset Strategy that is currently under development.</p>
29.	<p>EPA Services notes that there is some overlap with a previous Commonwealth assessment and offset site (EPBC2011/6021 Eglinton South Yanchep residential development). Similar to what was required for the Yanchep Part 1 Proposal and the intersect with previous Commonwealth assessments, please provide details of the offset to allow the EPA to assess the suitability of the offset under the State approval process and State Offset Policy. EPA Services is supportive of the proposed</p>	<p>Approximately 3.93 ha of the Carnaby's Black Cockatoo foraging habitat recorded within the development envelope was approved to be cleared under the Eglinton / South Yanchep Residential Development approval under the EPBC Act (2011/6021). This separate development Proposal was assessed on Preliminary Documentation and approved on 16 June 2013 (EPBC 2011/6021). The PTA will include the 3.93 ha of Carnaby's Black Cockatoo foraging habitat within the YRE Part 2 development envelope approved to be cleared under EPBC 2011/6021</p>

No.	EPA Services comment	PTA's response
	<p>addition of 0.14 ha of impact for Carnaby's Black Cockatoo habitat offset calculations to account for overlap with the existing offset. Please provide information on the location of this site.</p>	<p>within the Proposal's total calculated impact to Carnaby's Black Cockatoo habitat, despite the overlap.</p> <p>The Commonwealth set conditions under EPBC 2011/6021, which included the acquisition or provision of 197.42 ha of Carnaby's Black Cockatoo habitat to offset the significant residual impact of this action on Carnaby's Black Cockatoo habitat. 0.14 ha of the 197.42 ha offset provided under EPBC 2011/6021 is located within the YRE Part 2 development envelope. As such, the Proposal will impact 0.14 ha of an offset provided under another approval. The PTA will compensate for the impact of the original action for which the offset was a condition of approval as well as the impact of the Proposal on this area. As such an additional 0.14 ha of impact to foraging habitat has been added to the significant residual impact to be offset.</p>
30.	<p>The significance of impacts to Ningana Bushland have not been adequately represented in the offset section. Please review and revise.</p>	<p>Impacts to Ningana Bushland are discussed in further detail within the Ningana Bushland report prepared by the PTA and included as Attachment 2 – Supporting Information.</p> <p>Impacts to Ningana Bushland will also be summarised within the Draft Offset Strategy that is currently under development.</p> <p>The significance of impacts to Ningana Bushland has been considered:</p> <ul style="list-style-type: none"> • Through the identification of the Proposal's significant residual impact to Ningana Bushland and requirement for an offset. • In initial quantification of the required offset guidance provided within SPP 2.8 to initially quantify the required offset • In development of the proposed offset, in accordance with the information provided within WA Offset Guidelines (Government of WA, 2014). <p>The Bush Forever offset, which will be detailed within the Draft Offsets Strategy, exceeds the offset requirement quantified in accordance with SPP 2.8. This is because the PTA has considered additional information such as the importance of Ningana Bushland to the community, the site's environmental values, impacts and the provision</p>

No.	EPA Services comment	PTA's response
		of a connection from the coast to Yanchep National Park.
31.	Table 12-4 'Remaining Area Total' has been incorrectly calculated. Please review and revise.	The Remaining Area Total should be 401.07 ha in Table 12-4. This will be corrected within the Draft Offsets Strategy which is currently under development.
32.	Please provide further details of the clearing already undertaken under clearing permit 7843/1 within the Yanchep Part 2 development envelope and any offsets that may have already been applied for the significant residual impact to Black Cockatoo habitat. EPA Services has been advised that clearing under this permit is now complete.	To facilitate preliminary geotechnical investigations for the YRE Proposal, the PTA applied for a clearing permit under Part V of the EP Act. Native Vegetation Clearing permit CPS 7843/1 was issued by the DWER on 31 August 2018 for the clearing of 6.56 ha of native vegetation for the purposes of geotechnical and UXO investigations only. The clearing permit, valid until 2029, authorised 6.56 ha to be cleared within the entire YRE Project (Part 1 and 2) development envelope. The permit was not divided into portions for Parts 1 and 2 of the YRE Project. Approved clearing under the permit included 5.74 ha of Carnaby's Black Cockatoo habitat and impacts were required to be offset as a condition of the permit. This offset was in the form of a payment to DWER. Accordingly, the calculation of impacts to Carnaby's Black Cockatoo habitat as part of this Proposal will include at least a portion of the clearing of 2.96 ha of vegetation that has already been authorised, cleared and offset under CPS 7843/1. Further information will be provided in the Draft Offsets Strategy that is currently under development.
33.	Please provide further details (in confidence) of the proposed land acquisition and/or on ground management sites proposed to offset the significant residual impacts of the Proposal in order that the EPA can assess the suitability of the sites. In particular, the locations of the proposed sites should be provided in confidence.	A separate confidential memorandum containing Commercial in Confidence information related to the Yanchep Rail Extension Part 2 Draft Offset Strategy will be provided to the EPA to assist in the assessment process.
34.	Please provide the context for which of the offset options each Commonwealth offset calculator output relates. It is currently unclear which table containing explanation of the values used relates to each output. Please either link the explanatory tables to the appropriate output, or include the explanatory table with	Revised Commonwealth Offsets calculators will be included as appendices to the Draft Offsets Strategy that is currently under development. Additional identifying information will be included for each calculator to distinguish to which offset site or environmental value the calculator applies. Further explanatory information on use and

No.	EPA Services comment	PTA's response
	the output in the appendix.	interpretation of data presented within the calculators will be provided within the Draft Offsets Strategy.
35.	Please provide further details regarding specific on-ground activities to offset the Banksia woodland TEC proposed as part of the on-ground management offset for Bush Forever.	<p>A separate direct land acquisition offset is proposed to counterbalance the significant residual environmental impacts to Banksia Woodlands TEC from the YRE Proposal.</p> <p>The Draft Offsets Strategy which is currently under development will detail the proposed Banksia Woodlands TEC offset proposal.</p>
36.	<p>For the on-ground management option to be considered a suitable offset for Bush Forever, the following further information will be required:</p> <p>a. Details on how management actions to avoid or mitigate the impacts of the Proposal, including indirect impacts and ecological connectivity, will be delineated from actions that form part of the offset.</p> <p>b. If available, please provide spatial data for vegetation types, vegetation condition and fauna habitat for Ningana Bushland as mapped in Appendix O. This will be required to measure the objectives of on-ground management to realise the conservation outcome.</p>	<p>The PTA proposes to provide funding to the DBCA to provide on-ground management of the entire Ningana Bushland Bush Forever Site 289 to counterbalance the Proposal's impacts to the site. Negotiation of offset details within stakeholders including DBCA, the proposed land manager and WAPC, the land owner, is ongoing.</p> <p>The DBCA is preparing a list of proposed management measures to be conducted within the entire Bush Forever Site 289 to maintain the site's environmental values. This will form the proposed Bush Forever offset package. DBCA's on-ground management works will be conducted outside the Proposal's development envelope and in addition to management actions proposed to be conducted by the PTA under the CEMP.</p> <p>Spatial data can be provided to EPA services with submission of the Draft Offsets Strategy, that is currently under development.</p>
37.	EPA Services notes that the on-ground management offset will need to demonstrate achievement of outcomes consistent with the values of the Bush Forever site being impacted. These values are not only its tenure or status but also includes the environmental values that were identified as part of its inclusion in Bush Forever, including fauna habitat and ecological linkage.	<p>The DBCA is preparing a list of proposed management measures to be conducted within the entire Ningana Bushland Bush Forever Site 289 to maintain the site's environmental values. This will form the proposed Bush Forever offset package.</p> <p>Final management measures will be provided within the Draft Offsets Strategy, that is currently under development.</p>
38.	Please include details of how proposed on-ground management will demonstrate achievement of outcomes consistent with the values of the Bush Forever site being impacted.	

No.	EPA Services comment	PTA's response
39.	<p>Please note that offsets for State listed Threatened Ecological Communities will need to aim to offset at least 100 per cent of the significant residual impact. The statement in section 12.8.2 and similar comments in sections 12.9.2 and 12.10.2 that <i>'The offset site must support approximately 0.21ha of SCP 26a habitat based on a minimum of requirement to offset 90% of the impact'</i> is incorrect and it is unclear what these calculations are based on. Please clarify.</p>	<p>The Draft Offsets Strategy is currently under development and will specify the proposed offset to counterbalance 100% of the significant residual impact. The PTA has a sufficient quantity of suitable and appropriate offsets to counterbalance 100% of the significant residual impact to all environmental values.</p> <p>The Draft Offsets Strategy and appendices including the Commonwealth Offsets Calculators refer to and quantify offsets equivalent to 100% of the calculated requirement, unless otherwise indicated, i.e. 90% has also been calculated for the Carnaby's Black Cockatoo offset where Black Cockatoo research is also being funded as part of the offset package.</p>
40.	<p>Section 12.7.3 (p. 251) and Table 12-38 (p. 296) refers to a Gingin land acquisition offset for potential breeding trees for Carnaby's cockatoo (Section 12.12). Section 12.12 refers to the Keysbrook site and there does not appear to be any further mention of a Gingin site. Please clarify the sites that may be suitable as land acquisition offsets.</p>	<p>The development of the Draft Offsets Strategy has progressed and:</p> <ul style="list-style-type: none"> • No longer includes the use of the Keysbrook Site as a proposed offset for the Proposal. • The proposed Gingin Site has been replaced by sites that have been acquired. <p>Further detail will be provided within the Draft Offsets Strategy that is currently under development. However, the PTA is proposing that the 135 potential breeding trees will be sourced within the acquired offset sites including the Nowergup/Neerabup site, Carabooda site, Cataby site and Lowlands site, in that order based on availability.</p>
41.	<p>EPA Services understands that the Lowlands and Keysbrook sites have been proposed as potential offset options for the Thornlie-Cockburn Link. If the two sites are also proposed to be used to offset the Yanchep Part 2 Proposal, further clarification is required regarding the accounting and separation between these offsets for each Proposal.</p>	<p>The Keysbrook site is no longer included in the revised Draft Offsets Strategy for the Proposal. The Keysbrook site has been allocated to the Thornlie-Cockburn Link (TCL) project.</p> <p>The Lowlands site will be used to offset the shortfall of Carnaby's Black Cockatoo foraging habitat and potential breeding trees that remains after available Carnaby's Black Cockatoo foraging habitat and potential breeding trees within the Nowergup/Neerabup site, Carabooda site and Cataby site has been allocated.</p> <p>The TCL Project is proposing to use the Lowlands Site to offset different environmental values, which will make separating the two offsets</p>

No.	EPA Services comment	PTA's response
		<p>between the two proposals straightforward.</p> <p>However, the Lowlands Site may also be used to counterbalance impacts to Carnaby's Black Cockatoo foraging habitat and potential breeding trees from the TCL Project.</p> <p>Quantification of the extent of each environmental value used within each offset site for each project will be provided within the final Offsets Strategy prepared for each project. This will include a table of data, spatial data and mapping, where practicable.</p>
42.	<p>Research funding – Carnaby's Black Cockatoo offset – please address the State's research offset requirements set out in the Offset guidelines. Any proposed research should be consistent with the EPA's 2019 Technical Report on Carnaby's cockatoo. Please note that any research funded as part of an offset is to be made publicly available (open access) and this should be included in any funding agreement between the PTA and the research body (Murdoch University in this instance).</p>	<p>The PTA is progressing negotiations with Murdoch University regarding the Proposal's scope of work and implementation and reporting arrangements. The PTA notes that research funded as an offset will be made publicly available and this will be built into the PTA's agreement with Murdoch University.</p> <p>Further information addressing the State's research offset requirements provided within the WA Offset guidelines will be provided within the Draft Offsets Strategy that is currently under development</p>
Fragmentation and severing of regional ecological linkage		
43.	<p>Further information is required to adequately identify the biodiversity values of the Ningana Bushland (BF 289) and to allow for a thorough analysis of the potential impacts from the Proposal.</p> <p>Using existing information, please discuss the regional significance of Ningana Bushland. Please provide an evaluation of the area/size of Ningana Bushland, as a large contiguous habitat, compared to similar sites or habitat in the northern subregion and discuss its importance as a faunal refuge in a fragmented urban landscape.</p>	<p>Refer to Attachment 2 – Supporting Information.</p>
44.	<p>Using available information, and using examples from other similar projects, please expand on the information provided in Table 11-1 to describe how the preferred alignment (Option 1)</p>	<p>The alignment through the Ningana Bushland was identified in the 1992 North-West Corridor Structure Plan which recommended deviating the railway alignment from the future freeway median into future town</p>

No.	EPA Services comment	PTA's response
	<p>was the chosen option as opposed to Options 2-4 (in particular tunnelling and viaduct construction). For example, it would be useful to understand if Options 2-4 are technically and practically feasible options as a means of minimising impacts.</p> <p>This information should further inform the development envelope width and the alignment through a Bush Forever site along the existing rail reservation in preference to existing road alignments or infrastructure corridors.</p> <p>In addition, please advise if there are any additional construction techniques/methods that are feasible and proven and can be implemented through the Bush Forever site to minimise fragmentation effects.</p>	<p>centres at Alkimos, Eglinton and Yanchep to encourage transit oriented development. Once the deviation was finalised from a planning perspective, then the railway alignment was constrained to an alignment along Marmion Avenue or through Ningana Bushland. A Marmion Avenue option was discounted as it would reduce opportunities to maximise the number of residents living within walking distance of the train stations.</p> <p>The PTA considered four alternative alignments and construction methods at various stages in the YRE Proposal's planning:</p> <ul style="list-style-type: none"> • Option 1: At grade construction along the referred alignment (west). • Option 2: At grade construction along the alternative alignment (east). • Option 3: Tunnel bore construction along the referred alignment. • Option 4: Viaduct (bridges) construction along the referred alignment. <p>The PTA has undertaken considerable investigation into the feasibility of Options 1-4 and concluded for a variety of reasons that Option 1 is the most practical and cost effective option. Available information and real project examples have been reviewed and provided the following insights:</p> <ul style="list-style-type: none"> • Tunnelling (Option 3) is technically possible but generally constructed only where there are significant above ground infrastructure constraints such as city centres and airports e.g. Esplanade Station to Perth Station, Forrestfield –Airport Link (FAL). The cost to tunnel through Ningana Bushland being ten times higher than an at-grade solution would result in an increase to the overall YRE project budget of approximately 120%, based on costs from the FAL project. Given that the State and Commonwealth governments have already committed fixed amounts of funding for the YRE project, this additional 120% has the potential to increase the project costs to beyond the quantified benefits, making investment unviable. If the project

No.	EPA Services comment	PTA's response
		<p>does not proceed then the result will be continued reliance on private vehicle transport with associated greenhouse gas emission increases as development in this area grows. It is also important to reiterate that tunnelling still requires some surface clearing to construct access tracks, maintenance shafts and emergency egress shafts.</p> <ul style="list-style-type: none"> • A viaduct option (Option 4) would involve the construction of rail bridges instead of embankments in areas of fill with areas of cut still required. Viaducts are typically constructed over rivers and valleys with bedrock or other strong geotechnical ground conditions close to the ground surface e.g. over the Swan or Canning Rivers. Piers for a viaduct in Ningana Bushland would need to be excavated to bedrock or if geotechnical conditions are not favourable shallow foundations will be constructed, which involve a larger wider cut into the ground and pouring concrete to provide the foundations. <p>Option 1 is the final alignment for the Proposal. Options 1 and 2 are discussed in more detail in Attachment 2 – Supporting Information.</p>
45.	<p>The ERD does not adequately acknowledge the level of significance of the impacts from fragmentation and cumulative impacts from future development as outlined in appendices Bamford 2019a, Bamford 2019b and GHD 2019.</p> <p>Using the existing information from the above appendices, please provide a fuller assessment of the potential impacts from fragmentation of Ningana bushland and an assessment of cumulative impacts from future development as they relate to the ecological connectivity provided by Ningana bushland.</p>	<p>The PTA has provided an assessment of the potential impacts from fragmentation of Bush Forever Site 289 (Ningana Bushland) (in Section 5.5.6 and 6.5.3 of the ERD) and within Attachment 2 – Supporting Information.</p> <p>To mitigate the potential impacts of the Proposal as a result of fragmentation, the PTA is proposing the installation of two green bridges to facilitate fauna movements and provide ecological linkage between bushland areas.</p> <p>Cumulative impacts to flora and vegetation from the Proposal at a local and sub-regional scale have been addressed in Section 5.5 of the ERD (ELA 2019a) and have been summarised in comment 13 above. Cumulative impacts to terrestrial fauna habitat from the Proposal at a local and sub-regional scale have been addressed in Section 6.5.1 of the ERD (ELA 2019a).</p> <p>Ningana Bushland has already been fragmented by the construction of</p>

No.	EPA Services comment	PTA's response
		<p>Marmion Avenue in 2008. The implementation of the Proposal will further fragment Ningana Bushland (see Attachment 2 – Supporting Information). The future Mitchell Freeway extension is proposed along the south-eastern edge of Ningana Bushland, and as shown in Figure 2, future urban development is planned at the following locations surrounding Ningana Bushland:</p> <ul style="list-style-type: none"> • South Yanchep – to the east through to the coast • Eglinton West and Allara Estates – to the south • Jindowie – to the north <p>The cumulative impact of each of these urban developments will further fragment the connectivity of Ningana Bushland to other areas of bushland. Therefore, the planned development surrounding Ningana Bushland will create further pressure on the area of bushland and increase the importance of maintaining the site in the future. For this reason the PTA has proposed a holistic mitigation strategy where green bridges will be installed within the southern part of Ningana Bushland (See Attachment 2 – Supporting Information) and the Draft Offsets Strategy that is currently under development includes management of the entire of Ningana Bushland.</p>
Principles table – principle 5 waste minimisation		
46.	<p>The ERD states that the total volume of excess fill will be dependent on final design taking into consideration the location and length of bridges in place of fill in undulating landscape through Ningana bushland.</p> <p>Where available, please provide indicative and/or potential locations of bridges, fauna overpasses/underpasses in Ningana Bushland.</p>	<p>Although the total volume of excess fill is dependent on the final design, which will be completed by the construction contractor, the preliminary design work undertaken to date indicates that the earthworks for YRE Parts 1 and 2 could result in an excess of up to 2 million cubic metres of material. This is as a result of the majority of the alignment through residential areas being designed within a cutting to reduce operational noise and vibration impacts. The commercial value of this material is expected to be high as it is unlikely to be contaminated, and will comprise sand geotechnically suitable for fill material and limestone which could be crushed for use as road base or in drainage structures. The PTA is in ongoing discussions with adjacent developers and government agencies to identify opportunities for local reuse of the</p>

No.	EPA Services comment	PTA's response
		<p>material.</p> <p>The earthworks design through the Ningana Bushland has been balanced to reduce the volumes of material transport in and out of the constrained rail corridor in this location.</p> <p>Please refer to Attachment 2 – Supporting Information, which provides further information on the cut and fill earthworks required within Ningana Bushland. Within Ningana Bushland, the current rail design does not require the construction of a rail bridge, as the alignment does not pass any substantial physical obstacle such as a body of water, valley or any existing roads.</p> <p>A figure showing the southern indicative zone to the south of Ningana Bushland where green bridges are able to be constructed is provided in Attachment 2 – Supporting Information.</p>

* There was no comment number 24 in the comments summary provided by EPA Services. The original comment numbering has been retained.

Table 3: Responses to public submissions

No.	Submitter	Submission and/or issue	PTA's response
General comments			
1.	ANON-GUMV-5QAM-K ANON-GUMV-5QAU-U ANON-GUMV-5QA3-S Urban Bushland Council Sustainable Population Australia	The submitters are concerned about the impacts of continued urban sprawl across the Swan Coastal Plain; the Proposal will facilitate urban-sprawl so far from the Perth Central Business District.	<p>The selection of new areas for development occurs largely in planning processes captured in the Metropolitan Regional Scheme (MRS) and later implemented through lower-level planning processes such as local structure plans and subdivision approvals. These higher level planning activities consider a wide range of factors in how future communities will be developed, including making suitable provisions for major transport routes for those communities. Planning is undertaken by the Western Australian Planning Commission (WAPC) and has been ongoing in the vicinity of the Proposal for several decades, as described in Section 2.2.1 of the ERD (ELA 2019a).</p> <p>The population of the northwest subregion is predicted to increase from 322,490 in 2011 to more than 740,000 in 2050 (DPLH and WAPC 2018b). This Proposal is being developed first and foremost in response to existing and planned urban development in the northwest subregion. It aims to provide essential transport services to the rapidly expanding northern coastal suburbs and, as described in Section 2.1 of the ERD (ELA 2019a), alleviate dependence on private vehicle road transport. The Proposal will foster the continued growth and development of activity centres by stimulating higher density land use and achieve better sustainability outcomes with planned communities, as opposed to 'opening up' new areas for development.</p> <p>The PTA acknowledges that new urban developments in the vicinity of the Proposal are being advanced by other parties separately to this Proposal.</p>
2.	ANON-GUMV-5QA3-S ANON-GUMV-	Submitters are concerned that alternative transport options and/or alignments have not been adequately considered. Alternatives include tunnelling a direct alignment, using	The PTA evaluated 11 alternative transport options as part of a Business Case submitted to the State and Commonwealth governments in 2017. These options included a status quo option as well as bus and light rail options. Further detailed analysis was

No.	Submitter	Submission and/or issue	PTA's response
	5QAK-H ANON-GUMV-5QAY-Y Quinns Rock Environmental Group Urban Bushland Council Inc. Sustainable Population Australia The Wildflower Society	existing road infrastructure, or light rail, express bus, or a trackless tram.	<p>undertaken of three short listed options against critical project selection criteria defined by Infrastructure Australia, the Commonwealth Government's independent advisor on infrastructure of national significance. The Business Case recommended that the State and Commonwealth government invest in a heavy rail solution and both governments have committed funding on this solution. Heavy rail was recommended based on a number of reasons, such as:</p> <ul style="list-style-type: none"> • Compatibility with existing heavy rail system, including track system and railcars, whereas a light rail or trackless tram system would require significant additional investment in terms of trams, new signalling systems and new maintenance facilities. • Faster journey time to Perth than light rail or bus option. • Ability to carry greater numbers of passengers than light rail or bus option. • Reduction in road congestion which would not be achieved with a bus solution. • At grade rail system is cheaper than tunnelling and also allows greater integration with town centres.
3.	ANON-GUMV-5QA3-S	The submitter is concerned that the rail will facilitate more coastal development that will be at risk of climate change impacts such as rising sea-level and storm surge events.	<p>The Proposal is being developed first and foremost in response to existing and planned urban development in the northwest subregion. It aims to provide essential transport services to the rapidly expanding northern coastal suburbs. It is however recognised that proximity to public transport services is generally considered an attractive feature of residential areas.</p> <p>The planning undertaken by the WAPC has included consideration of climate change risks including sea-level rise as part of the DPLH's Coastal Vulnerability Assessment and <i>State Planning Policy 2.6 State Coastal Planning Policy</i>.</p> <p>The Proposal is not located in an area considered at risk of rising</p>

No.	Submitter	Submission and/or issue	PTA's response
			<p>sea levels or storm surge events in the foreseeable future, due to its distance from the coast and elevation above sea level.</p> <p>The consideration of climate change impacts to coastal developments is the responsibility of the proponents of those developments and the relevant planning authorities that assess and approve them.</p>
4.	<p>Sustainable Population Australia</p> <p>Urban Bushland Council</p>	<p>The main project justification, that the rail reserve has been previously planned and that the Proposal location is limited by the already approved surrounding urban developments, is inadequate to warrant the impacts.</p>	<p>The population of the northwest subregion is predicted to increase from 322,490 in 2011 to more than 740,000 in 2050 (DPLH and WAPC 2018b). Although this population increase is a prediction and not a certainty, key long-term transport infrastructure such as this Proposal must take into account the existing and predicted transport needs of communities it will serve. The Proposal is therefore being developed first and foremost in response to existing and planned urban development in the northwest subregion.</p> <p>Key infrastructure projects such as this Proposal require iterative planning over long time periods and at several scales. As described in Sections 2.1 and 2.2 of the ERD (ELA 2019a), planning for the YRE Project has been ongoing for several decades via other planning processes. Environmental impacts have already been considered to some extent in these processes.</p> <p>The Proposal currently under assessment is the latest and most detailed iteration of the project available. The mitigation hierarchy has been applied to reduce the Proposal's environmental impact as described in the ERD (ELA 2019a) and elsewhere in this RTS. While the assessment is strictly unable to consider the entire planning history it is important to recognise that some greatly improved environmental outcomes have been achieved through the large-scale avoidance of impacts to areas of high ecological significance.</p>
5.	<p>ANON-GUMV-5QAM-K</p> <p>ANON-GUMV-</p>	<p>Submitters are concerned that the new rail will facilitate more impacts outside the Proposal envelope; the rail will give rise to more</p>	<p>This Proposal is being developed first and foremost in response to existing and planned urban development in the northwest subregion. It aims to provide essential transport services to the</p>

No.	Submitter	Submission and/or issue	PTA's response
	5QAU-U ANON-GUMV-5QA3-S Sustainable Population Australia Urban Bushland Council	development leading to further loss of vegetation outside the footprint of the rail along the Swan Coastal Plain, including TECs, Bush Forever sites and habitat for threatened fauna and the neighbouring and future impacts should be included in the assessment so that all impacts are considered.	<p>rapidly expanding northern coastal suburbs. While the Proposal will foster the continued growth and development of activity centres, it aims to stimulate higher density land use and achieve better sustainability outcomes with planned communities, as opposed to 'opening up' new areas for development. The selection of new areas for development occurs largely in planning processes captured in the MRS and lower-level planning schemes.</p> <p>The PTA acknowledges that new urban developments in the vicinity of the Proposal are being advanced by other parties separately to this Proposal. Those developments are subject to other planning and approval processes which contain mechanisms to consider environmental impacts including cumulative impacts to TECs, Bush Forever sites and threatened fauna. The planning processes also identify high value environmental values for reservation for conservation purposes. The PTA notes that cumulative impacts of both the YRE Project and expected urban development were estimated in the ERD (ELA 2019a).</p>
Flora and Vegetation			
6.	ANON-GUMV-5QA3-S ANON-GUMV-5QAK-H ANON-GUMV-5QAY-Y Urban Bushland Council Inc. The Wilderness Society Sustainable Population Australia	The submitters are concerned that the Avoidance Principle of the Offsets Policy regarding rail alignment has not been considered adequately for TECs and Bush Forever sites. The rail should be realigned to avoid loss of TECs and Bush Forever sites as clearing of these protected areas is not acceptable. TECs that are listed as critically endangered are at real threat of becoming extinct and therefore should never be cleared. Cost is not an adequate justification for impacting TECs and Bush Forever.	<p>The WA Environmental Offsets Guidelines (Government of Western Australia 2014) define the mitigation hierarchy that proponents must apply. The mitigation hierarchy consists of four steps, to be applied in this order: avoidance, minimisation, rehabilitation, offset.</p> <p>For impacts to Bush Forever and TECs, opportunities for the Proposal to avoid impacts are principally through:</p> <ul style="list-style-type: none"> • Positioning of the alignment – please refer to items 2 and 4 in Table 3 and ERD Section 2 (ELA 2019a). • Construction method used – please refer to item 2 in Table 3 and ERD Sections 2.3 and 11.1 (ELA 2019a). • Minimising the width of the development envelope – please refer to item 6 in Table 2, item 7 in Table 3 and ERD Section 2.2.4 (ELA 2019a).

No.	Submitter	Submission and/or issue	PTA's response
	The Wildflower Society		<p>As explained in item 4 of Table 3, some avoidance was achieved in earlier planning processes prior to this Proposal, which is summarised in ERD Section 2.2.4 (ELA 2019a).</p> <p>The avoidance of impacts to Bush Forever and TECs directly for this Proposal is summarised in ERD Table 5-17 (ELA 2019a).</p> <p>Further consideration of how impacts to flora and vegetation have been avoided or minimised is provided below.</p> <p><u>Avoidance</u></p> <ul style="list-style-type: none"> • The northern extent of the development envelope was modified to reduce clearing of native vegetation and avoid direct impacts to Bush Forever site 288 (Yanchep National Park and Adjacent Bushland). • Previous MRS amendments 1192/57 and 1248/57 have determined the points of entry into Ningana Bushland for the 'Railways' reservation, however the development envelope has been positioned to: <ul style="list-style-type: none"> ○ Minimise impacts to the Quindalup dune system; and ○ Maximise the size and viability of the two remaining portions of Ningana Bushland. <p>See Attachment 2 – Supporting Information.</p> <ul style="list-style-type: none"> • To construct the Proposal the volumes of material required to balance the cut/fill ratios for the entire alignment have been minimised. This process has limited the width of the development envelope, thereby avoiding further clearing of native vegetation and associated impacts to conservation significant flora and ecological communities. • Alternative alignments through Ningana Bushland were considered however the other options would have resulted in greater impacts to native vegetation, landforms (parabolic dunes) and karst systems (caves and voids) which may be

No.	Submitter	Submission and/or issue	PTA's response
			<p>habitat for subterranean fauna.</p> <ul style="list-style-type: none"> Through selection of the final alignment (Option 1) as described in Attachment 2 – Supporting Information) the amount of clearing for the Proposal has been reduced, and further native vegetation impacts avoided. <p>Not all impacts could be avoided, so the next step in the mitigation hierarchy (minimisation) has been implemented to reduce the extent and severity of impacts. These are also summarised in ERD Table 5-17 (ELA 2019a).</p> <p>The PTA may stabilise batters in some locations by using native plantings. While native species would be used, such plantings are not able to restore previous vegetation communities (including TECs) and therefore cannot be considered rehabilitation in the mitigation hierarchy. There are no other areas of temporary clearing that would be rehabilitated after construction as PTA has already located all temporary construction access and laydown areas within areas already required for long-term development (e.g. on planned future roads).</p> <p>Where significant residual impacts remain after avoidance, minimisation and rehabilitation have been applied, the PTA has proposed offsets in accordance with the fourth and final step in the mitigation hierarchy and will be described in the Draft Offsets Strategy that is currently under development.</p>
7.	The Wildflower Society	The submitter is concerned that minimisation options have not been adequately considered. Sections of the development envelope have jagged, irregular boundaries. Provide justification for the rail reserve varying from 40 m wide to up to 127 m wide.	<p>Further consideration of how impacts to flora and vegetation have been avoided is provided below. The development envelope encompasses the total area of clearing required for the Proposal, comprising the final footprint of constructed infrastructure as well as areas required for construction and laydown.</p> <p>As described in Section 2.3 of the ERD (ELA 2019a), the Proposal includes infrastructure other than just the railway tracks. The development envelope also accommodates associated infrastructure. The following construction and operational aspects</p>

No.	Submitter	Submission and/or issue	PTA's response
			<p>have been captured in the development envelope (shown in Figure 2):</p> <ul style="list-style-type: none"> • Railway extension - dual track railway and associated construction requirements (e.g. batters). • Yanchep Station – at grade railway station, car park and associated facilities. • Three road bridges. • Construction activity areas – operation of plant and machinery for earthworks and construction of infrastructure. • Site offices. • Construction laydown areas. • Stockpiling areas. • Drainage infrastructure, including drainage basins. • Fencing. • Access roads. • Principal Shared Path. <p>Embankments and cuttings are required in many places due to the highly undulating surface elevations. Wider embankments and cuttings are needed where the difference between the existing surface elevation and the railway elevation is greatest, leading to a wider development envelope.</p> <p>The development envelope also includes construction access and laydown areas. These areas are needed for construction of the Proposal but do not form part of the final footprint. The PTA has intentionally located the majority of these near proposed stations and within areas that are part of future urban development to minimise overall impacts.</p> <p>The “jagged, irregular boundaries” of the development envelope are the result of incorporating all of the above elements into the</p>

No.	Submitter	Submission and/or issue	PTA's response
			<p>development envelope.</p> <p>Further consideration of how impacts to flora and vegetation have been minimised is provided below:</p> <ul style="list-style-type: none"> • Where practicable, the size of the development envelope has been reduced to minimise vegetation clearing. For example, the section of the development envelope north of Yanchep Beach Road (Figure 2) is an average width of 40 m which is the minimum width required to construct and operate the railway. Another section is between Ningana Bushland and Yanchep Beach Road. • The PTA proposes to utilise two key sections of the development envelope for temporary construction laydown, stockpiling and other construction activities: <ul style="list-style-type: none"> ○ The footprint for Yanchep Station. ○ The section north and south of Yanchep Beach Road (Figure 2). <p>This has minimised the width of the development envelope and associated native vegetation clearing in other sections (e.g. within Ningana Bushland).</p> • The development envelope for the Proposal was determined based on the minimum construction and operational requirements for the Proposal. The development envelope therefore has been reduced as far as practicable. • In particular, the PTA investigated opportunities to minimise the size of the development envelope through Ningana Bushland, due the high environmental value. As shown in Attachment 2 – Supporting Information, the size of the development envelope is the minimum required to construct and operate the Proposal through Ningana Bushland. The width of the development envelope, between 80 m and 130 m, is needed for construction access and working room,

No.	Submitter	Submission and/or issue	PTA's response
			<p>earthworks, access tracks, PSP and drainage. .</p> <ul style="list-style-type: none"> • Within Ningana Bushland, the development envelope intersects three patches of Banksia Woodland TEC (as shown in Figure 3. The PTA investigated opportunities to minimise the width of the development envelope through these three patches, however construction methods are highly constrained at these locations. Therefore, the size of the development envelope has not been reduced. <p>For further discussion on how the PTA has avoided impacts associated with the development envelope, please see item 6 in Table 2 and ERD Section 2.2.4 (ELA 2019a) and Attachment 2 – Supporting Information.</p>
8.	Urban Bushland Council Quinns Rock Environmental Group	<p>The submitters are concerned about indirect impacts to Bush Forever site and TECs. There will be indirect impacts to BFS 289 from weeds, Phytophthora, altered hydrology and quality, and potential blowouts to Banksia woodlands and other remnants from changed dune landforms. Edge effects created by the clearing and fragmentation will result in further loss and extent of TECs.</p> <p>Fragmentation of Bush Forever 289 will be facilitated via public access through the proposed shared path. There is no adaptive management to deal with the weeds, disease or feral animal control impacts.</p> <p>The proposed feral animal control within a 69.59ha portion of Ningana bushland is not going to address the impacts of feral animals in Ningana bushland as a whole.</p> <p>Management efforts will be wasted if Ningana Bushland lacks an overall management plan. A</p>	<p>See above items 5, 6 and 7 in Table 3.</p> <p>Since the publication of the ERD in May, the PTA has further developed its offsets strategy outlined in section 12 of the ERD (ELA 2019a) and a YRE Part 2 Draft Offsets Strategy is under development. Based on further consultation with relevant Government stakeholders, the PTA has revised its assessment of the significant residual impact to Ningana Bushland Bush Forever Site 289 and the proposed offset to counterbalance the impact.</p> <p>To counterbalance the Proposal's impacts to the Ningana Bushland, the PTA is proposing to provide funding to the DBCA to provide on-ground management within the entire Ningana Bushland. This offset was originally described in ERD Section 12.14 (ELA 2019a) as targeted actions to improve a 69.59 ha area of Ningana Bushland. However, the PTA has since consulted with both the WAPC (as current owner of Ningana Bushland) and the DBCA (the agency identified as having the experience to conduct specific on-ground site management) regarding considerably improving on-ground management within Ningana Bushland. Both the WAPC and DBCA support the long-term management of Ningana Bushland for conservation purposes and view it is a task best applied to the Ningana Bushland as an ecosystem. As a result, the PTA has now</p>

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		<p>management authority should be assigned and allocated resources to prepare and implement management plan for the whole Ningana Bushland.</p>	<p>proposed to expand on-ground management to include the entire Bush Forever Site 289.</p> <p>Under the revised Ningana Bushland Bush Forever Site 289 offset proposal, the PTA proposes to provide funding to the DBCA to provide on-ground management for the entire Ningana Bushland site for a period of seven years.</p> <p>Further details on the revised Ningana Bushland offset proposal will be provided in the YRE Part 2 Draft Offsets Strategy that is currently under development. Detailed arrangements regarding the funding, management and ownership arrangements and agreements are still being discussed and agreed between the DBCA, WAPC and the PTA. The PTA is committed to a Ningana Bushland offset proposal and will update the Draft Offsets Strategy as required.</p> <p>The PTA acknowledges the Proposal has the potential to indirectly impact Bush Forever and TECs as discussed in ERD Sections 5.5.6 and 5.5.7 (ELA 2019a). Please see also item 36 in Table 2 regarding management of the Proposal's indirect impacts to Ningana Bushland and TECs versus management proposed as part of offsets.</p>
9.	Urban Bushland Council	<p>The percentage of vegetation remaining for the Quindalup complex and Cottesloe complex - north as stated by PTA in section 5.5.1 (including cumulative impacts) and associated conclusions are inconsistent with the vegetation data provided in Appendix C of the EPA's <i>Interim Strategic Advice - Perth and Peel @ 3.5 million Environmental impacts, risks and remedies</i>.</p> <p>The data for the Yanchep Rail Proposal should be analysed at the Perth and Peel regional scale.</p>	<p>Vegetation complexes (and other environmental values) were reported in the ERD using three spatial scales relevant to this Proposal:</p> <ul style="list-style-type: none"> • Local – a 1 km buffer of the development envelope. • Subregional – the northwest subregion as defined in Perth and Peel@3.5million (DPLH and WAPC 2018a), corresponding to the City of Joondalup and City of Wanneroo local government areas. • Regional – the Perth subregion of the Swan Coastal Plain region of the Interim Biogeographical Regionalisation of Australia (IBRA).

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			<p>These scales are used to contextualise the environmental values and impacts of the Proposal. IBRA subregions are used for the regional scale for values such as vegetation and fauna habitat because the IBRA classifications have a biological basis. The reporting of data at this scale also follows an established practice for environmental impact assessment on the Swan Coastal Plain.</p> <p>The Perth and Peel regional scale used in <i>Interim Strategic Advice - Perth and Peel @ 3.5 million Environmental impacts, risks and remedies</i> (EPA 2015) was the boundary of the Strategic Assessment of the Perth and Peel Region (SAPPR), which has been suspended indefinitely. SAPPR's boundary has a planning basis and sits in size between the subregional and regional scales used in the YRE Part 2 ERD. Since the EPA's interim strategic advice was published in 2015, vegetation complexes for the Swan Coastal Plain have been redescribed by Webb et al. (2016) and updated data has been made available by DBCA (2019).</p> <p>Refer to Attachment 1 – Revised TEC/PEC Tables from ERD (ELA 2019a) for revised numerical values for vegetation complexes.</p>
10.	The Wilderness Society	There are inconsistencies throughout the ERD and appendices. For instance, Appendix C RSP Environmental Impact Assessment (2018) claims that 12.10 ha Banksia woodlands of the Swan Coastal Plain TEC will be cleared, while ERD says 8.07 ha (Ecological Australia, 2018). 32% of the variation between figures is considered significant. Both documents are using GHD 2018a and 2018b reports as a reference.	<p>The values presented in the ERD were the most current values available at the time of publishing. In some cases, impacts had been refined between the publishing of some of the supporting documents (e.g. the RPS document at Appendix C of the ERD) and the ERD. The PTA acknowledges there may have been some discrepancies between values presented in different documents.</p> <p>In developing this RTS, the PTA has checked the values presented. Updated and correct values are now presented in Attachment 1 – Revised TEC/PEC Tables.</p>
11.	The Wilderness Society	More detailed information should be provided to support PTA's claim that impacts of clearing 13.81 ha of SCP 24 and the loss of three individuals of flora species priority 3 is not a	The Proposal will result in the loss of 13.68 ha of Northern Spearwood shrublands and woodlands ('community type 24') PEC (see section 5.5.2 of the ERD, ELA 2019a). The Proposal's impact to the PEC will result in 4.11% of the PEC's extent cleared at a

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		significant impact of the Proposal.	<p>regional level (GHD 2019).</p> <p>This PEC is listed as Priority 3(i) by DBCA (2017) and is classified as a poorly known community that is known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation. In the absence of threats to many of these occurrences, it is unlikely the Proposal will cause an increase in conservation status in the PEC or associated flora or fauna species.</p> <p>Of the mapped extent of the Northern Spearwood shrublands and woodlands PEC, approximately 99% occurs within conservation areas at the regional scale, suggesting a very high degree of long-term protection of its known extent.</p> <p>The PEC is not an ecological community protected by statute (i.e. not formally recognised as being threatened), and no rare or endangered plants have been recorded in the mapped occurrences of the PEC within the development envelope. The occurrences of the PEC impacted by the Proposal are outside the formal conservation reserve system. Therefore, in accordance with the considerations of significance set out in the WA Environmental Offsets Guidelines (Government of Western Australia 2014), the residual impact to the PEC from the Proposal is not significant.</p> <p>The Proposal will result in the loss of up to 33 individuals of conservation significant flora within the development envelope (ELA 2019a). This includes individuals of two Priority 3 (poorly known taxa) taxa and two Priority 4 (Rare, Near Threatened and other taxa in need of monitoring) taxa.</p> <p>At a regional scale, losses represent approximately 10% of records for each of three of the taxa, and approximately two thirds reduction in the case of <i>Beyeria cinerea</i> subsp. <i>cinerea</i>. See Table 5-15 in the ERD (ELA 2019a). The perceived impacts to the three priority flora species at the local and regional scales are a reflection of limited targeted survey effort and available count (frequency) data (GHD 2019). GHD found that population estimates are</p>

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			<p>underrepresented, with the actual number of individuals expected to be much higher and that therefore, the impact calculations are considered very conservative (ELA 2019a).</p> <p>At the regional scale, <i>Hibbertia spicata</i> subsp. <i>leptotheca</i> and <i>Conostylis pauciflora</i> subsp. <i>euryrhipis</i> are well represented in conservation areas and <i>Conostylis pauciflora</i> subsp. <i>pauciflora</i> is poorly represented.</p> <p>Priority flora are not protected by statute (i.e. not formally recognised as being threatened) and the Proposal is not considered to cause the three species of priority flora to become threatened. Therefore, in accordance with the considerations of significance set out in the WA Environmental Offsets Guidelines (Government of Western Australia 2014), the residual impact to flora from the Proposal is not likely to be significant.</p>
12.	The Wilderness Society	Proper analysis and appropriate methodology should be applied regarding the unacceptable conclusion of minor constraints on the GHD report (2018).	A more detailed discussion around the survey limitations and how this has been factored into the outcomes of the ERD has been provided in item 16 in Table 2 .
13.	Quinns Rock Environmental Group The Wildflower Society	The ERD should be revised to assess the impacts to Tuart woodlands in the context of its recent listing under the EPBC Act as a critically endangered TEC and associated conservation advice.	<p>The EPBC Act prevents listing events from affecting actions that have already received a decision under section 75 as to whether they are a controlled action. These rules are explained in Environment Protection and Biodiversity Conservation Act 1999 (Cth) Policy Statement: Listing Events under the EPBC Act (DSEWPAC 2013). The effect of section 158A of the EPBC Act is that the MNES relevant to the assessment of an action are those that were already listed at the time the section 75 decision was made.</p> <p>Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain was first listed as a TEC in the Critically Endangered category on 4 July 2019. As this TEC was not listed at the time the Proposal (the action) was determined to be a controlled action on 12 November 2018 (EPBC 2018/8262), the TEC has no</p>

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			formal status under the EPBC Act in this particular assessment.
14.	The Wildflower Society	The Proposal envelope should be resurveyed for <i>Melaleuca</i> sp. Wanneroo which is now listed as an Endangered species and usually found in association with TEC SCP 26a. The consultants failed to find this species, possibly because the species was not listed at the time of the survey so they did not perform a targeted survey for the species.	<p><i>Melaleuca</i> sp. Wanneroo (G. J. Keighery 16705) was first listed under the EPBC Act as an Endangered species on 24 June 2019. For the same reasons as the Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain TEC described in item 13 in Table 3, it cannot be considered in the EPBC Act assessment of the Proposal.</p> <p>The primary flora surveys were undertaken by GHD in 2016 and 2017, which predates the 4 June 2019 listing under the EPBC Act. Additionally, no records of the species were identified from database searches. As such, the surveys did not include this species in the conservation significant species to be targeted.</p> <p>As noted by the submitter, this species occurs in association with <i>Melaleuca systema</i> and <i>M. huegelii</i> on limestone outcropping (TSSC 2018), for example as found with TEC SCP 26a. The field survey identified only 0.05 ha (500 m²) of vegetation within the development envelope that was mapped as vegetation type VT08 and aligns with TEC SCP 26a. However, <i>Melaleuca</i> sp. Wanneroo was not recorded as one of the 45 species identified at this location. VT08 was the only vegetation type with limestone outcropping.</p> <p>The PTA notes the environmental assessment has been undertaken by qualified botanists in accordance with the relevant guidelines and using the most up to date information (including conservation significant species) available at the time.</p>
15.	The Wildflower Society	Impacted flora should be recovered prior to clearing. Where clearing is unavoidable, threatened and priority flora species should be translocated to adjacent bushland. Large plants that can be feasibly moved such as <i>Xanthorrhoea</i> and <i>Macrozamia</i> species should be translocated to nearby open track or degraded areas.	<p>The PTA has committed to the salvage and relocation of <i>Xanthorrhoea</i> grass trees to be used within project revegetation rehabilitation areas and station landscaping. Cleared vegetation will also be mulched or logs kept for use in rehabilitation, landscaping and as furniture for green bridges. If there is a surplus of plants or mulch material then this will be offered to the DBCA, City of Wanneroo or other local environmental groups.</p> <p>The CEMP includes the following management actions relating to</p>

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		<p>The proponent should collect seed from native plants prior to clearing. The community should be given the opportunity to collect material for propagation or translocation prior to clearing, and this should be permitted by DBCA.</p> <p>Cleared material chipped / mulched and topsoil should be incorporated into revegetation along the rail line batters as per Main Roads successful best practice.</p>	<p>seed collection and topsoil:</p> <ul style="list-style-type: none"> • Staged collection of seed from areas within the development envelope. Harvesting will occur prior to clearing, and/or from felled vegetation by collecting fruit and drying and/or soaking/burning as required for each species, to release the seed. • Following vegetation clearing, topsoil will be salvaged. Topsoil will be stripped to a depth of approximately 50 mm and no greater than 100 mm to prevent dilution of the topsoil seed bank. • Salvaged topsoil will be directly transferred to an identified receiving site if there are such sites available at the time of stripping. If direct transfer is not possible, topsoil will be stockpiled in a dieback free area to a maximum height of 1.5 m. <p>The PTA has developed its own revegetation rehabilitation and landscaping specifications based on Main Roads' standards and lessons learned from other PTA projects.</p> <p>The current version of the CEMP is included as Attachment 3 – Construction Environmental Management Plan.</p>
16.	ANON-GUMV-5QA3-S	Clearing of vegetation will make the region hotter and dryer.	<p>It is acknowledged that removal of vegetation, and especially a reduction in tree canopy, in urban areas can lead to the 'Urban Heat Island Effect'.</p> <p>The PTA will work with the City of Wanneroo to ensure the Proposal complies with their <i>Local Planning Policy 4.8 Tree Preservation and Street Tree Policy</i> and the revegetation and landscaping will aim to replace as much vegetation and tree canopy as possible.</p> <p>The "Urban Heat Island Effect" will also be considered when designing the Proposal's infrastructure. Use of lighter station roof and paving materials can reduce heat by reflecting instead of absorbing energy from the sun.</p>

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			<p>The PTA is also working with the METRONET Station Precincts team plus the City of Wanneroo and private developers to ensure that sufficient green public open spaces are incorporated into the precincts surrounding the train stations.</p>
Terrestrial Fauna			
17.	ANON-GUMV-5QAK-H	<p>The submitter is concerned that the loss of habitat and fragmentation will contribute to the fauna extinction crisis.</p>	<p>Table 6-11 in the ERD (ELA 2019a) assesses the significance of impacts from clearing of fauna habitats for conservation significant fauna species. With the exception of Carnaby's Black Cockatoo, the impact of construction of the Proposal to fauna species is expected to be low, primarily due to the widespread availability of fauna habitat outside the development envelope.</p> <p>The WA Environmental Offsets Guidelines (Government of Western Australia 2014) define the mitigation hierarchy that proponents must apply. The mitigation hierarchy consists of four steps, to be applied in this order: avoidance, minimisation, rehabilitation, offset. Avoidance, minimisation and rehabilitation of fauna habitats are closely related to the same factors as described for Bush Forever and TECs in item 6 in Table 3.</p> <p>Where significant residual impacts remain after avoidance, minimisation and rehabilitation have been applied, the PTA has proposed offsets in accordance with the fourth and final step in the mitigation hierarchy. The revised Draft Offsets Strategy is currently under development and includes offsets for the significant residual impact to Carnaby's Black Cockatoo foraging and breeding habitat.</p> <p>Section 6.5.3 of the ERD (ELA 2019a) discusses the potential impacts of fragmentation before any mitigations such as fauna crossings (e.g. overpasses and underpasses) are applied. ERD Section 6.6.1 discusses the options for and effects of providing fauna crossings. Many of the fragmentation impacts to particular species identified in ERD Section 6.5.3 can be addressed by suitable fauna crossings. As stated in ERD Table 6-17 and Attachment 2 – Supporting Information, the PTA is committed to providing two green bridges to maintain the local east-west habitat</p>

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			<p>connectivity for the long-term movement of native fauna in Ningana Bushland. Ningana Bushland was chosen for green bridges as it is the only location where no urban development is expected or planned on either side of the Proposal. The proposed green bridges are discussed further in Attachment 2 – Supporting Information.</p> <p>After application of the mitigation hierarchy, the EPA's objective for terrestrial fauna is expected to be met. No fauna extinctions are likely to occur as a result of the implementation of the Proposal.</p>
18.	ANON-GUMV-5QAY-Y	The rail should be realigned to avoid impacts to threatened Black Cockatoo nesting and foraging trees.	Due to the widespread nature of Carnaby's Black Cockatoo foraging habitat in the vicinity of the development envelope, there are no feasible alignments available that would completely avoid Carnaby's Black Cockatoo foraging habitat or potential breeding trees. See items 19 and 44 in Table 2 and item 2 in Table 3 for further discussion on Proposal alternatives.
19.	Urban Bushland Council	The rail will create a barrier to east-west species movement.	<p>Sections 5.5.6 and 6.5.3 of the ERD (ELA 2019a) recognise that the Proposal will create a north-south barrier and fragment fauna habitat.</p> <p>As no fauna movement corridors across the development envelope were detected, Bamford (2019a) considered instead the effect of fragmentation of Ningana Bushland into smaller, separate portions on individual species. Green bridges are proposed to facilitate fauna crossings across the railway and provide ecological linkage between bushland areas, and these are described further in Attachment 2 – Supporting Information.</p>
20.	City of Wanneroo	The submitter is concerned about the impact of the Proposal on the movement of macro-fauna in the areas adjacent to the rail corridor. Management of macro-fauna such as kangaroos during construction (including prior to vegetation removal) should ensure that no animals are contained in development areas or small areas	<p>The PTA will ensure that fauna trapping and relocation is undertaken immediately prior to vegetation clearing commencing. The PTA will liaise with the DBCA to identify appropriate relocation sites which have sufficient carrying capacity to take relocated fauna.</p> <p>Fauna spotters will be onsite during vegetation clearing works and vegetation clearing will be undertaken in a staged approach to allow fauna to move into large adjacent bushland areas such as Ningana</p>

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		<p>of remnant vegetation.</p> <p>Fauna movement should, as much as possible, not be adversely affected by the works. If macro-fauna is to be left within the regional open space, they should not exceed the carrying capacity of that area.</p> <p>Relocation of fauna should be considered where appropriate on advice from DBCA. Management of the regional open space by DBCA should be formalised and appropriate infrastructure installed including conservation fencing, controlled access (vehicular and pedestrian), fire access etc.</p>	<p>Bushland and away from residential development or small areas of public open space which are unlikely to be able to support long term populations of macro-fauna such as kangaroos.</p> <p>The proposed green bridges will provide some movement of macro fauna across the railway once constructed (refer Attachment 2 – Supporting Information).</p> <p>As part of its offsets strategy, the PTA is proposing to work with the WAPC and DBCA to improve on-ground management of the entire Ningana Bushland. This includes proposing to provide funding to the DBCA to conduct on-ground management works including installing fencing, maintaining fire breaks, conducting weed control and managing public access within the site. Updated information on the Ningana Bushland offset will be provided in the Draft Offsets Strategy that is currently under development.</p>
21.	The Wildflower Society	The proponent should construct a fauna corridor, either an underpass or an overpass, to re-connect these populations.	The PTA has committed to providing two green bridges, which will be located in the southern part of Ningana Bushland. The type of crossings to be used is subject to railway design constraints, however possible options were discussed in Section 6.6.1 of the ERD and tabulated in ERD Table 6-16. Updated information on these green bridges is provided in Attachment 2 – Supporting Information .
22.	Quinns Rock Environmental Group	The submitter is concerned about the fragmentation of Bush Forever 289 irrespective of proposed mitigation, and recommends that design of the proposed fauna over and under-passes follow designs outlined in the Handbook of Road Ecology (Grilo C, Smith DJ and van der Ree R, 2016)	<p>Since the publication of the ERD in May, the PTA has further developed its offsets strategy and a Draft Offsets Strategy is under development. Based on further consultation with relevant Government stakeholders including EPA Services, the DBCA and WAPC, the PTA has revised its assessment of the significant residual impact to Ningana Bushland Bush Forever Site 289 and the proposed offset to counterbalance the impact.</p> <p>To counterbalance the Proposal's impacts to the Ningana Bushland Bush Forever Site 289, the PTA is proposing to provide funding to the DBCA to provide on-ground management within the entire Ningana Bushland Bush Forever Site 289. This offset was originally</p>

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			<p>described in ERD Section 12.14 (ELA 2019a) as targeted actions to improve a 69.59 ha area of Ningana Bushland. However, the PTA has since consulted with both the WAPC (as current owner of Ningana Bushland) and the DBCA (the agency identified as having the experience to conduct specific on-ground site management) regarding considerably improving on-ground management within Ningana Bushland Bush Forever Site 289. Both the WAPC and DBCA support the long-term management of Ningana Bushland for conservation purposes and view it is a task best applied to the entire ecosystem. As a result, the PTA has now proposed to expand on-ground management to include the entire Bush Forever Site 289. Further information on the proposed Ningana Bush Forever Site 289 offset proposal will be provided in the Draft Offsets Strategy currently under development.</p> <p>Updated information on the two green bridges to be provided in Ningana Bushland as a mitigation strategy for fragmentation and ecological connectivity impacts is provided in Attachment 2 – Supporting Information. Although the design of the fauna crossings is yet to be decided as it is subject to railway design constraints that are yet to be finalised, the PTA will take into consideration the principles in the publication referred to by the submitter.</p>
23.	The Wilderness Society	There is no evidence to prove that a fauna underpass to link the two areas of Ningana Bush Forever is useful to mitigate impacts to terrestrial fauna.	There are many examples of successful fauna underpasses in Western Australia, particularly on rail and road projects. The PTA and Main Roads WA have monitoring data which provides evidence of fauna underpass use by native fauna species within the Perth region.
24.	The Wilderness Society	The Proposal will directly impact short-range endemic (SRE) and lead to indirect impacts such as habitat fragmentation, habitat degradation from weeds and lead to lower genetic diversity in SRE. Further study should be done to ensure that SRE species in the	<p>All identified SRE species that may occur within the YRE Part 2 development envelope are known to occur outside of the development envelope. Maps of SRE species' distributions (Figures 4 – 11) are provided in the SRE desktop assessment (Invertebrate Solutions 2018).</p> <p>In addition, a recent Level 2 SRE survey was undertaken for the</p>

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		<p>development envelope are present in large enough numbers in the surrounding area to avoid local extinction and to ensure that genetic diversity can be maintained.</p>	<p>Mitchell Freeway Extension (Hester Av to Romeo Rd) in July and November 2018 by Invertebrate Solutions for Main Roads WA, which is in close proximity to the Proposal. This survey identified the same SRE species identified by the earlier desktop assessment. This survey also confirms the premise in the YRE SRE assessment report (Invertebrate Solutions 2018) that all potential SRE species (including the millipede <i>Antichiropus whistleri</i> and the trapdoor spider <i>Idiosoma sigillatum</i>) are also present in adjacent bushland and conservation estates (Neerabup National) within the local area.</p> <p>The PTA engaged qualified SRE specialists to conduct a desktop assessment of SRE fauna in the vicinity of the Proposal according to the relevant guidance published by the EPA. See item 16 in Table 2.</p>
Subterranean Fauna			
25.	The Wilderness Society	<p>The submitter recommends that additional data should be updated to confirm impacts to subterranean fauna. The submitter is concerned that the impacts of the Proposal on subterranean fauna are not well understood given the general lack of research and data on subterranean fauna in Western Australia and the Swan Coastal Plain, and the limited field study undertaken.</p>	<p>The YRE Part 2 development envelope intersects mapped medium risk karst areas and is at least 380 m away from the mapped high risk karst areas. The YRE Project Development Envelope is composed broadly of Safety Bay Sand, Tamala Sand and Tamala Limestone, however, the Safety Bay Sand and the Tamala Sand provide limited habitat potential for subterranean fauna due to their unconsolidated nature and lack of interstitial voids (Invertebrate Solutions 2018). Whilst the YRE Development Envelope is located within 380 m of a high karst risk area (Tamala Limestone) the development envelope is located within the low risk Safety Bay and Tamala Sand units that have a low likelihood of subterranean fauna (Invertebrate Solutions 2018).</p> <p>The location of caves does not provide an accurate representation of available troglofauna habitat. It is mostly the smaller, micro and meso (1 mm – 20 cm) caverns that often provide habitat for subterranean fauna, due to their higher and constant humidity. Micro and meso-caverns can occur throughout the Tamala Limestone, thus all consolidated Tamala Limestone should be considered to have high habitat value for subterranean fauna</p>

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			despite an absence of human sized voids in many areas (Invertebrate Solutions 2018).
Landforms			
26.	Urban Bushland Council	<p>The PTA has understated the significance of the impacts and ecological importance of the Quindalup Dune parabolic landforms.</p> <p>Indirect impacts such as instability and unpredictable erosion due to clearing and alteration to the parabolic dune should be considered further.</p>	<p>17.54 ha of the Proposal's development envelope intersects the Quindalup parabolic dune system (Q1 and Q2). To minimise the risk of erosion or dune blowout impacting areas of adjacent Quindalup dune system, the contractor will be restricted to the development envelope. Fencing will be erected to reduce the potential of interaction between construction activities and the adjacent dunes.</p> <p>Where earthworks intersect dunes, monthly visual inspections will be undertaken, and following completion of construction activities within the development envelope dunes will be stabilised through the planting of locally endemic flora species or bioengineering controls.</p> <p>In the event of Proposal attributable activities causing a dune blowout, a coastal rehabilitation specialist will be engaged to stabilise the landform to prevent further erosion.</p>
Social Surroundings			
27.	Urban Bushland Council	The social impacts of very long commuter distances is unacceptable.	This Proposal is designed to reduce commuter travel times by providing a quicker public transport service and a competitive alternative to private transport. Long term planning for the North-West Corridor has aimed to transform Yanchep into a new city centre with greater employment opportunities. A larger goal of this Proposal is also to stimulate mixed use developments around new train stations to promote them as employment and shopping destinations in their own right.
Offsets			
28.	ANON-GUMV-5QAM-K	<p>The submitters are opposed to the offsets strategy for Black Cockatoos:</p> <p>a. Given that there is lag-time of 20+ years</p>	Environmental offsets are only applied where the residual impacts of a proposal are considered significant after avoidance, minimisation and rehabilitation have been pursued (Australian

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	<p>Urban Bushland Council</p> <p>The Wilderness Society</p>	<p>between clearing and revegetation offsets, particularly for Black Cockatoos, and that this project has been in planning for 20 years, why haven't offsets been established/revegetated in advance of clearing? Offset planning should be included in the conceptual stage.</p> <p>b. Offsets do not justify a net loss to Black Cockatoo habitat, therefore the proposed clearing should be considered environmentally unacceptable.</p> <p>c. The purchase of other lands for conservation will not solve the problem as Black Cockatoo habitat as a whole, irrespective of tenure, is shrinking and rehabilitation of the ecosystem is a long-term strategy.</p>	<p>Government 2012a; Government of Western Australia 2014). These measures, defined by the State Government as the Australian Residual Impact Significance Model (RISM) will be detailed in the RISM attached to the YRE Part 2 Draft Offsets Strategy. In accordance with the RISM, offsets are only proposed to counterbalance impacts of the Proposal to Carnaby's Cockatoo where the residual impact to the species was deemed significant.</p> <p>Additional information on offsets is summarised below:</p> <ul style="list-style-type: none"> • Revegetation is not proposed to be conducted within any of the offset sites within the YRE Part 2 Draft Offsets Strategy. Direct offsets are in the form of land acquisition and the proposal to provide funding to the DBCA to provide seven years of on-ground management at each site. • The 20+ years referred to in the comment is an input in the Commonwealth Offsets Calculator and refers to the time horizon over which loss is averted i.e. this duration refers to the total length of time the offset is likely to remain in place. 20 years is the maximum value allowed to be used in the calculator and is the appropriate duration for this Proposal. • Although advanced purchasing and banking of offsets is permitted under State and Commonwealth guidelines, a budget is required to purchase offsets. The PTA's offset budget is not allocated until a project receives State and/or Commonwealth funding which is approved following a significant amount of planning works. As such, offsets are purchased when there is more certainty that the Project will proceed. The PTA has liaised with the WAPC and DBCA to identify potential land acquisition targets for use as current and future offsets. • In accordance with the WA Environmental Offsets Guidelines (Government of Western Australia 2014), direct offsets through land acquisition is an acceptable type of offset. Land acquisition is also the State and Commonwealth preferred offset proposal. As such, the PTA is currently developing a YRE Part 2 Draft

No.	Submitter	Submission and/or issue	PTA's response
			<p>Offset Strategy through maximising land acquisition opportunities.</p> <ul style="list-style-type: none"> Land acquisition offsets propose to secure and provide on-ground management to existing Black Cockatoo habitat with the intention to transfer the sites to the conservation estate.
29.	<p>Quinns Rock Environmental Group The Wildflower Society</p>	<p>The submitters suggests the offsets Proposal be revised to address the following:</p> <ol style="list-style-type: none"> Identify local sites to offset clearing of vegetation. Land far away from the development used as offsets is questionable. Management offsets within Ningana Bushland be part of an overall management plan for the entire site, not only the portion proposed to be offset. Appendix V of the ERD, which tabulates the values from the Commonwealth Offset Assessment Guide, two critical percentages - risk of loss (%) without offset and risk of loss (%) with offset - are specified but no justification is given for the values. Revise to include justification. For the retrospective acquisition of the Mardella site: <ol style="list-style-type: none"> confirm whether the Mardella site is already in conservation land given it is a retrospective acquisition provide justification for the nominated percentage risk of loss before the offset Include additional offsets for Tuart Woodland TEC. 	<p>A Draft YRE Part 2 Offset Strategy is currently under development proposes the following offsets in vicinity of the Proposal:</p> <ul style="list-style-type: none"> Acquisition and management of offset sites in Carabooda and Nowergup/Neerabup, both located approximately 5 km from the impact, and offset sites in Cataby and Mardella, both located approximately 100 km from the impact. Proposal to provide funding to the DBCA to manage the entire Ningana Bushland Bush Forever Site 289 (not just a portion) for a period of seven years. <p>The YRE Part 2 Draft Offset Strategy, currently under development, will include a justification of the values used in the Commonwealth Offset Calculator for each proposed offset.</p> <p>The Lowlands Site in Mardella was purchased in 2014 by the WAPC as an Advanced Offset, which is an approved mechanism for securing offsets under State and Commonwealth Guidelines. Class 'A' conservation reserve status was applied in 2015. Elevation of conservation status to Class 'A' was conducted in 2015 for urgent management reasons and to honour the agreement made with the former private landowner. The application of the Class 'A' conservation status would not have occurred if the State did not purchase the site for use as an Advanced offset.</p> <p>Justification of the nominated percentage of risk of loss for the Lowlands Site will be provided within the YRE Part 2 Draft Offsets Strategy that is currently under development.</p> <p>Tuart Woodlands TEC were not listed by the Commonwealth under the EPBC Act at the time the Proposal was referred, therefore,</p>

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			retrospective consideration is not required to be applied in the Proposal's environmental impact assessment.
30.	Urban Bushland Council	The on-ground management of Ningana Bushland Bush Forever site should not rely on offset funding. It should be managed and independently funded by government.	The PTA agrees with the Urban Bushland Council's submission. The PTA is in discussion with the WAPC as the current landowner of Ningana Bushland and the DBCA, the proposed future land manager to assist in securing ongoing funding from the State Government. However, this is likely to take a number of years to be achieved and it is anticipated that offset funding from this Proposal will assist in stimulating an agreement for ongoing funding.
31.	Sustainable Population Australia	All remaining Bush Forever sites should be made A-class reserves and PTA should be required to provide the management funding to maintain and improve condition.	The PTA is supportive of Bush Forever Site 289 (Ningana Bushland) becoming an 'A' class reserve however this process is led by the DBCA and is outside of the PTA's control. Funding for management of the entire Ningana Bushland Bush Forever Site 289 is included in the Draft Offsets Strategy that is currently under development.
32.	Sustainable Population Australia	Offsets should be expanded because the Proposal will result in future environmental impacts outside the rail footprint.	The YRE Part 2 Draft Offsets Strategy is currently under development. In some circumstances, the Strategy includes offsets for indirect impacts; however the PTA is unable to provide offsets for impacts beyond this.
Other			
33.	Sustainable Population Australia	If there is a fire or emergency, vehicular access across the rail line may be required but no such provision seems to be included in the design.	The PTA has consulted with the WAPC, DBCA and Department of Fire and Emergency Services (DFES) to ensure that appropriate fire and emergency access is provided. Emergency access will be provided via a Principal Shared Path (PSP) parallel to the railway on the western side and a dual use maintenance/emergency access road on the eastern side. Access across the railway will be provided at Pipidinny Road and Yanchep Beach Road.
34.	The Wildflower Society	Carbon emissions have been substantially underestimated. Model assumptions may not be applicable for the vegetation and soils impacted	A Carbon and Energy Assessment Report was conducted for the Proposal in accordance with the withdrawn EPA Environmental factor Guideline – Greenhouse Gas Emissions and Technical

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		<p>by the project. Emissions accounting for vegetation removal are not considered beyond the project lifetime. Emissions from the heavy machinery used for extraction and transportation of construction materials are not considered</p>	<p>Guidance. The assessment included scope 1 and 2 emissions – those which are directly or indirectly related to the Proposal. The EPA's Technical Guidance does not required consideration of Scope 3 emissions which is defined as value chain emissions generated from upstream or downstream activities by suppliers or customers.</p> <p>It is acknowledged that the modelling undertaken and documented in the report included impacts from vegetation clearing within the Proposal's lifetime but no longer time period than that. The model assumptions for vegetation and soil are based on the Transport Authorities Greenhouse Group Australia and New Zealand Carbon Gauge Tool. This applies a factor per hectare of vegetation clearance based on vegetation type. The biomass class of '1' was used for this model which represents 0-50 tonnes of dry matter per hectare. This class was chosen based on the vegetation surveys undertaken for the Proposal.</p> <p>The model also included emissions from heavy vehicles used for the extraction and transportation of materials which are undertaken as part of the Proposal but not emissions related to the extraction of construction materials purchased from third parties (Scope 3 items). For example the model includes excavation of fill material and limestone which will be used as part of the Proposal but does not include the extraction of raw materials used to create concrete mixes to be used onsite. This approach is consistent with the EPA's Technical Guidance.</p>
35.	Quinns Rock Environmental Group	<p>The value of the ecological linkage between the coast, Ningana Bushland and other bushland areas in the area has not been adequately considered. While the Marmion Avenue is separating BF397 and BF 289, there is an existing underpass under Marmion Avenue.</p>	<p>The value of this ecological linkage has been considered and two green bridges are proposed to provide ecological linkage between bushland areas (Attachment 2 – Supporting Information).</p>

Table 4: Responses to comments from Department of the Environment and Energy

No.	DoEE comment	PTA's response
EPBC Act listed threatened species and ecological communities (sections 18 and 18A)		
1.	<p>The Department notes that there are many different and conflicting figures for hectares proposed to be cleared as part of this Proposal in the PER documentation. The Department understands that the following hectares are proposed to be cleared for EPBC act listed threatened species and communities:</p> <ul style="list-style-type: none"> • 12.10 ha of Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community (Endangered) of which 2.05 ha is in Excellent condition, 7.57 ha is in Very Good condition and 2.48 ha is in Good condition; • 56.31 ha of foraging habitat of which 22.56 ha is 'high quality' and 33.75 ha is 'medium quality' in addition to 37 potential breeding trees (3 of which contain hollows) for the Carnaby's Black Cockatoo (<i>Calyptorhynchus latirostris</i>) (Endangered); and • 62.32 ha of foraging habitat for the Chuditch (<i>Dasyurus geoffroyi</i>) (Vulnerable). <p>Please confirm if the above clearing hectares (and respective habitat qualities) are correct. Additionally, please confirm the quality of the foraging habitat for the Chuditch proposed to be cleared for this Proposal.</p>	<p>The PTA confirms the following potential impacts from the Proposal clearing:</p> <ul style="list-style-type: none"> • 8.13 ha of Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community • 56.31 ha of foraging habitat for Carnaby's Black Cockatoo • 45 potential breeding trees for Carnaby's Black Cockatoo <p><u>Chuditch habitat</u></p> <p>The YRE Part 2 Fauna Desktop Study (Bamford Consulting Ecologists 2019a) states that:</p> <p><i>"The one mammal species is the Chuditch and it is expected only as a vagrant. The species is very rarely recorded on the coastal plain; the nearest recent record might be from BCE at Ellenbrook in 2004. As the Chuditch is expected only as a vagrant and the project area does not provide any ecological function, such as facilitating dispersal between populations, the project area cannot be considered significant for the species."</i></p> <p>The YRE Part 2 Fauna Underpass Assessment Statement (Bamford Consulting Ecologists 2019b) states that:</p> <p><i>"The Chuditch Dasyurus geoffroyii has been listed for the area (GHD 2018) but this species is an irregular visitor or rare vagrant this far onto the Coastal Plain and the design of underpasses or other crossings for the YRE2 would be of no conservation value for it."</i></p> <p>The above statements and reports are based on the following:</p> <ol style="list-style-type: none"> 1. Professional and expert opinion of the authors (Dr Barry Shepherd and Dr Mike Bamford, of Bamford Consulting

No.	DoEE comment	PTA's response
		<p>Ecologists).</p> <ol style="list-style-type: none"> <li data-bbox="1256 256 2085 491">2. Results of the 2019 desktop assessment conducted by the authors, Dr Barry Shepherd and Dr Mike Bamford (Bamford Consulting Ecologists 2019a) to produce a species list that can be considered representative of the vertebrate fauna assemblage of the YRE Part 2 project area based on unpublished and published data using a precautionary approach and local knowledge. <li data-bbox="1256 507 2085 639">3. Results of a site inspection conducted by Dr Barry Shepherd and Dr Mike Bamford, on 28 November 2018 along the rail corridor in the Ningana Bushland (Bamford Consulting Ecologists 2019a). <p>The referral discusses the Chuditch (<i>Dasyurus geoffroii</i>) (foraging) potential to opportunistically use habitat, based on the results of the EPBC Act Protected Matters Report results suggesting that there are records present within 10 km of the survey area and the habitat is suitable for this species. In addition, Table 38 on page 111 of the Environmental Impact Assessment (RPS 2018) references the potential impact to 62.32 ha of opportunistic foraging habitat.</p> <p>Further to the assessments undertaken and referenced in the referral, the PTA sought additional expert advice from Bamford Consulting Ecologists, based on advice from the DBCA that the Chuditch is considered locally extinct on the northern Swan Coastal Plain (Bamford Consulting Ecologists 2019a).</p> <p>Also refer to ERD Appendix O – Environmental (Bush Forever site 289) Candidate Offset Site Investigation, Yanchep Rail Extension (ELA 2018) which states:</p> <p><i>“Chuditch are considered locally extinct on the northern Swan Coastal Plain (DEC 2012b) and would not be considered to occur in the study area. The most recent NatureMap record (within 12 km) is from 1972 and consisted of a skeleton (age not identified). There have been recent sightings of Chuditch in the suburbs of Wandi (2009), Karnup (2010) and Bateman</i></p>

No.	DoEE comment	PTA's response
		<p><i>(2016) on the southern Swan Coastal Plain, the closest of which is more than 50 km from the study area."</i></p> <p>The Recovery Plan for the species also states that:</p> <p><i>"The Chuditch had not been recorded on the Swan Coastal Plain since the 1930s, however there have been records in the outer metropolitan areas such as Gooseberry Hill, East Martin and on the Swan Coastal Plain, Upper Swan Valley, High Wycombe, Wandi, Yalgorup National Park and Leschenault Conservation Park"</i> (DEC 2012b)</p> <p>Therefore, based on expert advice, a desktop assessment, site inspection and with reference to the Recovery Plan for the species, that the Chuditch is considered an 'irregular visitor or rare vagrant' in the area. The Proposal area does not provide any ecological function for the Chuditch, such as facilitating dispersal between populations, and therefore the Proposal area cannot be considered significant for the species.</p>
2.	<p>Please advise if rail strike is likely to impact the Carnaby's Black Cockatoo. If rail strike is likely to impact the Carnaby's Black Cockatoo, please describe the proposed avoidance and mitigation measures that will be implemented to minimise the impacts to an acceptable level.</p>	<p>During the operational stage of the Proposal, daily train movements within the rail reserve have the potential to impact Black Cockatoos as a result of collisions with trains. Black Cockatoos are slow to take off from the ground and they initially fly low before sweeping up higher. This take off pattern places them at greater risk of colliding with a fast moving vehicle such as a train if they forage or seek water in close proximity to the rail.</p> <p>In general, passenger trains travel at faster speeds than road vehicles which represents a greater risk of collision with avifauna. The PTA does not have data on Black Cockatoo mortality resulting from direct collisions along its current rail assets, however the likelihood is considered low. The PTA has focused on managing the risk of interaction between the birds and passenger trains.</p> <p>Drainage infrastructure will be installed in the rail reserve to minimise the risk of water pooling in close proximity to the railway tracks, and therefore minimising the risk of Black Cockatoos seeking</p>

No.	DoEE comment	PTA's response
		<p>water and colliding with trains. Foraging species will also not be planted in close proximity to the railway tracks, to minimise the risk of Black Cockatoos foraging close to the rail and colliding with trains. Therefore the likelihood of vehicle strikes to Black Cockatoos is reduced.</p> <p>This approach is consistent with recent EPA decisions where it concluded 'the proponent should not include Black Cockatoo foraging habitat within 10 m of the road/rail upgrade in the design and planting for proposal landscaping activities' (EPA Report 1630, 1634).</p> <p>In the event of a train striking a Black Cockatoo, the incident will be reported to the PTA Environmental Manager within 24 hours. If the bird is injured it will be taken to an authorised veterinarian or wildlife carer.</p> <p>With the abovementioned management measures, the risk of train strike to Black Cockatoos is as low as reasonably practicable.</p>
3.	<p>The environmental impact assessment (Appendix C of the PER, page 36) states that "construction and access areas will be located within a 12.57 ha extent outside of the development footprint but within the development envelope". Please advise if additional clearing will be undertaken to construct these access areas. If additional clearing is proposed to be undertaken, please advise if this clearing is likely to have a significant impact on matters of national environmental significance.</p>	<p>All estimated clearing areas including construction and access areas have been included in the impact calculations and assessed against matters of national environmental significance.</p>
4.	<p>The transportation noise and vibration assessment (Appendix K of the PER, pages 10 to 11) notes that "the Chuditch (<i>Dasyurus geoffoyii</i>) has been listed for the area but this species is an irregular visitor or rare vagrant this far onto the Coastal Plain and the design of underpasses or other crossings for the YRE2 would be of no conservation value for it". The referral documentation proposed clearing of 62.32 ha of foraging habitat for the Chuditch (ranging from Excellent to Completely Degraded condition). Please provide</p>	<p>Appendix K of the Yanchep Rail Extension: Part 2 – Eglinton to Yanchep Environmental Review Document (ELA 2019a) is the Transportation Noise & Vibration Assessment METRONET – Yanchep Rail Extension (Lloyd George, 2018). This report makes no mention of the Chuditch.</p> <p>The PTA believes that the DoEE intended to refer to Appendix F of Yanchep Rail Extension Part 2 Fauna Desktop Study (Bamford</p>

No.	DoEE comment	PTA's response
	<p>further justification as to why the Chuditch is considered an “irregular visitor or rare vagrant” in the area and why the underpasses will be of no conservation benefit for the species.</p>	<p>Consulting Ecologists 2019a) which states that:</p> <p><i>“The one mammal species is the Chuditch and it is expected only as a vagrant. The species is very rarely recorded on the coastal plain; the nearest recent record might be from BCE at Ellenbrook in 2004. As the Chuditch is expected only as a vagrant and the project area does not provide any ecological function, such as facilitating dispersal between populations, the project area cannot be considered significant for the species.”</i></p> <p>The DoEE may also have intended to refer to Appendix G of Yanchep Rail Extension Part 2 Fauna Underpass Assessment Statement (Bamford Consulting Ecologists 2019b) which states that:</p> <p><i>“The Chuditch Dasyurus geoffroyii has been listed for the area (GHD 2018) but this species is an irregular visitor or rare vagrant this far onto the Coastal Plain and the design of underpasses or other crossings for the YRE2 would be of no conservation value for it.”</i></p> <p>The above statements and reports are based on the following:</p> <ol style="list-style-type: none"> 1. Professional and expert opinion of the authors (Dr Barry Shepherd and Dr Mike Bamford, of Bamford Consulting Ecologists). 2. Results of the 2019 desktop assessment conducted by the authors, Dr Barry Shepherd and Dr Mike Bamford (Bamford Consulting Ecologists 2019a) to produce a species list that can be considered representative of the vertebrate fauna assemblage of the YRE Part 2 project area based on unpublished and published data using a precautionary approach and local knowledge. 3. Results of a site inspection conducted by the authors, Dr Barry Shepherd and Dr Mike Bamford, on 28 November 2018 along the rail corridor in the Ningana Bushland (Bamford Consulting Ecologists 2019a).

No.	DoEE comment	PTA's response
		<p>The referral discusses the Chuditch (<i>Dasyurus geoffroi</i>) (foraging) potential to opportunistically use habitat, based on the results of the EPBC Act Protected Matters Report results suggesting that there are records present within 10 km of the survey area and the habitat is suitable for this species. In addition, Table 38 on page 111 of the Environmental Impact Assessment (RPS 2018) references the potential impact to 62.32 ha of opportunistic foraging habitat.</p> <p>Further to the assessments undertaken and referenced in the referral, the PTA sought expert advice from Bamford Consulting Ecologists, based on advice from the Department of Biodiversity Conservation and Attractions (DBCA) that the Chuditch is considered locally extinct on the northern Swan Coastal Plain (see above for this advice reference).</p> <p>Also refer to ERD Appendix O – Environmental (Bush Forever site 289) Candidate Offset Site Investigation, Yanchep Rail Extension (ELA 2018) which states:</p> <p><i>“Chuditch are considered locally extinct on the northern Swan Coastal Plain (DEC 2012b) and would not be considered to occur in the study area. The most recent NatureMap record (within 12 km) is from 1972 and consisted of a skeleton (age not identified). There have been recent sightings of Chuditch in the suburbs of Wandi (2009), Karnup (2010) and Bateman (2016) on the southern Swan Coastal Plain, the closest of which is more than 50 km from the study area.”</i></p> <p>The Recovery Plan for the species also states that:</p> <p><i>“The Chuditch had not been recorded on the Swan Coastal Plain since the 1930s, however there have been records in the outer metropolitan areas such as Gooseberry Hill, East Martin and on the Swan Coastal Plain, Upper Swan Valley, High Wycombe, Wandi, Yalgorup National Park and Leschenault Conservation Park” (DEC 2012b)</i></p> <p>Therefore, based on expert advice, a desktop assessment, site inspection and with reference to the Recovery Plan for the species,</p>

No.	DoEE comment	PTA's response
		that the Chuditch is considered an 'irregular visitor or rare vagrant' in the area. The Proposal area does not provide any ecological function for the Chuditch, such as facilitating dispersal between populations, and therefore the proposed action cannot be considered significant for the species.
5.	Please provide a copy of the Revegetation Management Plan referenced in the biological impact assessment (Appendix C of the PER, page 117).	The Revegetation Management Plan referenced in Appendix C (page 117) is Revegetation Management Plan is for the Eglinton/South Yanchep Residential Development (Strategen 2014). Please note that application and compliance with this report will only occur for works conducted within the portion of the development envelope and rail alignment that intersects with the Eglinton/South Yanchep Residential Development EPBC Act Approval 2011/6021 area.
Recovery plans and threat abatement plans		
6.	<p>Please demonstrate how the proposed action is not inconsistent with relevant recovery plans and threat abatement plans including (but not limited to):</p> <ul style="list-style-type: none"> • Department of Parks and Wildlife (2013). <i>Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan</i>. Department of Parks and Wildlife, Perth, Western Australia. Available from: http://www.environment.gov.au/resource/carnaby%E2%80%99s-cockatoo-calyptorhynchus-latrostris-recovery-plan. • Department of Environment and Conservation (2012). <i>Chuditch (Dasyurus geoffroii) Recovery Plan. Wildlife Management Program No. 54</i>. Department of Environment and Conservation, Perth, Western Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/dasyurus-geoffroii-2012. • Department of the Environment and Energy (2018). <i>Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi</i>. Canberra: Commonwealth of Australia. 	<p>Carnaby's Cockatoo Recovery Plan (DPAW, 2013):</p> <p>The following information summarises how the proposed action is not inconsistent with the Carnaby's Cockatoo Recovery Plan (DPAW, 2013):</p> <ul style="list-style-type: none"> • In accordance with Section 4, the Proposal avoids all listed known and potential threats to Carnaby's Cockatoo with the exception of impacts to potential breeding trees and breeding habitat. • In accordance with Section 5, the proposal's environmental impacts are in the process of being assessed under the Western Australian <i>Environmental Protection Act 1986</i> and the Commonwealth EPBC Act. Through this assessment process, impacts have been avoided and minimised to as low as practicable in accordance with the RISM as demonstrated within the ERD (ELA 2019a). Significant residual environmental impacts to Carnaby's Cockatoo will be offset through a combination of direct offsets in the form of land acquisition and

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	<p>Available from: http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-disease-natural-ecosystems-caused-phytophthora-cinnamomi-2018.</p> <ul style="list-style-type: none"> • Department of the Environment and Energy (2016). <i>Threat abatement plan for competition and land degradation by rabbits</i>. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. • Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008). <i>Threat abatement plan for predation by the European red fox</i>. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. 	<p>on-ground management and indirect offsets in the form of providing funding to Murdoch University to conduct Black Cockatoo research. Murdoch University's research proposal has been written in accordance with the Carnaby's Cockatoo Recovery Plan.</p> <ul style="list-style-type: none"> • In accordance with Section 5, the environmental impact assessment was conducted with reference to Guidance Statement No. 33 Environmental Guidance for Planning and Development (EPA 2008). • In accordance with Section 12.1 - Carnaby's Cockatoo land acquisition offsets are proposed to be managed for a period of seven years by the DBCA with the intention to transfer sites to the conservation estate. • In accordance with Section 12.2, the Murdoch University Research Proposal will monitor populations of Black Cockatoos through GPS and satellite tracking over an extended period to understand more about their habitats and behaviours. • In accordance with Section 13.2, the Proposal is not reducing the extent of nesting habitat (trees with nesting hollows), feeding habitat (as defined by vegetation complexes), and night roosting habitat (as identified through community survey) by more than 10% throughout the species range. • In accordance with Section 14, the Proposal: <ul style="list-style-type: none"> ○ Will protect and manage important habitat through avoiding and minimising impacts and the provision of direct and indirect offsets. ○ Proposes to allocate funding to the DBCA to manage land acquired for offsets. ○ Will initiate monitoring and research to inform management of Carnaby's Cockatoo through the provision of funding to Murdoch University to conduct

No.	DoEE comment	PTA's response
		<p>their research proposal.</p> <ul style="list-style-type: none"> ○ Will engage with the broader community through the publication of data collected by Murdoch University. <p>Chuditch Recovery Plan (DEC 2012b):</p> <p>The proposed action is not inconsistent with Chuditch Recovery Plan (DEC 2012b) as the plan states:</p> <p><i>“The Chuditch had not been recorded on the Swan Coastal Plain since the 1930s, however there have been records in the outer metropolitan areas such as Gooseberry Hill, East Martin and on the Swan Coastal Plain, Upper Swan Valley, High Wycombe, Wandi, Yalgorup National Park and Leschenault Conservation Park”.</i></p> <p>The following additional information supports the Chuditch Recovery Plan (DEC 2012b) in the assessment that the Proposal is not located in an area considered significant for the species:</p> <ul style="list-style-type: none"> • <i>“The one mammal species is the Chuditch and it is expected only as a vagrant. The species is very rarely recorded on the coastal plain; the nearest recent record might be from BCE at Ellenbrook in 2004. As the Chuditch is expected only as a vagrant and the project area does not provide any ecological function, such as facilitating dispersal between populations, the project area cannot be considered significant for the species.”</i> (Bamford Consulting Ecologists 2019a). • <i>“The Chuditch Dasyurus geoffroyii has been listed for the area (GHD 2018) but this species is an irregular visitor or rare vagrant this far onto the Coastal Plain and the design of underpasses or other crossings for the YRE2 would be of no conservation value for it.”</i> (Bamford Consulting Ecologists 2019b) • <i>“Chuditch are considered locally extinct on the northern Swan Coastal Plain (DEC 2012b) and would not be considered to occur in the study area. The most recent NatureMap record (within 12 km) is from 1972 and consisted of a skeleton (age not</i>

No.	DoEE comment	PTA's response
		<p><i>identified). There have been recent sightings of Chuditch in the suburbs of Wandi (2009), Karnup (2010) and Bateman (2016) on the southern Swan Coastal Plain, the closest of which is more than 50 km from the study area.” (ELA 2018).</i></p> <p>Dieback Threat Abatement Plan (DoEE 2018):</p> <p>The following information summarises how the proposed action is not inconsistent with the Dieback Threat Abatement Plan (DoEE 2018):</p> <ul style="list-style-type: none"> • No dieback infestation has been identified within the development envelope. • More than half of the development envelope was uninterpretable due to a lack of sufficient indicator species (Glevan Consulting 2017). • The presence of calcareous soils and limestone throughout most of the YRE Project area reduces the likelihood of <i>Phytophthora</i> dieback being present, as the pH of such soils is hostile to the pathogen (Glevan Consulting 2017). • The contractor will manage the threat posed during construction by implementing the site specific Construction Environmental Management Plan which will be developed in consideration of the information provided within Section 1.4 of the Dieback Threat Abatement Plan (DoEE 2018). Specific management measures include: <ul style="list-style-type: none"> ○ Requiring that all vehicles and equipment is clean on entry and any imported materials have been certified dieback free prior to transport to site. ○ Allocation of adequate resources to provide effective on-ground management measures and controls to prevent the spread of dieback during construction. • The use of crushed limestone for the maintenance access track reduces the risk of spreading dieback during railway operations

No.	DoEE comment	PTA's response
		<p>as dieback contaminated material on vehicle tyres will likely be inhibited by the high pH of the crushed limestone.</p> <p>Threat Abatement Plan for Competition and Land Degradation by Rabbits (DoEE 2016):</p> <p>The following information summarises how the proposed action is not inconsistent with the Threat Abatement Plan for Competition and Land Degradation by Rabbits (DoEE 2016):</p> <ul style="list-style-type: none"> • The proposed action is not expected to result in the direct increase of local rabbit populations. • No EPBC Act species listed as likely to be impacted by rabbits within the Threat Abatement Plan (DoEE 2016) are likely to occur within the Proposal's development envelope. • No EPBC Act threatened flora or ecological communities identified as being affected by rabbits within the Threat Abatement Plan (DoEE 2016) occur within the Proposal's development envelope. • Clearing and excavation activities proposed to be conducted during construction may reduce rabbit habitat. • The proposed offset to counterbalance impacts to the Ningana Bushland Bush Forever Site 289 is the provision of funding to the DBCA to provide seven years of on-ground management within Ningana Bushland, the Bushland directly impacted by the Proposal. This is likely to include feral animal control measures. <p>Threat Abatement Plan for Predation by the European Red Fox (DEWHA, 2008):</p> <p>The following information summarises how the proposed action is not inconsistent with the Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008):</p> <ul style="list-style-type: none"> • The proposed action is not expected to result in the direct increase of local fox populations.

No.	DoEE comment	PTA's response
		<ul style="list-style-type: none"> The proposed offset to counterbalance impacts to the Ningana Bushland Bush Forever Site 289 is the provision of funding to the DBCA to provide seven years of on-ground management within Ningana Bushland, the bushland directly impacted by the Proposal. This is likely to include feral animal control measures which will likely be conducted in accordance with the Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008). The contractor will manage the attraction of pests including foxes during construction by implementing the site specific Construction Environmental Management Plan. Specific management measures include management of waste storage and removal within the site office and laydown areas. <p>The two green bridges proposed to be constructed to mitigate fragmentation and ecological impacts will include design mechanisms to reduce the risk of fauna using the infrastructure being a target for foxes.</p>
7.	<p>Please demonstrate how the proposed action has had regard to relevant conservation advice, including (but not limited to):</p> <ul style="list-style-type: none"> Threatened Species Scientific Committee (2016). <i>Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community</i>. Canberra: Department of the Environment and Energy. 	<p>The following information summarises how the proposed action has had regard to the relevant conservation advice within the <i>Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community</i>. (TSSC 2016) as:</p> <ul style="list-style-type: none"> Information provided within the guidance for determining whether the banksia woodlands ecological community protected under the EPBC Act is present was referred to during vegetation surveys, mapping and reporting conducted to assess impacts of the Proposal. Information provided to guide classification of Banksia patches into PEC or TEC based on size and condition was referred to in assessing the extent of Banksia Woodland PEC and TEC within the Proposal's development envelope.

No.	DoEE comment	PTA's response
		<ul style="list-style-type: none"> • Summary of threats information was used to assess the environmental impact of the Proposal on Banksia Woodlands TEC. • The information presented within Section 5.2.1 of TSSC (2016) has been considered in the development of management measures to minimise impacts to Banksia Woodlands during clearing and construction activities. • The proposed offset to counterbalance impacts to the Ningana Bushland Bush Forever Site 289 is the provision of funding to the DBCA to provide seven years of on-ground management within Ningana Bushland, the bushland directly impacted by the Proposal. This is likely to include measures to manage weeds, feral animals, dieback and/or other diseases and fire. As management is being conducted by the DBCA, it will likely be conducted in accordance with TSSC (2016). • Banksia Woodlands TEC Offsets were developed in accordance with advice provided within the Offsets section of TSSC (2016) including providing like-for-like offsets down to sub-community and management of offsets.
Offsets		
8.	On 25 June 2019, the proponent verbally advised the Department that an indirect offset (i.e. a research Proposal) may be proposed for this Proposal. If an indirect offset is proposed, please provide details of the proposed indirect offset along with information regarding how the indirect offset Proposal meets each of the criteria for research programs outlined in the Department's <i>Environmental Offsets Policy (2012)</i> .	Section 12.16.3 – Compliance with the Commonwealth Criteria on pages 288 – 290 of the Yanchep Rail Extension: Part 2 – Eglinton to Yanchep Environmental Review Document (ELA 2019a) demonstrates how the proposed research Proposal (Warren et. al, 2019) considers DoEE criteria for research based on the content within the Department's Environmental Offset Policy (2012). This information will also be included in the YRE Part 2 Draft Offsets Strategy that is currently under development.
9.	The Department notes that the figures provided in the offset impact calculators do not appear to accurately reflect the residual significant impact of the Proposal on EPBC Act listed threatened species and ecological communities (i.e. ha of habitat proposed to be cleared).	The Commonwealth Offsets Calculators for each offset proposal have been revised and provided to the DoEE and will be included within the YRE Part 2 Draft Offset Strategy that is currently in development. Residual significant impacts have been confirmed and

No.	DoEE comment	PTA's response
	Please revise and resubmit the impact calculators to reflect the ha of habitat for EPBC Act listed threatened species and communities proposed to be cleared (i.e. the ha outlined in the Department's comment 1 above).	justification of the values used within the Commonwealth Offsets Calculators will be provided within the YRE Part 2 Draft Offset Strategy.
10.	Please demonstrate how the proposed offset is consistent with each of the principles of the Department's <i>EPBC Act Environmental Offsets Policy (2012)</i> , and provide a comprehensive justification for each of the figures used to complete the offsets calculator.	<p>Table 12-38 Consideration of Commonwealth offset principles within Section 12 of the ERD demonstrates how the proposed offset is consistent with each of the principles of the Department's <i>EPBC Act Environmental Offsets Policy (2012)</i>. An updated version of this table, addressing all MNES will also be provided in the Draft Offsets Strategy that is under development.</p> <p>Justification for each of the values used within the Commonwealth Offsets Calculator for each environmental value being offset will be provided in the YRE Part 2 Draft Offset Strategy.</p>
11.	The Offset Strategy (Appendix O of the PER, page 20) recommends that a comprehensive Carnaby's Black Cockatoo assessment be undertaken within the offset site. Additionally, the Offset Strategy recommends a survey to determine the Floristic Community Types within the proposed offset site. Please provide the results of these further assessments to the Department. This information will assist the Department to form a view as to the adequacy of the proposed offset site.	<p>Appendix O of the PER refers to the Ningana Bushland (Bush Forever Site 289) Candidate Offset Site Investigation – Yanchep Railway Extension, not the Offset Strategy. The PTA believes this was a typo and the DoEE made reference to the incorrect report title.</p> <p>Section 5 of ELA (2018) does recommend further surveys, including surveys to determine Floristic Community Types and a comprehensive Carnaby's Black Cockatoo habitat assessment to further determine and quantify the ecological values of Bush Forever Site 289. However, the PTA does not consider further environmental surveys of the Ningana Bushland Bush Forever Site 289 are required to support the PTA's proposal to provide funding to the DBCA to manage the site as a Bush Forever offset as:</p> <ol style="list-style-type: none"> 1. The Ningana Bushland Bush Forever Site 289 on-ground management offset is only proposed to offset the Proposal's impacts to Bush Forever, and not to offset impacts to Carnaby's Black Cockatoo habitat or Banksia Woodlands of the Swan Coastal Plain TEC. 2. Bush Forever offsets are a State requirement and the State

No.	DoEE comment	PTA's response
		<p>requires that Bush Forever offsets are based on 'like for like' in terms of values and at a vegetation complex level, not to a Floristic Community Type (FCT). The PTA is of the view that it has satisfied this requirement at a State level.</p> <p>Carnaby's Black Cockatoo offsets are proposed to be provided through land acquisition and these sites will be comprehensively surveyed to assess Carnaby's Black Cockatoo environmental values. The YRE Part 2 Draft Offsets Strategy, currently under preparation will provide further information on the Carnaby's Cockatoo offset proposals and their suitability based on surveys.</p>
12.	<p>The environmental impact assessment (Appendix C of the PER, page 18) states that "the proponent has advanced discussions with the Western Australian Department of Biodiversity, Conservation and Attractions to inform the preparation of an Offsets Strategy... A number of suitable offset locations have been identified, and these sites are currently being reviewed by the proponent." Please provide details of the alternative offset options that have and/or are being considered, beyond that proposed in the Offsets Strategy (i.e. Ningana Bushland (Bush Forever Site No. 289)) for our consideration.</p>	<p>A YRE Part 2 Draft Offsets Strategy is under development and will describe the final offset strategy for the Proposal.</p> <p>The YRE Part 2 Offsets Strategy development process has included extensive consultation with relevant stakeholders and proposes a specific approach to offset each significant residual impact rather than options.</p> <p>The PTA is proposing to provide funding to the DBCA to manage the Ningana Bushland Bush Forever Site 289 as the Bush Forever offset.</p>
Construction Environmental Management Plan		
13.	<p>The Department notes that the ha proposed to be cleared for EPBC Act listed threatened species and ecological communities referenced in the CEMP do not reflect the ha referenced in the referral or other PER documents. Please revise the CEMP to accurately reflect ha proposed to be cleared for EPBC Act listed threatened species and ecological communities (refer to the Department's comment 1 above).</p>	<p>The CEMP (Attachment 3 – Construction Environmental Management Plan) has been revised to include the Proposal's potential impacts to the following EPBC Act listed threatened species and ecological communities:</p> <ul style="list-style-type: none"> • 8.13 ha of Banksia dominated woodlands of the SCP TEC (Banksia TEC) • 56.31 ha of Carnaby's Black Cockatoo foraging habitat • 45 potential breeding trees for Carnaby's Black Cockatoo.

No.	DoEE comment	PTA's response
14.	The CEMP references a development envelope of 72.86 ha however the biological impact assessment (Appendix C of the PER, page 37) references a development envelope of 72.88 ha. Please confirm the area of the development envelope and accurately reflect this area in the CEMP.	The CEMP has been revised to include the confirmed area of the development envelope as 72.86 ha (Attachment 3 – Construction Environmental Management Plan). The area referenced in biological impact assessment (Appendix C of the PER) is incorrect.
15.	In the CEMP, please identify the weeds in the development envelope including the Declared Weeds to be managed under the <i>Biosecurity and Agriculture Management Act 2007 (WA)</i> .	The CEMP (Attachment 3 – Construction Environmental Management Plan) has been revised to include the following Declared Pests as defined by the <i>Biosecurity and Management Act 2007 (BAM Act)</i> and/or Weeds of National Significance (WoNS): <ul style="list-style-type: none"> • <i>Gomphocarpus fruticosus</i> (narrowleaf cottonbush) – Declared Pest • <i>Moraea flaccida</i> (One-leaf Cape Tulip) – Declared Pest • <i>Solanum linnaeanum</i> (apple of Sodom) – Declared Pest • <i>Zantedeschia aethiopica</i> (Arum Lily) – Declared Pest • <i>Lantana camara</i> (common lantana) – Declared Pest and WoNS • <i>Asparagus asparagoides</i> (bridal creeper) – Declared Pest and WoNS.
16.	The CEMP states that “seed collection” will occur in areas of foraging habitat for the Carnaby’s Black Cockatoo. Please advise if collected seed will be used in the proposed revegetation of the site.	The CEMP Table 3-1 (Attachment 3 – Construction Environmental Management Plan) has been revised to confirm collected seed will be used as part of the revegetation within the development envelope, where practicable.
17.	The CEMP states that progressive clearing will occur to allow fauna to move away from clearing activities. Please identify the duration over which progressive clearing will occur.	The CEMP Table 3-3 (Attachment 3 – Construction Environmental Management Plan) has been revised to confirm progressive clearing will be undertaken over a maximum duration of three (3) months.
18.	The CEMP states that, prior to the proposed clearing, potential breeding trees for the Carnaby’s Black Cockatoo will be inspected and, if breeding activities is inspected, a 10 m buffer will be established and the proposed clearing postponed until “DBCA advises it is suitable to continue”. Please state the criteria that DBCA will use to determine when it is “suitable to continue [clearing]”.	The CEMP Table 3-3 (Attachment 3 – Construction Environmental Management Plan) has been revised with the DBCA suitability reference removed. The statement has been revised to “Postpone clearing within 10 m of active nests until an appropriately qualified terrestrial fauna spotter has verified that the hollow(s) are no longer being used by the black cockatoos”.

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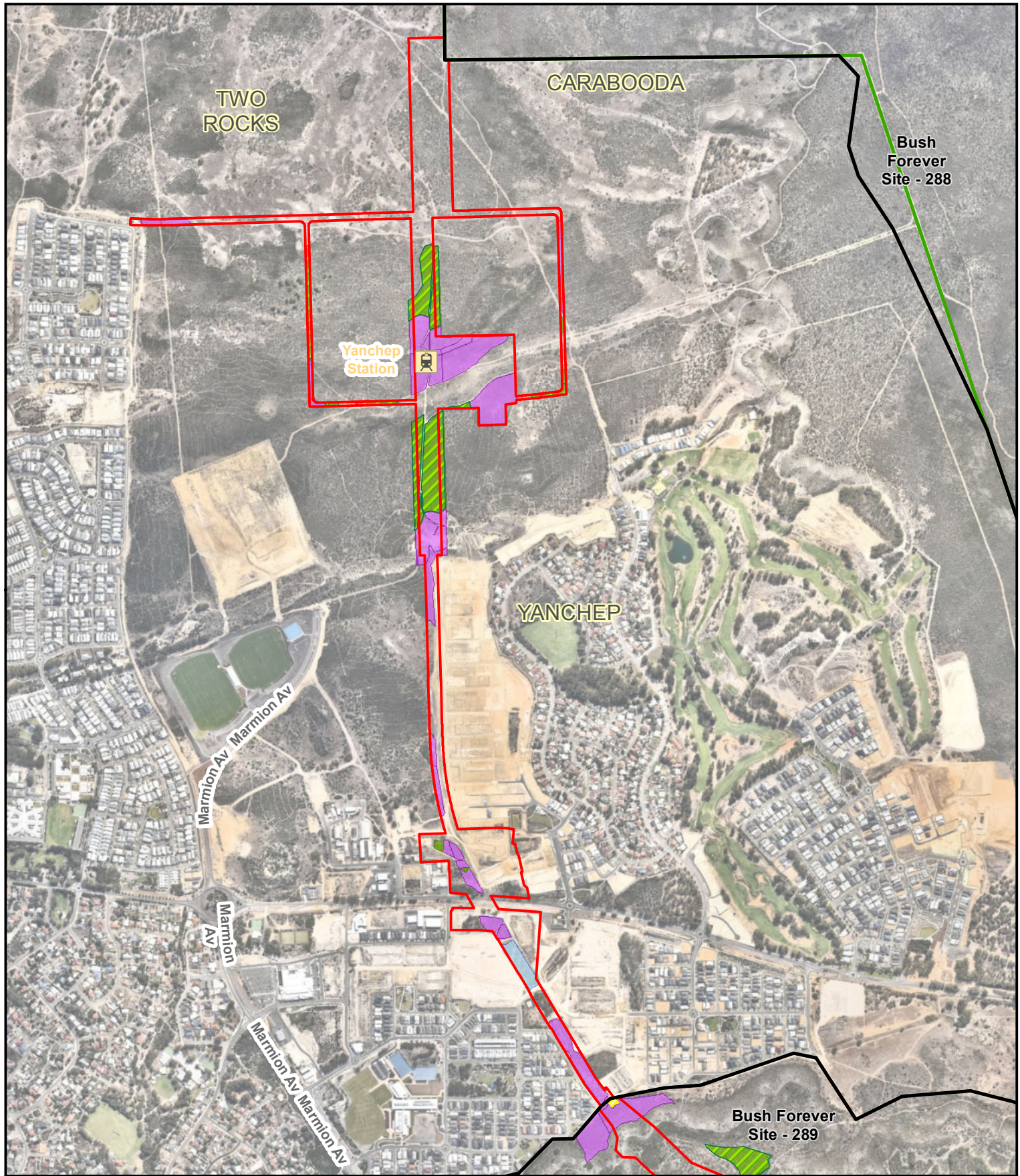
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4 Figures



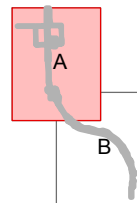
Yanchep Rail Extension (Part 2)
Figure 3 – Threatened and Priority Ecological Communities

Legend

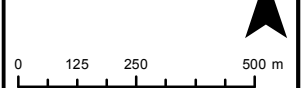
- Part 2 Development Envelope
- Proposed Station
- Bush Forever
- DBCA Legislated Lands and Water
- National Park
- Banksia dominated woodlands of the SCP IBRA Region (WA PEC)
- Northern Spearwood shrublands and woodland (FCT24) (WA PEC)
- Tuart woodlands of the Swan Coastal Plain (WA PEC)
- Banksia woodlands of the SCP (EPBC TEC)
- Melaleuca huegelii* - *M. systema* shrublands on limestone ridges (26a) (WA TEC)

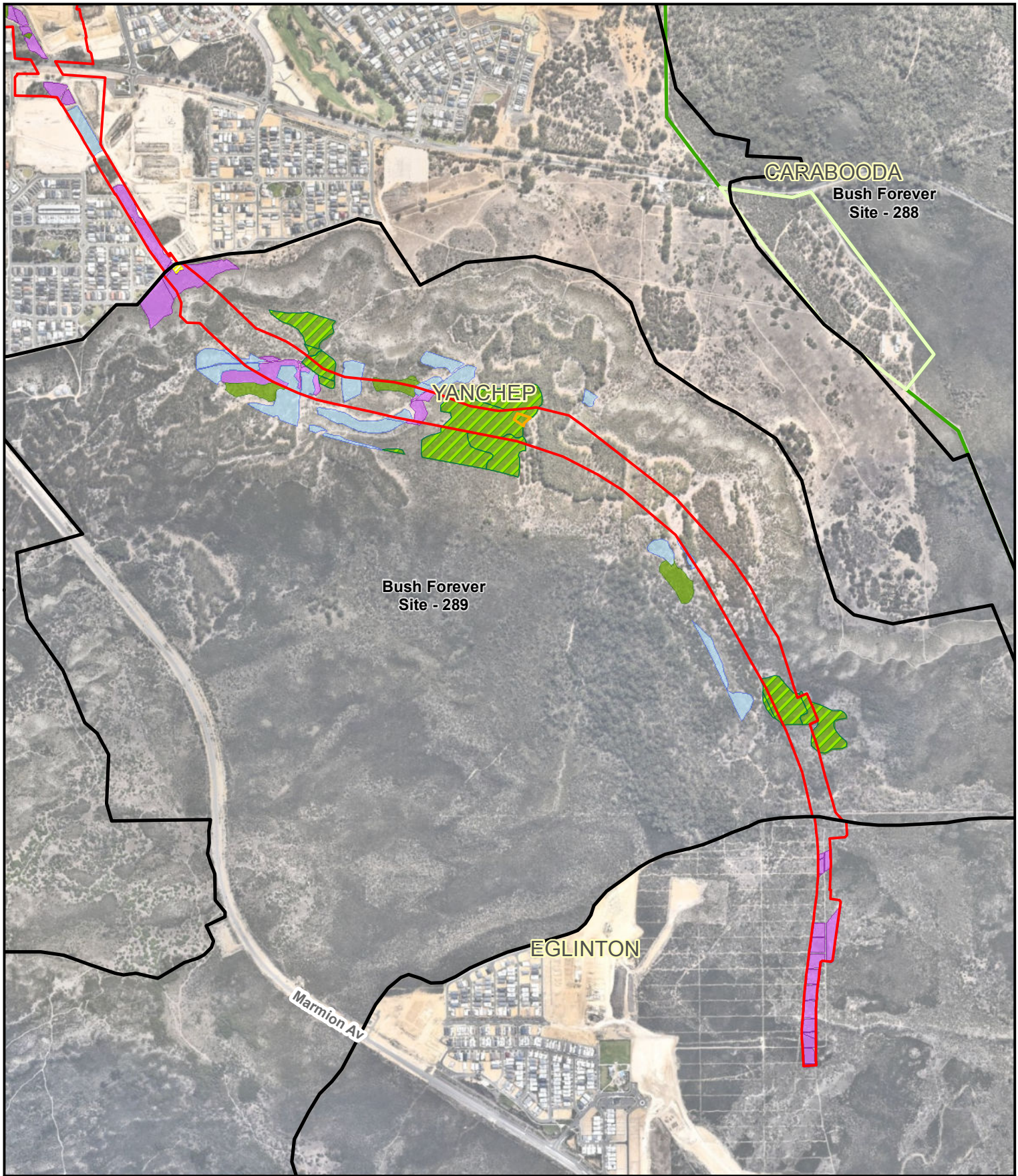


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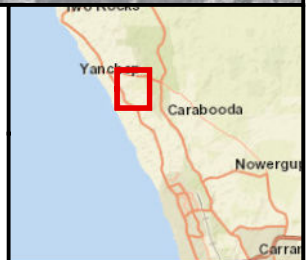
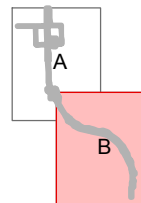
Yanchep Rail Extension (Part 2)
Figure 3 – Threatened and Priority Ecological Communities

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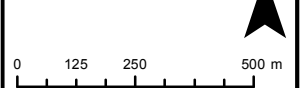
- Part 2 Development Envelope
- Bush Forever
- DBCA Legislated Lands and Water
- National Park
- Section 5(1)(h) Reserve
- Banksia dominated woodlands of the SCP IBRA Region (WA PEC)
- Northern Spearwood shrublands and woodland (FCT24) (WA PEC)
- Tuart woodlands of the Swan Coastal Plain (WA PEC)
- Banksia woodlands of the SCP (EPBC TEC)
- Melaleuca huegellii* - *M. systema* shrublands on limestone ridges (26a) (WA TEC)
- Revised from PEC to Banksia Woodlands of the Swan Coastal Plain TEC

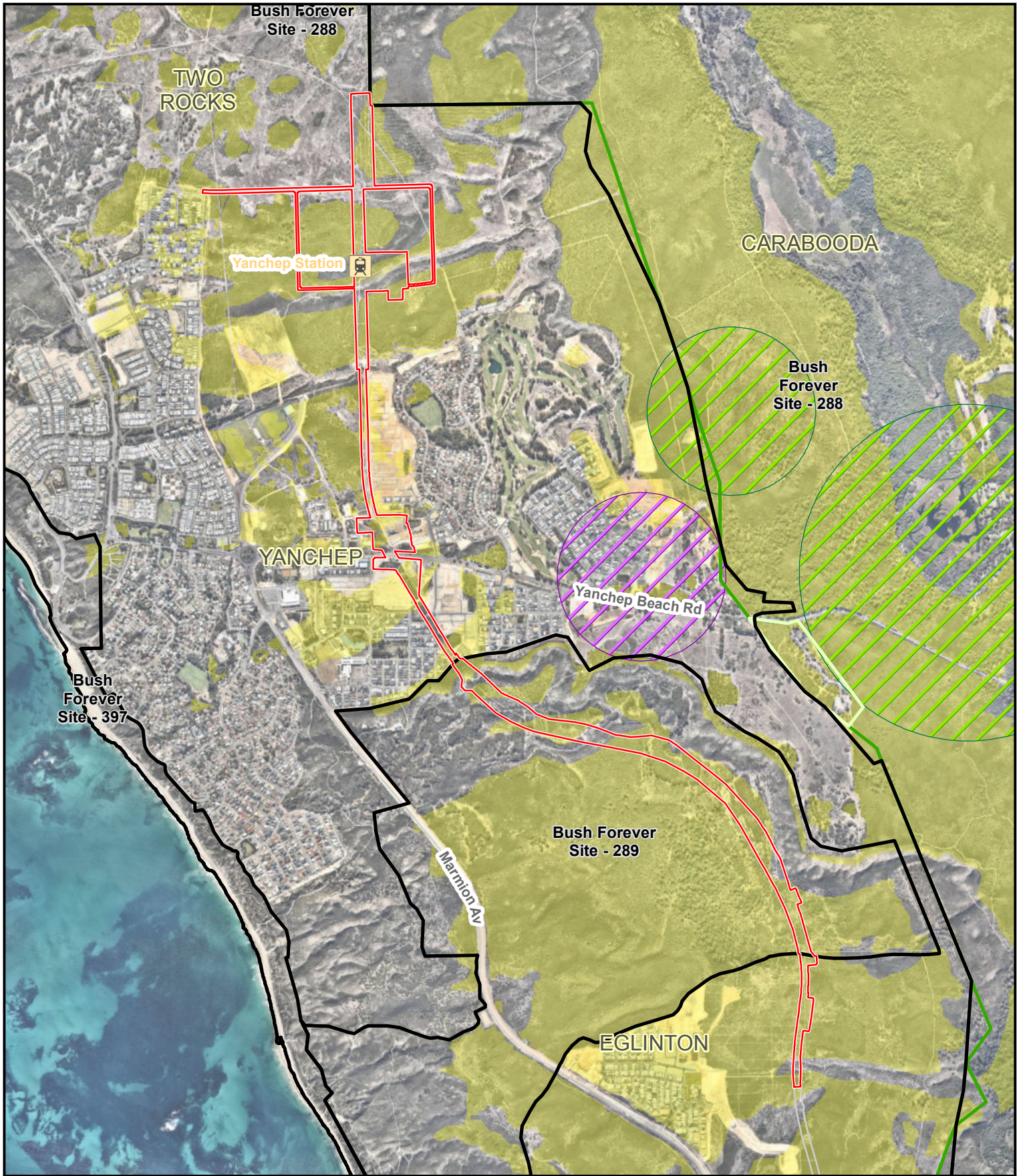


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Yanchep Rail Extension (Part 2)
Figure 4 – Local Context Black Cockatoo Habitat



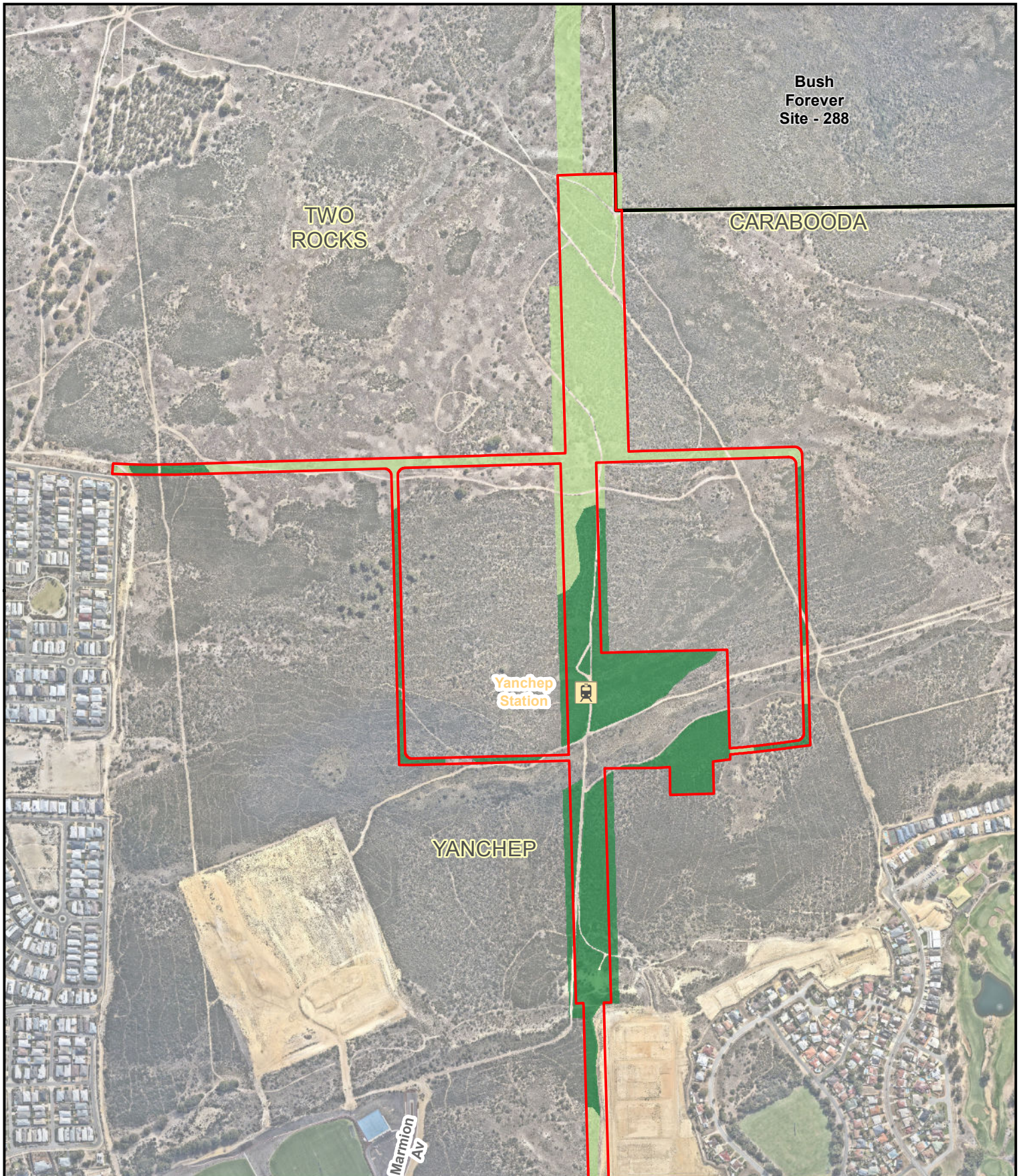
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- YRE Part 2 Development Envelope
- YRE Part 1 Development Envelope
- Proposed Station
- Bush Forever
- DBCA Legislated Lands and Water**
- National Park
- Section 5(1)(h) Reserve
- Confirmed Roost Sites (DBCA-050)
- Unconfirmed Roost Sites (DBCA-051)
- Areas Requiring Investigation as Feeding Habitat in the Swan Coastal Plain (DBCA-057)

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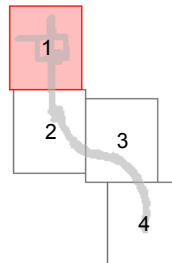
Yanchep Rail Extension (Part 2)
Figure 5 – Black Cockatoo Habitat



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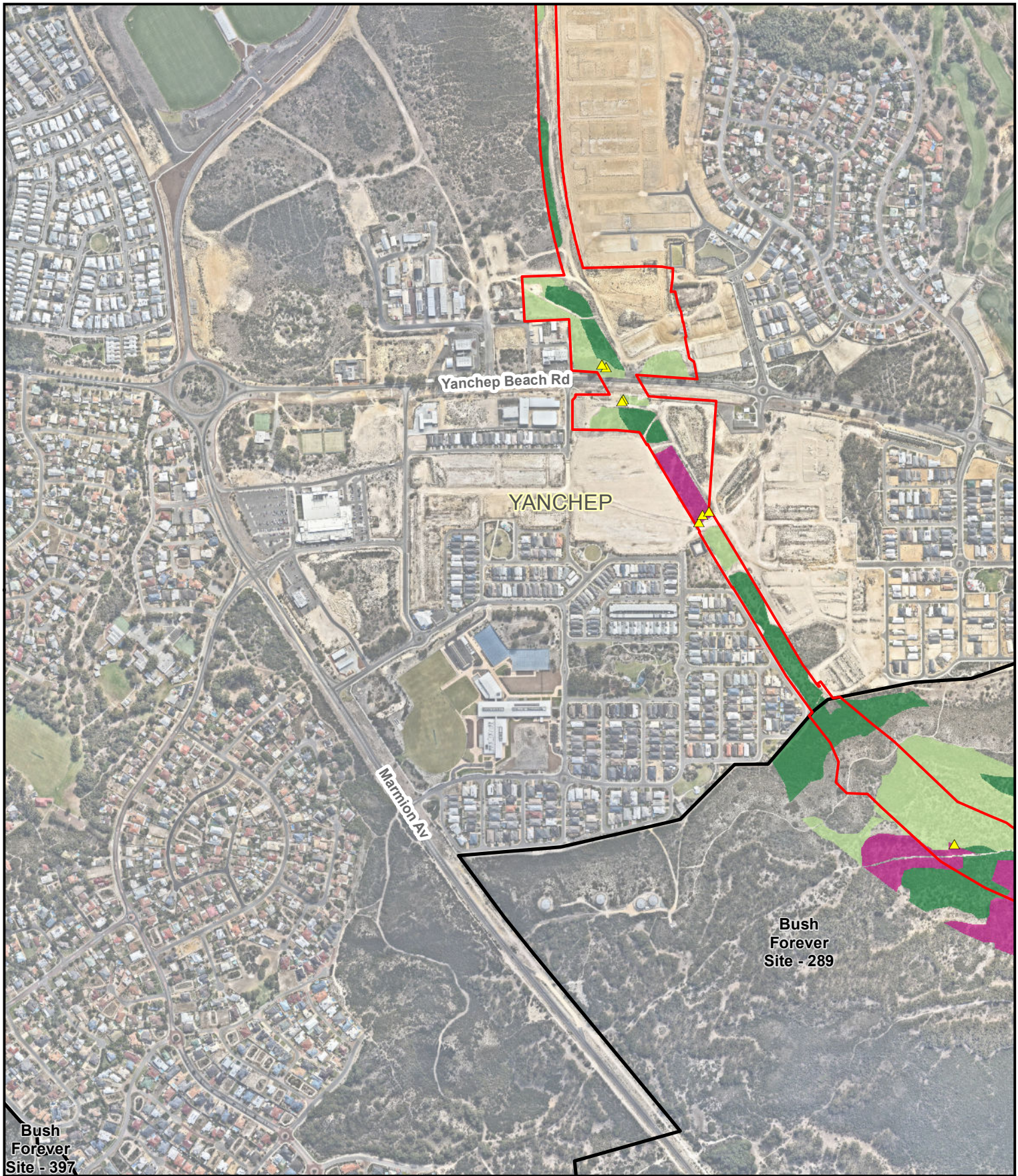
- YRE Part 2 Development Envelope
- Proposed Station
- Bush Forever
- DBCA Legislated Lands and Water
- National Park
- Black Cockatoo Foraging Habitat**
- Foraging - High Value
- Foraging - Moderate Value



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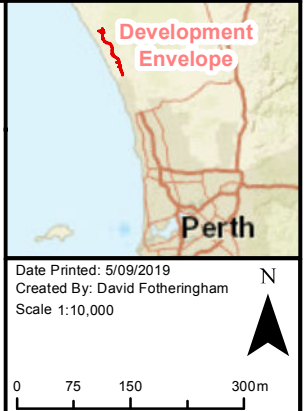
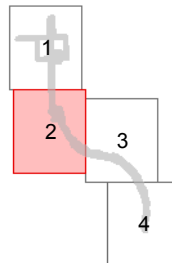
Yanchep Rail Extension (Part 2)
Figure 5 – Black Cockatoo Habitat

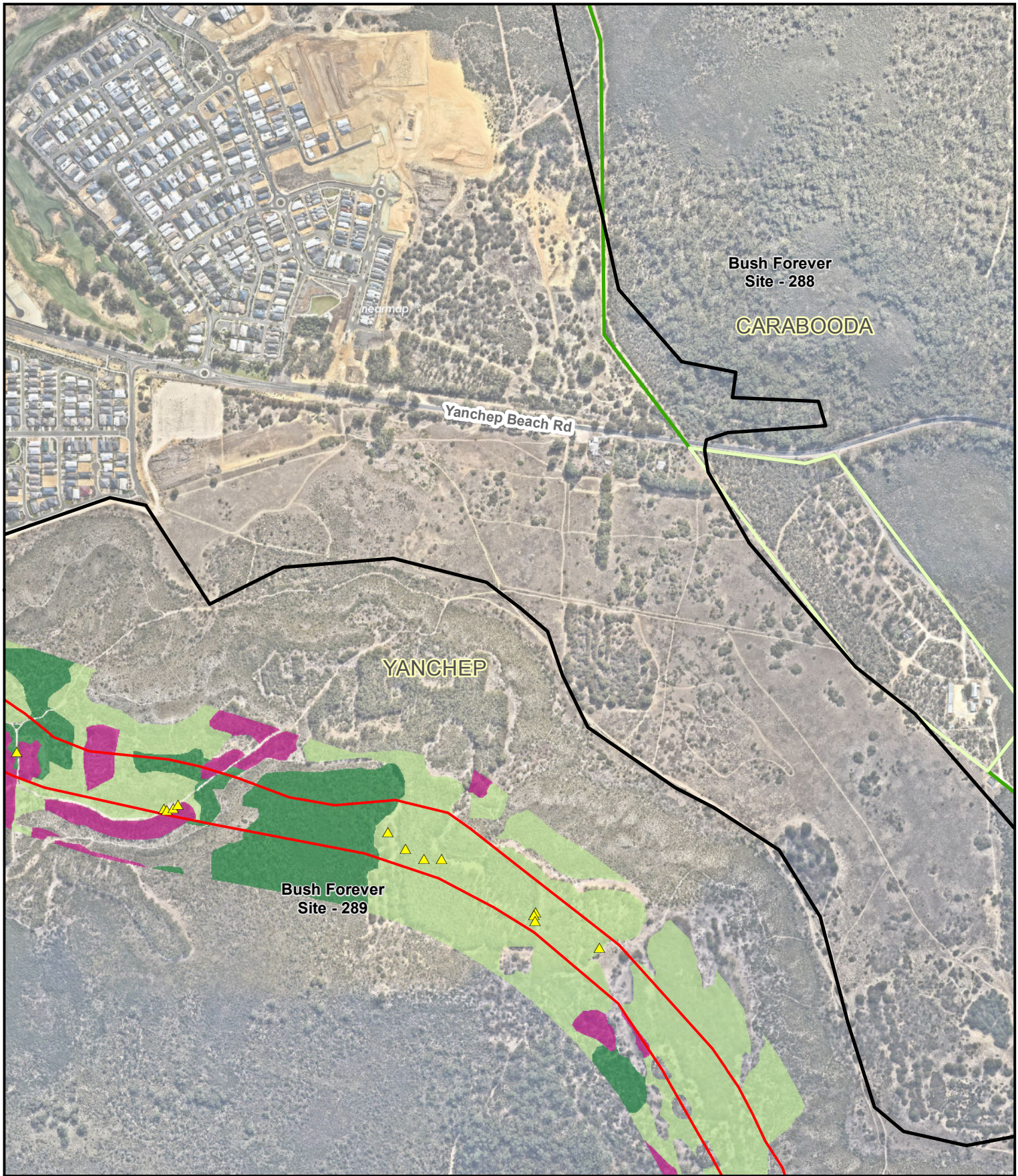


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Legend

- YRE Part 2 Development Envelope
- Bush Forever
- Black Cockatoo Foraging Habitat**
- Foraging, Breeding and Roosting - Moderate Value
- Foraging - High Value
- Foraging - Moderate Value
- Black Cockatoo Potential Breeding Trees





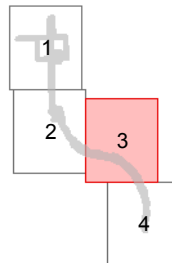
Yanchep Rail Extension (Part 2)
Figure 5 – Black Cockatoo Habitat



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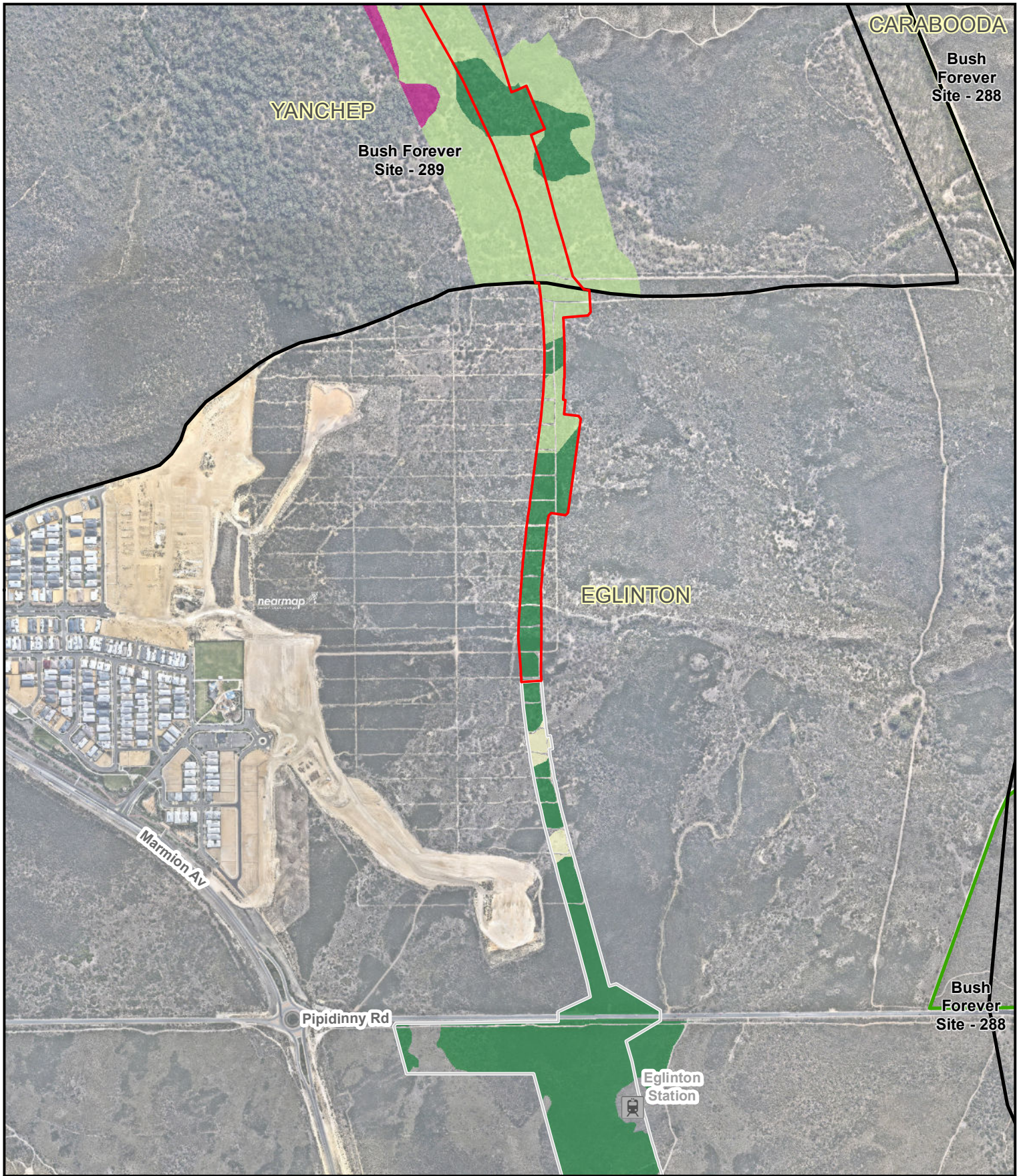
- | | |
|--|--|
| YRE Part 2 Development Envelope | Black Cockatoo Foraging Habitat |
| Bush Forever | Foraging, Breeding and Roosting - Moderate Value |
| DBCA Legislated Lands and Water | Foraging - High Value |
| National Park | Foraging - Moderate Value |
| Section 5(1)(h) Reserve | Black Cockatoo Potential Breeding Trees |



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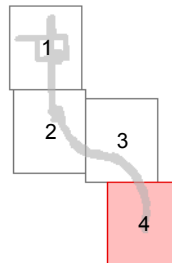
Yanchep Rail Extension (Part 2)
Figure 5 – Black Cockatoo Habitat



Public Transport Authority

Legend

- YRE Part 2 Development Envelope
 - YRE Part 1 Development Envelope
 - Proposed station (YRE Part 1)
 - Bush Forever
 - DBCA Legislated Lands and Water
 - National Park
-
- Black Cockatoo Foraging Habitat**
- Foraging, Breeding and Roosting - Moderate Value
 - Foraging - High Value
 - Foraging - Moderate Value
 - Foraging - Low Value



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5 Attachments