



# Report and recommendations of the Environmental Protection Authority



## Yanchep Rail Extension Part 2 - Eglinton to Yanchep

Public Transport Authority

Report 1656

November 2019

## Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
12/09/2018	EPA decides to assess – level of assessment set	
18/10/2018	EPA approved Environmental Scoping Document	6
22/05/2019	EPA accepted Environmental Review Document	31
27/05/2019	Environmental Review Document released for public review	5 days
08/07/2019	Public review period for Environmental Review Document closed	6
15/10/2019	EPA accepted Proponent Response to Submissions	10
24/10/2019	EPA completed its assessment	2
20/11/2019	EPA provided report to the Minister for Environment	4
25/11/2019	EPA report published	3 days
09/12/2019	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the Environmental Protection Authority (EPA) decides to assess the proposal and records the level of assessment.

In this case, the EPA met its timeline objective to complete its assessment and provide a report to the Minister.



Dr Tom Hatton  
Chairman

18 November 2019

ISSN 1836-0483 (Print)  
ISSN 1836-0491 (Online)  
Assessment No. 2174

## Executive Summary

The Yanchep Rail Extension: Part 2 – Eglinton to Yanchep Proposal (the proposal) was referred to the Environmental Protection Authority (EPA) by the proponent, the Public Transport Authority, on 25 August 2018.

The proposal consists of the construction and operation of a 7.2 kilometre extension to the Joondalup railway line from the future Eglinton Station to the suburb of Yanchep in the City of Wanneroo. The proposal includes one new intermodal (rail, bus, 'park and ride' 'kiss and ride', walk and cycle) transit station at Yanchep, principal shared path, bridge infrastructure, and construction and access areas.

The EPA conducted an environmental impact assessment on the proposal, which included a six week public review period of the environmental review document, and has concluded the proposal is environmentally acceptable and can be implemented subject to certain conditions.

The EPA examined potential impacts on three key environmental factors: Flora and Vegetation, Terrestrial Fauna and Social Surroundings.

Central to the EPA's assessment of the proposal were the environmental values of Bush Forever site 289 Ningana Bushland and the measures by the proponent to mitigate impacts to this important bushland.

The EPA has recommended conditions (listed in Appendix 4) that include:

- Construction of 'green bridges' to maintain the ecological linkage across Bush Forever site 289 Ningana Bushland.
- Requiring an environmental management plan for ongoing maintenance of 'green bridges', revegetation of temporary construction and access areas and to minimise indirect impacts to native vegetation within Bush Forever site 289 Ningana Bushland.
- Managing construction activities to minimise impacts to Carnaby's cockatoos and other terrestrial fauna.
- Minimising impacts of noise and vibration during construction and operation.
- Offsets to counterbalance the significant residual impact to Bush Forever site 289 Ningana Bushland, the Threatened Ecological Community '*Melaleuca huegelii* – *Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)', Carnaby's cockatoos and the Priority Ecological Community *Banksia dominated woodlands of the Swan Coastal Plain* IBRA Region commensurate with the *Banksia woodlands of the Swan Coastal Plain* Commonwealth listed Threatened Ecological Community.

# Contents

	<b>Page</b>
<b>1. Introduction .....</b>	<b>1</b>
1.1 EPA procedures.....	1
1.2 Assessment on behalf of Commonwealth.....	1
<b>2. The proposal .....</b>	<b>2</b>
2.1 Proposal summary.....	2
2.2 Context .....	6
<b>3. Consultation .....</b>	<b>7</b>
<b>4. Key environmental factors .....</b>	<b>8</b>
4.1 Flora and Vegetation.....	9
4.2 Terrestrial Fauna.....	19
4.3 Social Surroundings.....	27
<b>5. Offsets.....</b>	<b>31</b>
<b>6. Matters of National Environmental Significance .....</b>	<b>36</b>
<b>7. Conclusion .....</b>	<b>39</b>
<b>8. Other Advice.....</b>	<b>41</b>
<b>9. Recommendations .....</b>	<b>44</b>
<b>References.....</b>	<b>45</b>
<b>Appendix 1: List of submitters.....</b>	<b>48</b>
<b>Appendix 2: Consideration of principles .....</b>	<b>49</b>
<b>Appendix 3: Evaluation of other environmental factors .....</b>	<b>53</b>
<b>Appendix 4: Identified Decision-Making Authorities and Recommended Environmental Conditions.....</b>	<b>62</b>

**Tables**

Table 1: Summary of the proposal ..... 2  
Table 2: Location and proposed extent of physical and operational elements ..... 2  
Table 3: Significant ecological communities in the development envelope ..... 11

**Figures**

Figure 1: Proposal development envelope ..... 4  
Figure 2: Yanched Rail Extension Parts 1 and 2 and regional context..... 5

# 1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of the EPA's environmental impact assessment of the proposal by the Public Transport Authority (PTA). The proposal is to extend the existing Joondalup railway line from the suburb of Eglinton through to Yanchep in the City of Wanneroo.

The EPA has prepared this report in accordance with section (s.) 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified during the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA on 25 August 2018. On 12 September 2018, the EPA decided to assess the proposal and set the level of assessment at Environmental Review with a six week public review. The EPA approved the environmental scoping document (ESD) for the proposal on 18 October 2018. The environmental review document (ERD) was released for public review from 27 May 2019 to 8 July 2019.

## 1.1 EPA procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (EPA 2016d) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* (EPA 2016e).

## 1.2 Assessment on behalf of Commonwealth

The proposal was determined to be a controlled action by a delegate of the Commonwealth Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 27 September 2018 as it will, or is likely to have, a significant impact on the following matters of national environmental significance (MNES):

- listed threatened species and communities (s. 18 and 18A).

The proposal was assessed as an accredited assessment between the Commonwealth and Western Australian governments.

## 2. The proposal

### 2.1 Proposal summary

The proponent, the PTA, proposes to extend the Joondalup railway line by 7.2 kilometres (km) from the future Eglinton Station to the suburb of Yanchep in the City of Wanneroo, referred to as Yanchep Rail Extension Part 2 (Figures 1 and 2). The proposal is to construct and operate the rail extension and includes one new intermodal (rail, bus, 'park and ride' 'kiss and ride', walk and cycle) transit station at Yanchep.

The Yanchep Rail Extension Part 2 proposal includes the construction of stormwater drainage basins, construction and access areas and a turnback facility north of Yanchep Station to allow for the turning and stowage of trains.

The Yanchep Rail Extension Part 2 extends from the termination point of the Yanchep Rail Extension Part 1 at Eglinton north to Yanchep. Yanchep Rail Extension Part 1 was assessed by the EPA (EPA Report 1634) as a separate proposal in May 2019 (Figure 2).

The key characteristics of the proposal are summarised in Tables 1 and 2 below. A detailed description of the proposal is provided in section 2 of the ERD (ecological Australia, 2019).

**Table 1: Summary of the proposal**

<b>Proposal title</b>	Yanchep Rail Extension: Part 2 – Eglinton to Yanchep
<b>Short description</b>	The proposal is to construct and operate a 7.2 km extension to the Joondalup railway line from the future Eglinton Station to the suburb of Yanchep in the City of Wanneroo. The proposal includes one new intermodal transit station at Yanchep, principal shared path, bridge infrastructure, and construction and access areas.

**Table 2: Location and proposed extent of physical and operational elements**

<b>Element</b>	<b>Location</b>	<b>Proposed extent</b>
<b><i>Physical elements</i></b>		
Clearing and disturbance for construction of the railway, stations, principal shared path, drainage structures, construction laydown and access, fencing, bridges, noise walls.	Located within the development envelope as shown in Figure 1.	Clearing and disturbance of no more than 62.3 hectares (ha) which includes no more than: <ul style="list-style-type: none"> <li>• 57.7 ha of native vegetation including: <ul style="list-style-type: none"> <li>○ 0.05 ha of <i>Melaleuca huegellii</i> – <i>Melaleuca systema</i> shrublands on limestone ridges</li> </ul> </li> </ul>

Element	Location	Proposed extent
		<p>(Gibson et al. 1994 type 26a);</p> <ul style="list-style-type: none"> <li>○ 8.8 ha of Banksia dominated woodlands of the Swan Coastal Plain IBRA Region.</li> <li>● 28.8 ha of Bush Forever site 289.</li> <li>● 56.3 ha of Carnaby's cockatoo foraging habitat, inclusive of 2.1 ha of Carnaby's cockatoo potential breeding habitat</li> <li>● 45 Carnaby's cockatoo potential breeding trees within a 72.9 ha development envelope.</li> </ul>



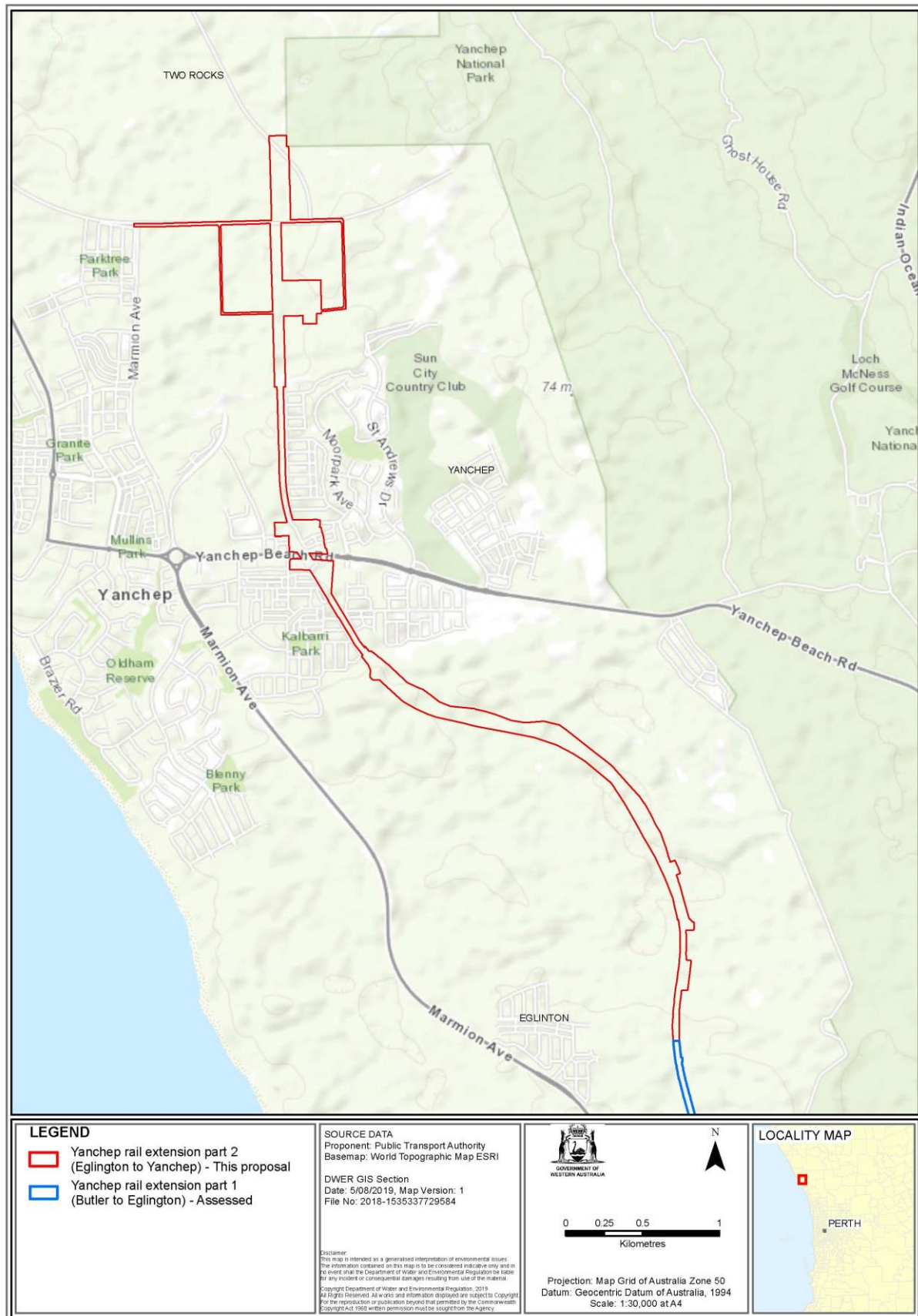


Figure 1: Proposal development envelope



Figure 2: Yanchep Rail Extension Parts 1 and 2 and regional context

## 2.2 Context

The proposal is located approximately 40 km north of Perth's central business district between the suburbs of Eglinton and Yanchep in the City of Wanneroo.

Under the Metropolitan Region Scheme (MRS), the proposal is located in areas zoned for urban development and reserved for parks and recreation. The majority of the proposal development envelope is comprised of land reserved for Railways, with the remaining land reserved for Other Regional Roads and Parks and Recreation or zoned Urban and Central City Area.

### **Previous EPA consideration of the St Andrews Yanchep – Two Rocks North West Corridor MRS Amendment 975/33**

The proposal generally follows the Railways reservation in the MRS. In 1996, MRS Amendment 975/33 rezoned approximately 4,250 hectares (ha) of rural land within the north-west urban corridor to Urban/Urban Deferred, created a Central City zoning for a proposed strategic regional centre (160 ha) and reserved 1,340 ha for Parks and Recreation purposes, including the majority of the current Bush Forever site 289 Ningana Bushland (BF 289 Ningana Bushland). MRS Amendment 975/33 further identified the major regional road reserves and extensions to the northern suburbs passenger rail system and included the railway reservation to the Yanchep townsite.

Amendment 975/33 was initiated prior to amendments to planning and environmental legislation that allows the EPA to undertake environmental impact assessment at the scheme amendment stage. Therefore, while the EPA provided advice to the Western Australian Planning Commission (WAPC) in 1996 regarding MRS Amendment 975/33, it has not formally considered the railway reservation to Yanchep under Part IV of the EP Act.

In summary, while the railway reservation has received relevant planning approvals, this is not an environmental impact assessment consideration for the EPA. Under the EP Act, the EPA can only consider the merits and environmental impacts of the proposal that has been referred. It is further noted that the current railway reservation has not been subject to environmental assessment and approval by the EPA and the Minister for Environment, respectively.

### 3. Consultation

The EPA advertised the referral information for the proposal for public comment in September 2018 and received 27 submissions. One submission requested ‘Assess – Environmental Review – No Public Review’ and 26 submissions requested ‘Assess – Public Environmental Review’.

The proponent consulted with government agencies and key stakeholders during the preparation of the ERD. The agencies and stakeholders consulted, the issues raised, and the proponent’s responses are detailed in the proponent’s ERD (ecological Australia, 2019).

Five agency submissions and 10 public submissions were received during the public review period. The key issues raised relate to:

- lack of consideration of alternative transport options, alternative alignments or alternative construction methods
- lack of consideration of potential impacts to the Banksia woodlands of the Swan Coastal Plain Threatened Ecological Community (TEC)
- cumulative impact of the whole Yanchep rail extension and associated future urban development
- fragmentation of the east-west ecological linkage
- impacts from clearing of native vegetation and fauna habitat, particularly on Carnaby’s cockatoo foraging, roosting and potential breeding habitat
- impacts on BF 289 Ningana Bushland which is reserved for parks and recreation in the MRS.

The proponent addressed the issues raised in the Response to Submissions document (PTA 2019).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders about the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

## 4. Key environmental factors

In undertaking its assessment of this proposal and preparing this report, the EPA had regard for the object and principles contained in s. 4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information and ERD
- public comments received on the referral, stakeholder comments received during the preparation of the proponent's documentation and public and agency comments received on the ERD
- the proponent's response to submissions raised during the public review of the ERD
- the EPA's own inquiries
- the EPA's *Statement of environmental principles, factors and objectives* (EPA 2018)
- the relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.3.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation** – direct and indirect impacts from clearing of flora and vegetation including impacts to Priority and Threatened Ecological Communities and the bisection and fragmentation of a large regional east-west ecological linkage.
- **Terrestrial Fauna** – direct and indirect impacts associated with the clearing of fauna habitat as well as fragmenting a large reserve that provides an east-west ecological linkage.
- **Social Surroundings** – potential construction and operation impacts to social surroundings from noise and vibration and dust emissions.

The EPA considered other environmental factors during the course of its assessment of the proposal. These factors, which were not identified as key environmental factors, are discussed in the proponent's ERD (ecological Australia, 2019). Appendix 3 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that the following principles were particularly relevant to its assessment of the proposal:

1. **The precautionary principle** – the proposal has the potential to result in serious or irreversible damage to occurrences of a TEC and habitat for an Endangered species of black cockatoo. The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and

that relevant measures are undertaken by the proponent to manage residual impacts.

2. **The principle of intergenerational equity** – the proposal has the potential to impact the health, diversity and productivity of a TEC and foraging and potential breeding habitat for an Endangered species of black cockatoo. The EPA has recommended conditions to ensure the biological environment is maintained for the benefit of future generations.
3. **The principle of the conservation of biological diversity and ecological integrity** – the proposal will clear areas of a TEC, three Priority Ecological Communities (PEC), areas of foraging and potential breeding habitat for an Endangered species of black cockatoo and will bisect a regionally significant ecological linkage. The EPA has recommended conditions to manage the impacts on conservation significant vegetation and fauna so that biological diversity and ecological integrity are maintained.

Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 – 4.3. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 7 provides the EPA's conclusion as to whether or not the proposal as a whole is environmentally acceptable.

## **Assessment on behalf of Commonwealth**

The EPA assessed the proposal on behalf of the Commonwealth Minister for Environment as an accredited assessment. The EPA has addressed MNES under each relevant factor and has summarised its assessment of MNES in section 6.

### **4.1 Flora and Vegetation**

#### **EPA objective**

The EPA's environmental objective for this factor is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained.*

#### **Relevant policy and guidance**

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a)
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016f)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a).

In addition to the relevant current policy and guidance above, the EPA also had regard to the Interim Recovery Plan No 193 *Melaleuca huegelii – Melaleuca systema* shrublands of limestone ridges (Swan Coastal Plain Community type 26a – Gibson et al. 1994) (Luu and English 2005).

### **EPA assessment**

Consistent with the *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a), the EPA has considered the potential direct and indirect impacts, cumulative impacts, and risks to flora and vegetation.

Consistent with the EPA's *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a), the EPA has considered the:

- application of the mitigation hierarchy
- potential direct and indirect impacts of the proposal
- risks to flora and vegetation posed by the proposal
- implication of cumulative impacts
- scale at which impacts may occur
- significance of the flora and vegetation impacted
- proposed management and mitigation approaches and whether they are technically and practically feasible
- level of confidence underpinning the predicted residual impacts.

### **Flora and vegetation surveys**

In total, six field surveys have been undertaken, each comprising either the whole or part of the full Yanchep rail extension alignment that runs between Butler in the south and Yanchep in the north.

While the surveys undertaken did not incorporate vegetation unit characterisation of an area between 500 and 1000 metres (m) on both sides of the proposal corridor, the EPA considers that the flora and vegetation surveys are mostly consistent with the current policy and guidance documents. When combined with existing information and previous surveys in the area, there is sufficient detail to allow the EPA to undertake its assessment on flora and vegetation.

### **Existing environment**

The development envelope comprises a mixture of remnant native vegetation, planted eucalypt species, highly disturbed areas and cleared areas. Two vegetation complexes occur within the development envelope, the Quindalup Complex and Cottesloe Complex – North. Only a small portion, approximately one hectare, of the development envelope intersects vegetation associated with the Cottesloe Complex

– North. The current extent remaining of both Complexes is greater than 30 per cent of the pre-European extent.

Vegetation condition within the development envelope ranged from ‘Completely Degraded’ to ‘Excellent’ with the majority (54 per cent) of vegetated areas in ‘Good’ or better condition (ecological Australia 2019). Thirteen vegetation types were described across approximately 62 ha of the development envelope; approximately 58 ha was considered to be representative of native vegetation in ‘Degraded’ or better condition. Four significant ecological communities occur within the development envelope, one TEC and three PECs, and are described in Table 3.

**Table 3: Significant ecological communities in the development envelope**

Floristic Community Type (FCT)	Extent within development envelope (ha)	Pre-European extent remaining (ha)	State listing, EPBC Act listing
<i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands on limestone ridges (SCP 26a)	0.05 <sup>1</sup>	199	Endangered, N/A
Banksia dominated woodlands of the SCP IBRA Region (Banksia PEC)	8.8 <sup>2</sup>	16,837 <sup>3</sup>	P3, Endangered (Banksia woodlands of the SCP)
Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands of the SCP (Tuart PEC)	2.1	17,070	P3, Critically Endangered (Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the SCP) <sup>4</sup>
Northern Spearwood shrublands and woodlands (FCT 24 PEC)	13.7	1008	P3, N/A

<sup>1</sup> New occurrence that adds to known extent of community

<sup>2</sup> 8.1 ha of which is commensurate with the EPBC Act listed Banksia woodlands of the SCP TEC

<sup>3</sup> Pre-European extent remaining within the north-west corridor

<sup>4</sup> Listed in July 2019

The development envelope traverses 28.8 ha of BF 289 Ningana Bushland, with 10.1 ha and 18.7 ha within the MRS ‘Railway’ and ‘Parks and Recreation’ reservations respectively. Approximately 27.7 ha is mapped as being in a ‘Degraded’ or better condition and is considered regionally significant native vegetation.

#### *Values of Ningana Bushland*

BF 289 Ningana Bushland covers 640.8 ha in total, contains up to 564 ha of native vegetation and is a recognised east-west regional ecological linkage (Link No. 0) within the City of Wanneroo. Link No. 0 provides a link through BF 289 Ningana Bushland to two major north-south regional ecological linkages, the coastal bushland strip and the inland wetland chains (ecological Australia, 2019).



BF 289 Ningana Bushland is recognised in the Bush Forever report (Government of Western Australia, 2000) as part of a regionally significant contiguous bushland/wetland linkage. BF 289 Ningana Bushland meets all six specific coastal reserve criteria. The area also meets all six of the EPA's criteria for the identification of regionally significant natural areas; representation of ecological communities; diversity; rarity; maintaining ecological processes or natural systems; scientific or evolutionary importance; general criteria for protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation.

The flora and vegetation surveys (GHD 2018) identified 150 native flora species within the survey area. No threatened flora species listed under the *Biodiversity Conservation Act 2016* were recorded during the survey. One individual of the Priority 3 (P3) species *Hibbertia spicata* subsp. *leptotheca* was recorded in the development envelope during the 2016-2018 surveys (GHD, 2018). An additional three Department of Biodiversity, Conservation and Attractions (DBCA) Priority-listed flora species were recorded during the 2012 flora and vegetation survey (GHD 2012) but were not relocated during the 2016-2018 field surveys.

Sixty-two introduced flora taxa were recorded during field surveys, including six declared pests under the *Biosecurity and Agriculture Management Act 2007*, two of which are considered weeds of national significance. No *Phytophthora cinnamomi* infestations were observed within the development envelope. The presence of calcareous soils and limestone within the development envelope reduces the likelihood of *Phytophthora cinnamomi* being present.

### **Impacts**

The potential impacts of the proposal can be described with respect to the direct and indirect impacts, and also the wider-scale impacts on the Bush Forever site and the regional ecological linkage.

The proposal would directly impact on flora and vegetation through the clearing of up to 57.7 ha of vegetation that includes the conservation significant communities identified in Table 3. This includes 27.7 ha of BF 289 Ningana Bushland of intact native vegetation that is considered regionally significant.

Of the 72.9 ha development envelope, approximately 15.1 ha is considered to be 'Completely Degraded' or 'Cleared'.

The proposal also has the potential to indirectly impact flora and vegetation through:

- the introduction and spread of weeds and disease
- increased fire risk and changes to fire regimes
- increased dust emissions during construction
- fragmentation of native vegetation and an east-west regionally significant ecological linkage
- alteration of hydrological processes
- edge effects.

The wider-scale impacts associated with permanently dividing BF 289 Ningana Bushland into smaller areas are significant but difficult to quantify. The proposal will increase the perimeter to area ratio of the remaining bushland area either side of the proposal. Currently, BF 289 Ningana Bushland is bisected into two blocks, one of 160 ha to the west of Marmion Avenue and a larger area of approximately 479 ha to the east of Marmion Avenue.

This proposal will further bisect this larger block into a 321 ha patch between Marmion Avenue and the proposal and a smaller 130 ha patch east of the proposal. This smaller patch will be bordered by an area of urban development and the future extension of the Mitchell Freeway planned to run adjacent to Yanchep National Park.

This proposal has the potential for disruption to ecosystem processes such as fauna movement (discussed under terrestrial fauna), and flora recruitment and germination cues that may take many years following construction to be noticeable. Overall, without measures to maintain habitat connectivity the significant values and the viability of the site would erode over time.

From a cumulative impact perspective, the proposal introduces additional pressures to a bushland reserve that is already under pressure from threats caused by uncontrolled access, rubbish dumping, weeds and increasing and ongoing impacts from surrounding urban developments to the north and south.

### ***Mitigation and management measures***

The EPA notes the proponent's application of the mitigation hierarchy. The EPA is aware that beyond BF 289 Ningana Bushland the proposal is considerably constrained by urban development, particularly north of BF 289 Ningana Bushland. Urban development is yet to occur along most of the southern boundary of BF 289 Ningana Bushland and the alignment is less constrained in this area. The proponent proposes to clear the entire development envelope.

The EPA notes that outside of BF 289 Ningana Bushland that the proponent has minimised the width of the development envelope to the minimum required to construct and operate the railway, approximately 40 m. This is due to constraints of surrounding urban development. The proponent has opted to construct the proposal at grade, rather than in a cutting, throughout BF 289 Ningana Bushland. This will result in a development envelope of up to 130 m wide through the Bush Forever area, partially to accommodate engineering requirements of constructing at grade and partially for the provision of temporary construction laydown areas.

Temporary construction laydown areas will be located within BF 289 Ningana Bushland and the proponent proposes to limit these areas as much as possible. The proponent also proposes where these laydown areas are not required for permanent infrastructure, they will be revegetated or stabilised where practicable. No rehabilitation has been proposed as part of the proponent's mitigation hierarchy or as a component of the construction environmental management plan.

Standard construction management measures that are practicable and technically feasible have been proposed in a construction environmental management plan to ensure the risk of indirectly impacting remnant, adjacent vegetation is minimised.

Management measures include:

- demarcation of the development envelope
- identification of trees to be retained
- vehicles to be clean on entry and exit to minimise spread of weeds
- sourcing of clean fill and treatment of fill that may contain weed seed
- management of declared weeds
- site access restrictions and inductions
- standard dieback management procedures
- salvage of topsoil and seed collection
- revegetation of batters of a suitable gradient.

### ***Assessment of impacts***

#### **BF 289 Ningana Bushland**

The proposal would result in the direct loss and fragmentation of regionally significant vegetation as it bisects BF 289 Ningana Bushland. The proposal would directly impact 28.8 ha of BF 289 Ningana Bushland of which 27.7 ha is intact native vegetation.

As discussed above, the proposal will result in a 130 ha block of BF 289 Ningana Bushland east of the proposal becoming isolated. The EPA considers that this block will be of a size and shape that may limit its viability given its predominantly linear shape, large perimeter to area ratio, and that it will be bound to the east and north largely by urban development.

Advice received from the DBCA during the course of the EPA's assessment suggests that green bridges should be provided to reduce the significance of the impacts of fragmentation. One located in the southern portion of BF 289 Ningana Bushland to facilitate landscape-scale east-west ecological linkage and one in the north of the site. The DBCA further advised that consideration could be given to constructing additional green bridges to further mitigate the impacts of the development. These green bridges would assist in maintaining the resilience of the remaining fragmented area and the viability of the vegetation communities and terrestrial fauna species (discussed under terrestrial fauna) of the area.

To address fragmentation impacts within BF 289 Ningana Bushland, the EPA recommends that at least three 30 m wide green bridges be installed across the rail line. Having regard to the scale and extent of the infrastructure through the regionally significant bushland (2.9 km), the EPA considers this would serve to further minimise impacts on Ningana Bushland.

The EPA agrees with the DBCA that green bridges should be spaced along the entire portion of the alignment that traverses BF 289 Ningana Bushland. However, in

order to avoid a green bridge being located at the northern section of BF 289 Ningana Bushland where the effectiveness may be limited by indirect impacts associated with urban development, the EPA is recommending that green bridges be located within the southern and central extent of the alignment through BF 289 Ningana Bushland (condition 6-2).

Based on advice of the DBCA, the EPA considers that in order for green bridges to maintain an ecological linkage across the rail corridor they should provide a continuously vegetated link to areas of intact native vegetation.

The EPA acknowledges that emergency vehicle access is required along the rail alignment. Noting the importance of providing emergency access, the EPA encourages the proponent to examine every opportunity to look at innovative ways to incorporate emergency access into green bridges whilst maintaining continuous vegetated links. The EPA recommends condition 6-2 to ensure that the green bridges directly connect areas of intact native vegetation to provide a continuously vegetated link and provide vegetative habitat cover across the extent of each green bridge, where practicable.

The EPA is aware that ongoing management would be required to maintain the effectiveness of vegetated green bridges. The EPA recommends condition 6-3 that requires an ongoing management plan be prepared and implemented to ensure that the green bridges are maintained to ensure that the ecological linkage is retained within BF 289 Ningana Bushland. The management plan will require the proponent to demonstrate that the ecological linkage is retained within BF 289 Ningana Bushland, identify the indicative location and design of the green bridges and include completion criteria for the provision of vegetative cover.

The management plan must also specify on-ground management actions related to feral animal control, weed control, fencing and access control, and hygiene management measures. This condition requires the management plan to be prepared on advice of the DBCA.

The EPA considers that the provision of green bridges within BF 289 Ningana Bushland will mitigate the impacts associated with fragmentation. However, the EPA considers that the loss of 27.7 ha of regionally significant bushland from BF 289 Ningana Bushland would result in a significant residual impact that would require an offset.

The DBCA has advised that on-ground management actions should be undertaken within BF 289 Ningana Bushland. The EPA agrees with the advice of the DBCA and considers that on-ground management is appropriate to counterbalance the significant residual impact to BF 289 Ningana Bushland. The EPA considers that on-ground management should contribute to a net environmental benefit and tangible improvement within BF 289 Ningana Bushland and recommends condition 11 consistent with the WA Offset Guidelines. Offsets are discussed further in section 5.

The EPA notes that the proponent is proposing to locate temporary construction areas for laydown and access to the rail corridor within BF 289 Ningana Bushland,

and that the proponent proposes to revegetate or stabilise these areas where practicable. The EPA considers that any areas within BF 289 Ningana Bushland that are not required for permanent infrastructure should be revegetated with endemic species. The EPA is therefore recommending condition 8 which will require the proponent to undertake revegetation within BF 289 Ningana Bushland for any areas not required for ongoing operations, through the preparation and implementation of a revegetation management plan.

The EPA also considers that indirect impacts from the proposal should be managed directly outside the development envelope within BF 289 Ningana Bushland. The EPA therefore recommends condition 7 requiring an environmental management plan be prepared and implemented.

#### Threatened Ecological Community SCP 26a

The clearing of up to 0.05 ha of TEC SCP 26a in 'Very Good' condition is equivalent to less than 0.1 per cent of the previously known extent (101 ha) remaining within the north-west sub-regional planning framework area. The occurrence of the community identified during the biological survey for the proposal are considered to be locally significant as no other occurrences are known within the local area.

As an 'Endangered' community, all known occurrences are habitat critical, and all occurrences are important (Luu and English, 2005 p.3). The EPA notes that many of the currently known occurrences of SCP 26a occur in areas protected for conservation or are proposed for retention, and that the identified occurrence within the development envelope is a newly identified occurrence of the community.

The EPA notes that the development of the previously approved Yanchep Rail Extension Part 1 will result in the loss of up to 0.94 ha of SCP 26a and that a number of previously identified occurrences of the community are located in areas proposed for industrial development or resource extraction. The ecological community therefore faces increasing and ongoing pressures from development.

The EPA therefore recommends that the proponent should provide an offset to counterbalance the significant residual impact of the loss of 0.05 ha of SCP 26a. The EPA recommends conditions 11-2 through 11-7 to identify an initially unprotected area or areas to be protected for conservation.

#### Priority Ecological Communities

As described in Table 3, the proportion of the vegetation loss for each of these priority ecological communities is small and incremental, and the EPA considers the proposal is unlikely to significantly impact the regional extent of any community.

Therefore, having regard to the relevant EP Act principles and the environmental objective for Flora and Vegetation, the EPA considers that the conservation rating of these PECs are unlikely to change as a result of clearing. The EPA therefore considers that the impacts are acceptable and do not require an offset.

### *Banksia PEC*

The EPA notes that 8.1 ha of the 8.8 ha of the Banksia PEC is also considered to be representative of the EPBC Act listed Banksia dominated woodlands of the SCP TEC. Impacts to the Banksia woodlands of the SCP TEC are assessed in section 6.

### *Tuart PEC*

The EPA notes that the Tuart PEC has recently been listed under the EPBC Act as 'Critically Endangered' and is further discussed in section 6.

### *FCT 24 PEC*

This proposal will impact approximately four per cent of the mapped extent of the community in the north-west corridor. However, when considered cumulatively with the Yanchep Rail Extension Part 1, the total potential impact is 29.7 ha or nine per cent of the current north-west planning sub-region extent. The EPA notes that the potential cumulative impact to the FCT 24 PEC from urban land development is unmapped.

The EPA is aware that the FCT 24 PEC is increasingly vulnerable to future clearing for urban development in the north-west corridor. Several of the mapped occurrences have been cleared for resource extraction or are zoned for infrastructure or industrial development. Consistent with the previous assessment of the Yanchep Rail Extension Part 1, the EPA therefore provides 'other advice' in relation to the further clearing of the FCT 24 PEC in section 8 of this report.

### Indirect impacts

The EPA notes the proponent has proposed to incorporate water sensitive urban design principles into the design of the proposal as appropriate. The EPA considers this is appropriate to manage surface water flows in the area and should contribute to minimising indirect impacts to vegetation as a result of changes to surface hydrology.

The EPA considers that the provision of access on the eastern and western sides of the rail line within BF 289 Ningana Bushland may result in indirect impacts to the bushland from unauthorised vehicle access or unmanaged pedestrian access. Unauthorised vehicle access may include motorcycle riders and unmanaged pedestrian access may include recreational walkers and pet owners. This has the potential to significantly impact on the values of BF 289 Ningana Bushland. The proponent has proposed 1.2 m high fencing along the western boundary of the development envelope and restricting access to the access track on the eastern side of the alignment with the installation of locked boom gates or similar. The EPA notes that no fencing is proposed to be installed on the eastern side of the development envelope within BF 289 Ningana Bushland.

Overall, the EPA considers that the proponent's proposed management of the potential indirect impacts from construction of the proposal are practicable and technically feasible. To ensure that indirect impacts to flora and vegetation within BF 289 Ningana Bushland are minimised as far as practicable, the EPA recommends the implementation of an environmental management plan (condition 7) to ensure that the proposal minimises indirect impacts to flora and vegetation.

The EPA considers that indirect impacts to flora and vegetation are not likely to be significant if there is implementation of conditions 6 and 7.

## Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016a)
- direct impacts to 0.05 ha of the TEC SCP 26a
- direct and indirect impacts to BF 289 Ningana Bushland
- fragmentation of a large regional east-west ecological linkage
- potential indirect impacts from the spread of weeds, unauthorised vehicle access, unmanaged pedestrian access, increased risk of fire and edge effects
- proponent's proposed measures to mitigate fragmentation impacts
- proponent's proposed management measures to minimise construction impacts.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation that the impacts to this factor are manageable and would no longer be significant, provided:

- There is control through the authorised extent in Schedule 1 of the Recommended Environmental Conditions (Appendix 4).
- There is a requirement for the proponent to construct no less than three green bridges within BF 289 Ningana Bushland in accordance with implementation condition 6.
- That there is implementation of measures to maintain the ecological linkage through BF 289 Ningana Bushland following completion of the proposal through the preparation and implementation of an Environmental Management Plan (condition 6).
- That there is implementation of an environmental management plan to minimise indirect impacts to flora and vegetation within BF 289 Ningana Bushland (condition 7).
- That there is implementation of a revegetation management plan to undertake revegetation of temporary construction areas within BF 289 Ningana Bushland (condition 8).
- Implementation of offsets to counterbalance the significant residual impact to 0.05 ha of TEC SCP 26a and 27.7 ha of Bush Forever 289 Ningana Bushland (condition 11).

## 4.2 Terrestrial Fauna

### EPA objective

The EPA's environmental objective for this factor is *to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*

### Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c)
- *Technical Guidance – Sampling methods for terrestrial vertebrate fauna* (EPA 2010)
- *Technical Guidance – Terrestrial fauna surveys* (EPA 2004)
- *EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region, Advice of the Environmental Protection Authority under section 16(j) of the Environmental Protection Act 1986* (EPA 2019)
- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offsets Guidelines* (Government of Western Australia 2014).

The considerations for environmental impact assessment for this factor are outlined in *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c).

In addition to the above policies and guidelines, the EPA has also had regard to the *Carnaby's Cockatoo* (*Calyptorhynchus latirostris*) *Recovery Plan* (Department of Parks and Wildlife 2013).

### EPA Assessment

Consistent with the *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c), the EPA has considered the potential direct and indirect impacts, cumulative impacts and risks to terrestrial fauna.

### Existing environment

A desktop assessment identified 185 vertebrate species as potentially occurring in the proposal area. The proponent notes that the fauna assemblage is modified due to habitat loss and urbanisation, with substantial species loss. The proponent considers that further species loss is likely due to the proximity of urban areas and associated feral species, ongoing disturbance and decline in vegetation condition.

The key features of the fauna assemblage are associated with its:

- **Uniqueness**
  - assemblage varies across the site with differences in landform, vegetation type and condition



- may be the closest intact assemblage to Perth based on size and condition of Ningana Bushland, and extensive bushland to the east
- distinctive feature is the presence of a few coastal heath species that do not occur further south on the SCP such as the white-breasted robin and bush-rat (moodit).
- **Completeness**
  - intact in terms of frogs, reptiles and potentially birds due to extent and quality of some areas, and being part of a larger area of bushland
  - loss of some mammal species, likely due to multiple factors including predation.
- **Richness**
  - moderately rich in the local context due to large extent and high quality of environments
  - vegetation and soils are moderately uniform resulting in a lower species richness.

Fauna surveys identified 54 bird species, 14 reptiles, and six mammals. Eight introduced species were also recorded. Two invertebrates were recorded during 2011-2012. A desktop assessment of the likelihood of occurrences of short-range endemic (SRE) habitat and species was undertaken.

Of the native species recorded during the field surveys, three are listed as conservation significant fauna:

- Carnaby's cockatoo (Endangered under the EPBC Act and *Biodiversity Conservation Act 2016*)
- western brush wallaby (Priority 4)
- ground cricket (*Pachysaga* sp.) (Priority 1 and confirmed SRE).

A further seven conservation significant species are considered likely to occur or have the potential to occur:

- peregrine falcon (other specially protected fauna under the *Biodiversity Conservation Act 2016*)
- jewelled south-west ctenotus (Priority 3)
- black striped snake (Priority 3)
- quenda (Priority 4)
- graceful sun-moth (Priority 4)
- tree cricket (*Austrosaga spinifer*) (Priority 2 and a potential SRE)
- woolybush bee (*Hylaeus globuliferus*) (Priority 3).

Approximately 77 per cent (56 ha) of the development envelope provides high to moderate value foraging habitat for Carnaby's cockatoo. Approximately 2 ha of the

development envelope was considered potential breeding habitat and a known breeding record is located 3 km east of the development envelope within Yanchep National Park. Forty five potential breeding trees with a diameter at breast height (DBH) greater than 500 millimetres (mm) were identified within the development envelope.

Suitable black cockatoo roosting habitat was identified within the development envelope, although no roosting was recorded. Two confirmed roosting sites occur approximately 2 km east of the development envelope within Yanchep National Park. An additional unconfirmed roosting site occurs approximately 1 km east of the proposal outside of the national park.

The proponent mapped 62 ha of fauna habitat within the development envelope, of which approximately 65 per cent (47 ha) was considered high value fauna habitat and 20 per cent (14 ha) medium value habitat. Up to 73 ha of SRE habitat was recorded within the development envelope.

The surveys defined seven fauna habitat types:

- *Banksia sessilis* over low mixed shrubland
- mixed *Banksia* woodland
- *Lomandra* herb lands on secondary dunes
- limestone ridge lines
- mixed tall shrubland
- *Eucalyptus* woodland
- planted *Eucalyptus* woodland.

The proposal traverses a large regional ecological linkage at BF 289 Ningana Bushland. Fauna movement is likely to occur throughout continuous patches of remnant bushland. The EPA notes that no well-defined fauna movement corridors are apparent in the area, likely due to the extensive bushland remaining in the area. The EPA further notes that planned urban development surrounding the proposal would reduce the area of contiguous habitat and will likely result in the linkage provided by BF 289 Ningana Bushland becoming more important in the future.

## **Impacts**

Terrestrial fauna would be directly impacted through:

- clearing of:
  - 62 ha of fauna habitat
  - 73 ha of SRE habitat
  - 56 ha of Carnaby's cockatoo foraging habitat
  - 45 potential Carnaby's cockatoo breeding trees
- fragmenting habitat by bisecting a regional east-west ecological linkage.

Terrestrial fauna has the potential to be indirectly impacted through:

- increasing the risk of injury and/or mortality due to the construction and operation of the railway
- introduction of light, noise and vibration
- increased feral predation
- habitat degradation of adjacent habitat through weeds, introduction and/or spread of dieback, fire and changes to surface water runoff and quality.

### ***Mitigation and management measures***

The EPA notes the proponent's application of the mitigation hierarchy to reduce the proposals impacts on terrestrial fauna and their habitat.

To minimise impacts to terrestrial fauna during construction the proponent proposes to undertake the following:

- trapping and relocation of conservation significant vertebrate fauna species within seven days of clearing activities
- progressively clear vegetation to allow fauna to move out of the area
- fauna spotters to be present during clearing activities
- installation of fencing following clearing to limit fauna returning to the area
- inspection of fencing, trenches and temporary infrastructure for trapped fauna
- pre-clearing inspection of potential black cockatoo breeding trees
- restriction of construction activities within 10 m of active black cockatoo nesting trees
- implementation of hygiene protocols to minimise impacts to adjacent fauna habitat.

The EPA notes the proponent is proposing to construct two adjacent 30 m wide green bridges in the southern portion of BF 289 Ningana Bushland to provide for some dispersal of terrestrial fauna and SRE across the development envelope.

The EPA notes that noise barriers or ballast matting are not proposed within BF 289 Ningana Bushland.

### ***Assessment of impacts***

The EPA notes that the proponent is proposing to clear all vegetation within the development envelope. Coupled with the fencing required for an electrified railway, this will create a physical barrier between fauna habitat either side of the development. The EPA is also aware that beyond the boundary of BF 289 Ningana Bushland, the location of the development envelope is surrounded by urban development.

### Carnaby's cockatoo

Carnaby's cockatoo is the subject of a recovery plan that outlines the key threatening processes to the species. Of relevance to this proposal, and assessed by the EPA, are the loss, degradation and fragmentation of critical foraging habitat and potential roosting habitat and breeding trees and the risk of loss of individuals through collisions with trains.

The proposal will result in the clearing of approximately 56.3 ha of foraging habitat. The EPA notes that one unconfirmed and two known roosting sites occur within 2 km of the development envelope. Foraging habitat within 6 km of roost and nest sites is considered critical to supporting the species, which will follow vegetation corridors and actively avoid cleared and open areas when moving between roosting, water and food resources (EPA 2019).

The proposal would impact 45 potential breeding trees and 2.1 ha of suitable, moderate value, breeding habitat. Spatial data from the DBCA indicates the development envelope occurs within a confirmed Carnaby's cockatoo Swan Coastal Plain IBRA Region breeding area. A known breeding record is located approximately 3 km to the east of the development envelope within Yanchep National Park.

To minimise potential impacts to Carnaby's cockatoo that may be breeding within the development envelope, the EPA has recommended condition 9-1 requiring surveys be undertaken of potential nesting trees prior to clearing. Should evidence of nesting be found, a 10 m radius around the tree is to be established, restricting clearing until an appropriately qualified terrestrial fauna spotter has verified that the tree is no longer being used by the black cockatoos.

The EPA notes that no roosting activity was recorded within the development envelope during surveys, although it is unclear whether the surveys were undertaken at an appropriate time to observe roosting. Carnaby's cockatoo flocks show attachment to a particular roosting area, but will move between roost trees in response to environmental factors (EPA 2019). Therefore, while no roosting activity was recorded within the development envelope, black cockatoos may utilise suitable roosting habitat as required and on an ad hoc basis.

Yanchep National Park located to the east of the proposal area contains Carnaby's cockatoo foraging, roosting and breeding habitat. Additionally, Neerabup National Park to the south-east of the proposal area contains foraging and potential breeding habitat for the species. Therefore, given the close proximity of large areas of intact Carnaby's cockatoo habitat, the EPA considers the extent of loss from the proposal is unlikely to have a regional impact on the foraging and breeding habitat available.

However, at a local scale and given the conservation status of the species, the EPA considers that offsets are required to counterbalance the significant residual impact to 56.3 ha of Carnaby's cockatoo foraging habitat, including 2.1 ha of potential breeding habitat and 45 potential breeding trees from clearing for the proposal. Offsets are further discussed in section 5.

### Other fauna species

To avoid and minimise impacts to ground-dwelling terrestrial fauna from construction and operation of the railway, fencing would be installed on both sides of the railway following clearing activities. To further minimise impacts to terrestrial fauna during construction, the EPA recommends condition 9-2 requiring the proponent to undertake trapping and relocation of fauna prior to clearing, the presence of fauna spotters during clearing activities, and inspection and management of trenching activities.

The EPA notes that the proposal may result in impacts to several Priority and SRE species. Given the extent of suitable habitat remaining locally and within the north-west region, the EPA considers that the proposal's impacts represent a small incremental loss. Fauna habitats found within the development envelope, including SRE habitats, are also found in vegetation surrounding the proposal particularly within BF 289 Ningana Bushland. Therefore, the EPA considers that the loss of fauna habitats as a result of the proposal is unlikely to have a significant impact on ground-dwelling terrestrial fauna.

### Habitat fragmentation

The EPA's considerations and recommended conditions set out in section 4.1 in relation to measures to minimise fragmentation impacts in Ningana Bushland also serve to avoid and minimise impacts on fauna populations.

The DBCA has advised the majority of the fauna species that occur in BF 289 Ningana Bushland have relatively small territories and ranges, and multiple green bridges in close proximity are likely to only function for a restricted number of individuals. The DBCA considers a green bridge in the southern extent of BF 289 Ningana Bushland would be most suitably located between the shrublands and woodlands occurring south of the large primary dune in order to enhance the functionality of the green bridge. The DBCA has further advised it would be more effective to separate the proposed green bridges, locating one in the south and one further north along the proposed alignment within BF 289 Ningana Bushland.

The DBCA considers this would result in different fauna sub-groups benefitting from the provision of green bridges. Additional green bridges would improve fauna movement and further mitigate the impacts from the rail corridor. The DBCA has recommended each green bridge be designed and constructed to achieve a fully vegetated corridor to encourage use by a range of fauna species and reduce the risk of creating a predation trap at the entry and exit points.

Additionally, the DBCA consider any green bridge should be located, where possible, to achieve the shortest span across the rail line to reduce the distance fauna are required to travel between bushland remnants. They have also recommended that green bridges should be located in areas that link similar habitats. The DBCA has advised that green bridges should not be located in or near areas of dune blowouts or slopes, in areas of heavy disturbance, or in areas that include open, cleared areas or access tracks. Poor design and location of green bridges will limit their use by many native fauna species.

The EPA agrees the green bridges should be designed to facilitate use by the greatest number of fauna species. By doing so, the EPA considers the potential impacts to terrestrial fauna can be mitigated.

As mentioned in section 4.1, given the length of the rail alignment within BF 289 Ningana Bushland (approximately 3 km), the EPA recommends that no less than three separate vegetated green bridges of at least 30 m width be constructed across the rail line in accordance with condition 6-2.

To maximise the use of green bridges by fauna species, the EPA is recommending the green bridges should:

- directly connect areas of intact native vegetation to provide a continuously vegetated link, where practicable
- provide vegetative cover and fauna habitat that includes logs and other fauna furniture with no more than twenty per cent bare ground across the extent of the green bridge
- provide suitable pollinator habitat.

The EPA considers an ongoing management plan will also be required to maintain the effectiveness of the vegetated green bridges for fauna species, and therefore recommends condition 6-3. The management plan will require the proponent to demonstrate that the ecological linkage is retained within BF 289 Ningana Bushland, identify the indicative location and design of the green bridges and include completion criteria for the provision of vegetative cover and fauna habitat.

The management plan must also specify on-ground management actions related to feral animal control, fencing and access control. This condition requires the management plan to be prepared in consultation with the DBCA.

The EPA considers the measures specified in condition 6-2 and the implementation of the Green Bridge Design and Management Plan required by condition 6-3 should ensure the potential impacts of fragmentation to fauna populations are minimised as far as practicable following implementation of the proposal and that the ecological linkage will be maintained across BF 289 Ningana Bushland following construction of the proposal.

The EPA is aware the proponent has not proposed underpasses because the topography within BF 289 Ningana Bushland and operational requirements of the proposal would limit the utility of fauna underpasses as they would be of a length that would render them ineffective. The EPA notes that improving the effectiveness of fauna underpasses through the use of skylights or similar elements are limited due to construction and operational requirements.

#### Indirect impacts

The EPA considers that additional measures are required to manage the potential indirect impacts to terrestrial fauna from the construction and operation of the proposal through BF 289 Ningana Bushland. To ensure indirect impacts to terrestrial fauna are minimised directly outside the development envelope within BF 289

Ningana Bushland, the EPA is recommending condition 7 requiring the proponent to prepare, submit and implement an environmental management plan to manage indirect impacts.

## Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016c)
- *WA Environmental Offsets Policy and Guidelines* (Government of WA 2011; 2014)
- impact to Carnaby's cockatoo foraging habitat occurring within 6 km of known roosting and nesting sites for the species
- potential impact of the fragmentation of the regional east-west ecological linkage at BF 289 Ningana Bushland
- potential indirect impacts to terrestrial fauna within BF 289 Ningana Bushland
- mitigation measures proposed by the proponent to minimise impacts to terrestrial fauna and maintain the ecological linkage.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna that the impacts to this factor are manageable and would no longer be significant, provided:

- There is a limit on the clearing of Carnaby's cockatoo foraging habitat through the authorised extent in Schedule 1 of the Recommended Environmental Conditions (Appendix 4).
- There is a requirement to survey the potential black cockatoo breeding trees prior to clearing during breeding season (1 July to 31 December). If there is any evidence of nesting activities, condition 9-1 requires that clearing is not to occur within 10 m of the tree being used until an appropriately qualified terrestrial fauna spotter has verified that Carnaby's cockatoos are no longer using the tree.
- There is a requirement for the proponent to construct no less than three green bridges within BF 289 Ningana Bushland in accordance with implementation condition 6.
- That there is implementation of measures to maintain the ecological linkage through BF 289 Ningana Bushland following completion of the proposal through the preparation and implementation of a Green Bridge Management Plan (condition 6).
- That there is implementation of an environmental management plan to minimise indirect impacts to terrestrial fauna within BF 289 Ningana Bushland (condition 7).
- That activities associated with implementation of the proposal, including clearing and trenching, are undertaken in accordance with condition 9-2 to minimise indirect impacts to terrestrial fauna.

- An offset is provided to counterbalance the significant residual impact of clearing Carnaby's cockatoo foraging habitat, potential breeding habitat and potential breeding trees (see section 5, condition 11).

### **4.3 Social Surroundings**

#### **EPA objective**

The EPA's environmental objective for this factor is *to protect social surroundings from significant harm*.

#### **Relevant policy and guidance**

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- Environmental Factor Guideline – *Social Surroundings* (EPA 2016b).

In addition to the above guideline, the EPA has also had regard to the Western Australian Planning Commission's State Planning Policy 5.4 – *Road and Rail Noise* (SPP 5.4) (WAPC, 2019) and the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations) where relevant. The EPA notes that the current SPP 5.4 was released in September 2019, and that the proponent has undertaken its assessment against the previous 2009 SPP 5.4, consistent with the approved ESD for the proposal. The EPA considers that the previous SPP 5.4 is appropriate for this assessment.

#### **EPA Assessment**

Noise emissions have the potential to unreasonably interfere with the welfare, convenience and comfort of people. The proposal has the potential to impact nearby noise-sensitive premises and land uses during both construction and operation through the movement and operation of passenger trains and construction generated noise and vibration. Noise-sensitive premises are those occupied for residential or accommodation purposes and are defined in the Noise Regulations.

#### **Construction noise**

Noise impacts from construction activities for the rail line and stations and its impact on noise-sensitive premises are managed under Regulation 13 (Construction sites) of the Noise Regulations. This regulation specifies that any construction noise made between 7am and 7pm Monday to Saturday (excluding public holidays) is exempt from assigned noise limits in the Noise Regulations, provided the works are being carried out in accordance with the *Australian Standard 2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites*.

#### **Rail noise and vibration**

In terms of operational impacts, it is noted that the Noise Regulations do not apply to operational train noise, therefore the proponent has applied the guidance and considerations provided in SPP 5.4. This policy applies to proposed new rail projects in the vicinity of existing or future noise-sensitive land uses.



The proponent has adopted the SPP 5.4 noise target of  $L_{Aeq(Day)}$  55 decibels (dB(A)) and  $L_{Aeq(Night)}$  50 dB(A) as the assessment noise criteria at current built or future residences.

Regarding ground vibration, the proponent has referred to the:

- environmental conditions that apply to the rail line between the Clarkson and Butler stations (Ministerial Statement 629)
- *Australian Standard AS 2670.2.-1990: Evaluation of human exposure to whole body vibration – Part 2: Continuous and shock induced vibration in buildings (1 to 80 hertz (Hz))*

to apply the following vibration impact assessment criteria to the proposal:

- **Criterion 1:** vibration isolation measures will be provided where the predicted or actual vibration is Curve 2 (106 dB) or greater, as defined in AS 2670.2
- **Criterion 2:** the proposal will be designed to meet Curve 1.4 (103 dB), as defined in AS 2670.2
- **Criterion 3:** Vibration will be managed to be as low as reasonably practicable.

The Department of Water and Environmental Regulation (DWER) has advised it considers the above noise and vibration criteria to be appropriate for the assessment of the proposal.

### ***Existing environment***

The new railway line will largely be constructed in a cutting approximately 6 m below existing and/or future surrounding ground levels. Existing residential developments and lands zoned in the MRS for future urban development surround the majority of the railway corridor.

### ***Impacts***

#### Construction Noise

The proponent considers that noise and vibration impacts would be localised and temporary during the construction phase. The proponent has stated that a noise management plan will be developed and submitted for approval to the CEO of the City of Wanneroo, in the event that activities are planned outside of the permissible hours as required by Regulation 13 of the Noise Regulations.

#### Rail noise and vibration

The proponent has identified all the relevant receiver locations for noise impact assessment, representing both the existing and future residences along the proposed alignment. The proponent predicted that both the noise assessment criteria of  $L_{Aeq}$  and  $L_{Amax}$  will be exceeded at quite a large number of receiver locations, if no noise mitigation measures are implemented.

In terms of vibration, the proponent predicted that Criterion 2 would be exceeded at a number of receiver locations without implementing any vibration mitigation measures.

The DWER has advised that the proponent's assumptions and inputs for noise and vibration modelling and predictions, and the assessment method and conclusions are reasonable.

### ***Mitigation and management measures***

#### **Construction**

In considering the proposal's potential impacts on residential areas, the EPA notes that the proponent will comply with the requirements of the Noise Regulations and will utilise the standard management measures in *AS 2436:2010 – Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites*.

In the event that the construction works will need to be undertaken outside the permissible hours, work will be undertaken in accordance with an out of hours noise management plan. This plan will include duration of work, predicted noise emissions and noise management measures, monitoring, and procedures for receiving, handling and responding to any potential noise and vibration complaints. This plan will require approval by the Chief Executive Officer of the City of Wanneroo.

The EPA considers that, with appropriate management and mitigation measures, construction noise and vibration impacts are expected to be manageable and meet the requirements of the Noise Regulations.

#### **Rail noise and vibration**

The EPA expects proponents to use best practice noise management to minimise impacts on amenity, and be consistent with relevant provisions in SPP 5.4. To reduce impacts from train movements and ensure the relevant noise and vibration criteria are met, the proponent has proposed a range of technically feasible and proven mitigation measures in its *Noise and Vibration Management Plan – Metronet – Yanchep Rail Extension* (Reference: 17074053-02; 30 May 2018) (NVMP).

#### ***Noise mitigation***

Noise walls with heights ranging from 2.2 m to 4 m have been shown in the NVMP for all sections of the project adjoining existing and possible future residences. The proponent has modelled the noise walls and predicted that  $L_{Aeq(Day)}$  assessment noise target criterion of 55 dB(A) would be met at the majority of the receiver locations. The exceedance at the remaining locations, would be less than or equal to 2 dB, which would be considered marginal. For some areas, the proponent has also proposed the provision of building facade noise packages for residential premises, where appropriate.

The NVMP includes a commitment to construct noise barriers along the rail reserve boundary at all identified and existing noise sensitive premises where noise limits are predicted to be exceeded. For other sections, the proponent will work closely with adjoining land developers to develop appropriate noise mitigation measures in locations where no residential development is currently in place.

### *Vibration Mitigation*

The proponent has committed to installing ballast matting adjacent to all existing and approved future residential developments. The proponent predicts that this vibration mitigation measure would be able to reduce the vibration level between 10 to 15 dB. As the vibration assessment indicated that Criterion 2 would only be marginally exceeded at a number of locations along the proposed railway extension, the reduction provided by the ballast matting will be significant.

The DWER has advised that it considers that the proposed train noise and vibration mitigation measures are appropriate and should be able to substantially reduce the train noise and vibration impact.

### **Assessment of impacts**

The proponent has advised that further detailed modelling will be undertaken to confirm the height and location of the required noise walls at the detailed design phase for each area, when design levels of the rail line are available.

As the detailed design of the proposal and hence locations and heights of noise walls are not yet available, the EPA recommends condition 10-2, which will require the NVMP be revised prior to operations commencing. This plan is to include the details of relevant noise mitigation measures (i.e. design levels, noise walls and building facade noise control packages) to confirm that noise and vibration criteria will be met.

The EPA also recommends that the proponent continues to consult with residences and adjoining developers of future residential projects bordering the proposal about the final dimensions and configurations of the noise walls.

The EPA considers that the impacts to this factor are manageable and would not be significant, provided the proponent updates its NVMP with details of the mitigations measures once detailed design is available.

### **Summary**

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Social Surroundings* (EPA 2016b)
- temporary and localised nature of construction noise impacts
- relevant provisions in SPP 5.4 that apply to movement of trains
- feasible mitigation measures such as vibration matting and construction of noise walls to reduce noise and vibration impacts to acceptable levels.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Social Surroundings that the impacts to this factor are manageable and would not be significant. This is provided the proponent updates its NVMP with details of the mitigations measures once detailed design is available and submit the plan for approval prior to the operation of the proposal, as set out in recommended condition 10-2 (Appendix 4).

## 5. Offsets

### Relevant policy and guidance

The EPA considers that the following policy and guidance is relevant to its assessment of offsets for the proposal:

- *WA Environmental Offsets Policy* (Government of Western Australia 2011)
- *WA Environmental Offset Guidelines* (Government of Western Australia 2014)
- *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* (EPA 2016e).

### EPA Assessment

Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual impacts of a proposal. The EPA may apply environmental offsets where it determines that a proposal's residual impacts are significant, after avoidance, minimisation and rehabilitation have been pursued.

Consistent with Principle 1 of the State Government's Offsets Policy (Government of Western Australia 2011) the proponent has applied the mitigation hierarchy by identifying measures to avoid, minimise and mitigate. Mitigation measures are discussed under the relevant environmental factor in section 4 of this report. The EPA notes that no rehabilitation has been proposed by the proponent, however the proponent is proposing to revegetate batters where possible.

In applying the residual impact significance model (Government of Western Australia 2014), the EPA considers that the proposal would have a significant residual impact from the following:

- clearing of 0.05 ha of TEC SCP 26a '*Melaleuca huegelii* – *Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)'
- clearing of 56.3 ha of Carnaby's cockatoo foraging habitat
- clearing of 2.1 ha of Carnaby's cockatoo potential breeding habitat
- clearing of 45 Carnaby's cockatoo potential breeding trees
- clearing of 8.1 ha of Banksia PEC
- clearing of 27.7 ha of native vegetation within BF 289 Ningana Bushland.

In noting the above significant residual impacts, the EPA has considered Principle 2 (environmental offsets are not appropriate for all projects) of the Offsets Policy (Government of WA 2011) and has determined that offsets are appropriate and applicable for this proposal.

The proponent has proposed offsets to address the significant residual impacts, which comprise of land acquisition, provision of research funding for Carnaby's cockatoos and on ground management of BF 289 Ningana Bushland. These are discussed further below.

## **Land acquisition**

The proponent has proposed land acquisition to offset the significant residual impacts of the proposal to the TEC SCP 26a, Banksia PEC and Carnaby's cockatoo habitat and breeding trees. The proponent has listed four potential sites, on the understanding that the final acquisition package will likely be a combination of these four sites. These site options are located at Nowergup/Neerabup and Carabooda (in close proximity to the proposal) and Cataby and Mardella.

The EPA notes the proponent has had regard for Principles 3 (relevant and proportionate) and 4 (based on sound environmental information) of the Offsets Policy (Government of Western Australia 2011) in the selection of these sites due to the size, available information on environmental values, and proximity to the proposal.

The EPA also notes the proponent has had regard for Principles 5 (adaptive management) and 6 (long-term strategic outcomes) of the Offsets Policy in the proposed offsets. The proponent intends that the identified land acquisition offsets would be managed for conservation purposes in perpetuity and that risks and contingency measures have been identified for each of the proposed offsets.

Consistent with the approach used in other assessments, the EPA recommends the Commonwealth's Offset Assessment Guide be used to calculate the offset quantum for TEC SCP 26a, Carnaby's cockatoos, and Banksia PEC. In accordance with Principle 4 (based on sound environmental information) this assessment should be undertaken for any land acquisition offsets once the condition and values of the proposed site and extent of any rehabilitation works is known.

The EPA agrees with the proponent's calculation of three-to-one ratio for offsetting potential breeding trees. This would result in the requirement to offset at least 135 potential Carnaby's cockatoo breeding trees.

The EPA reiterates its position from its Technical Report *Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region* (EPA 2019) and its *Interim strategic advice Perth and Peel @ 3.5 million Environmental impacts, risks and remedies* (EPA 2015) that:

- there is a decreasing availability of suitable land within the Perth-Peel Region for offsets
- increasing or improving habitat by rehabilitation and restoration of degraded areas in close proximity to the impacted area should be undertaken.

In view of the above and considering how the proponent's proposed offset options have applied the six principles of the Offsets Policy (Government of WA 2011), the EPA recommends an offset condition (condition 11) is imposed to counterbalance the significant residual impacts of the proposal. The condition requires a TEC SCP 26a Land Acquisition Strategy be prepared and submitted within 6 months of the issue of the Ministerial Statement. It also requires a Land Acquisition and Rehabilitation Offsets Strategy for the remaining environmental values be prepared and submitted within 12 months of the issue of the Ministerial Statement.

### **Research project – black cockatoo research funding**

The proponent proposes to fund a maximum of 10 per cent of the total offset required for Carnaby's cockatoos to an organisation such as Murdoch University to finance black cockatoo research. The proponent is currently considering funding a research proposal by Warren et. al. 2019. This is consistent with the Commonwealth's Offset Assessment Guide, which limits the proportion that compensatory mechanisms (which includes research) can be used to a maximum of 10 per cent of the total offset requirement.

The EPA's Technical Report for *Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region* (EPA 2019) acknowledges that a large amount of research has been conducted for this species but there remain significant knowledge gaps in relation to the ecology of the species and likely impacts of the threatening processes. The technical guide also provides a list of the key knowledge gaps and research being undertaken or needed.

The WA Environmental Offset Guidelines advises that research projects undertaken should provide information that would improve the environmental assessment of future projects and focus on achieving an outcome rather than providing a certain amount of money.

In considering the six principles of the Offsets Policy, the EPA has recommended condition 11-10 which requires a Land Acquisition and Rehabilitation Offsets Strategy to include a Carnaby's Cockatoo Research Plan. This will only be required where research projects are proposed to offset the significant residual impacts to Carnaby's cockatoo. This research plan will aim to increase the scientific knowledge of black cockatoos relevant to improving the conservation and management of the species and its habitat in the Perth and Peel regions.

### **On-ground management – BF 289 Ningana Bushland**

The EPA notes that the proponent has proposed that a minimum of 23.5 ha of native vegetation would be required to offset impacts to BF 289 Ningana Bushland. The proponent has not proposed an offset for the 9.6 ha of vegetation within BF 289 Ningana Bushland intersected by the development envelope reserved in the Region Scheme as 'Railways'.

The EPA notes that BF 289 Ningana Bushland contains regionally significant vegetation, significant fauna habitat and ecological linkage values. The EPA therefore considers that an offset is required to counterbalance the loss of the 27.7 ha of regionally significant native vegetation within BF 289 Ningana Bushland intersected by the development envelope based on the areas very high conservation significance. Section 4.1 discusses the impacts to BF 289 Ningana Bushland.

The EPA notes that the proponent has proposed an 'on-ground management' offset for the loss of regionally significant native vegetation through a contribution of funds for the management of BF 289 Ningana Bushland for seven years. The proponent proposes that once management works are identified it is intended that the DBCA would implement those works within BF 289 Ningana Bushland.

The EPA notes that direct offsets are actions designed to provide for on-ground improvement, rehabilitation and conservation of habitat and can include restoration, revegetation and rehabilitation of natural areas outside the proposal area (Government of Western Australia, 2011). The EPA further notes Principle 6 of the WA Offset Policy that environmental offsets will be designed to be enduring, enforceable and deliver long term strategic outcomes, and that a flexible approach to the security, management, monitoring and audit of offsets will be adopted to ensure environmental outcomes are realised.

In relation to BF 289 Ningana Bushland the EPA has had regard to the:

- current and future threats and pressures from urban development
- areas of Ningana bushland mapped as 'Degraded' that could benefit from improvement works
- absence of a management plan and management agency to underpin the long term management of the area for the purpose of conservation.

In view of the above, which demonstrates opportunities to improve the values of the bushland, the EPA considers that on-ground management of BF 289 Ningana Bushland is an appropriate offset provided that any on-ground management includes improvement works, such as rehabilitation, to contribute to a net environmental benefit and an improvement in the environmental values of specific areas in BF 289 Ningana Bushland.

On-ground management actions include revegetation and rehabilitation focused on improving habitat connectivity across the landscape and management actions to address threats such as weeds, dieback, uncontrolled access, fire and feral animals for the purpose of improving habitat condition and quality.

In considering the principles of the WA Offset Policy, the EPA recommends an offset condition (condition 11) is imposed to counterbalance the significant residual impacts of the proposal to BF 289 Ningana Bushland. As a component of the offset condition, the EPA has recommended condition 11-8(2) requiring the proponent to spatially define the area(s) of BF 289 Ningana Bushland to be rehabilitated, improved and managed to counterbalance the significant residual impact to 27.7 ha of Bush Forever.

In addition to requiring on-ground management of BF 289, the EPA is also supportive of efforts being led and facilitated by the proponent to establish security of tenure for the site and long-term ongoing management for conservation arrangements. This is consistent with Principle 6 (long term) of the WA Environmental Offsets Policy.

The EPA also notes that this is consistent with the State Government's commitment in the now suspended Strategic Assessment of the Perth and Peel Regions project that outlined a long-term conservation program, which included establishing secure tenure and management arrangements for certain Bush Forever sites, including BF 289 Ningana Bushland.

## **Summary**

The EPA recommends that an offset condition (condition 11) is imposed to counterbalance the significant residual impacts of the proposal. The condition requires a TEC SCP 26a Land Acquisition Strategy be prepared and submitted within six months of the issue of the Ministerial Statement, and a Land Acquisition and Rehabilitation Offsets Strategy for the remaining environmental values be prepared and submitted within 12 months of the issue of the Ministerial Statement. The Land Acquisition and Rehabilitation Offset Strategy is to include on-ground management actions to rehabilitate, improve and manage Bush Forever 289 Ningana Bushland.



## 6. Matters of National Environmental Significance

The Commonwealth Minister for the Environment has determined that the proposal is a controlled action under the EPBC Act as it is likely to have a significant impact on one or more MNES. It was determined the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- listed threatened species and communities (s. 18 and 18A).

On 27 September 2018, the delegate under the EPBC Act determined the proposal would be assessed by accredited assessment under the EP Act. The EPA has assessed the controlled action on behalf of the Commonwealth as an accredited assessment under the EPBC Act.

This assessment report is provided to the Commonwealth Minister for the Environment who will decide whether or not to approve the proposal under the EPBC Act. This is separate from any Western Australian approval that may be required.

### Commonwealth policy and guidance

The EPA had regard to the following relevant Commonwealth guidelines, policies and plans during its assessment:

- *Commonwealth EPBC Act Environmental Offsets Policy* (Commonwealth of Australia 2012)
- *Approved conservation advice (incorporating listing advice) for the Banksia woodlands of the Swan Coastal Plain Ecological Community* (Commonwealth of Australia 2016)
- *Carnaby's cockatoo (Calyptorhynchus latirostris) recovery plan* (Department of Parks and Wildlife 2013)
- *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi* (Commonwealth of Australia 2014).

### EPA assessment

#### ***Banksia woodlands of the Swan Coastal Plain TEC***

The proposal would require the clearing of 8.13 ha of vegetation that is representative of the Banksia woodlands TEC across a number of occurrences. The Banksia woodlands TEC in the development envelope is considered to be in Good or better condition. A further 9.32 ha was identified beyond the boundary of the development envelope, within the additional survey area.

Adjacent to the development envelope, the Banksia woodlands TEC has been inferred to occur from BF 289 Ningana Bushland through to BF 288 Yanchep National Park. The largest occurrences of the Banksia woodlands TEC in proximity to the development envelope occur in BF 288 Yanchep National Park and BF 381 Ridges and Adjacent Bushland to the east, and BF 406 Wilbinga-Caraban Bushland to the north.

The areas to be cleared represents only a small portion of the Banksia woodlands TEC located in the local area, with existing isolated patches well represented in local conservation areas. However, the proposal will fragment the TEC, and may lead to indirect impacts and degradation of the larger occurrences of Banksia woodlands TEC in this area.

The EPA notes the loss of 8.1 ha of the Banksia woodlands TEC contributes to the decline in the geographic distribution of the community and reduces the size of the remaining occurrences. The EPA also notes that while the areas to be cleared are relatively small, clearing of the Banksia woodlands TEC and construction activities may reduce the integrity of the community in this area and introduces an increased risk from indirect impacts to larger occurrences and the remaining extent.

In total, the EPA considers the proposal would result in a significant residual impact to 8.13 ha of the Banksia woodlands TEC. The Banksia woodlands TEC that would be cleared can be considered habitat critical to the survival of the community, or buffer zones important for protecting the integrity of the community. The EPA therefore recommends offsets to counterbalance this impact (section 5).

Further, the EPA has recommended condition 7 to ensure that indirect impacts to native vegetation in Ningana Bushland are managed appropriately. The EPA has also recommended the proponent be required to implement hygiene protocols and undertake weed control and management during construction of the proposal.

### ***Carnaby's cockatoo (Calyptorhynchus latirostris)***

The proposal will result in the removal of 56.3 ha of Carnaby's cockatoo habitat, consisting of 22.6 ha of high value and 33.8 ha of medium value foraging habitat, including 2.1 ha of potential breeding habitat, and 45 potential breeding trees (ecological Australia, 2019). None of the identified potential breeding trees contain hollows. The proposal may also increase risk of mortality to Carnaby's cockatoos if they are present in the development envelope during clearing. The EPA notes that the closest known Carnaby's cockatoo roosts are three sites located in the Yanchep area. Two confirmed roosting sites occur approximately 2 km east of the development envelope within Yanchep National Park. An additional unconfirmed roosting site occurs approximately 1 km east of the proposal outside of the national park.

The EPA has assessed the direct and indirect impacts on these species (section 4) and has proposed offsets to counterbalance the significant residual impacts of the proposal (section 5). The EPA has recommended a condition (condition 9) requiring the proponent, during breeding season, to undertake a survey of the potential Carnaby's cockatoo breeding trees prior to clearing. If any evidence of nesting activities is found, clearing must not occur within 10 m of the tree being used for nesting until such time an appropriately qualified terrestrial fauna spotter has verified that the hollows are no longer being used by the Carnaby's cockatoo.

### ***Other listed matters***

The EPA notes that the proponent's referral documentation stated that the clearing of 62.3 ha of foraging habitat for the western quoll (chuditch) *Dasyurus geoffroyii*

(ranging from Excellent to Completely Degraded condition) is proposed. However, the EPA also notes that the subsequent ERD further clarifies that the western quoll is expected only as a vagrant and the development envelope does not provide a unique ecological function for the species, and the development envelope is not expected to be significant habitat for the species. The EPA considers that the potential impacts of the proposal are not significant for the species, as this species is considered unlikely to occur in the development envelope. The EPA has therefore not recommended any conditions regarding the management of impacts to the western quoll.

The Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community was listed as Critically Endangered under the EPBC Act on 4 July 2019. As the TEC was listed after the proposal was determined to be a controlled action by a delegate of the Commonwealth Minister for the Environment under the EPBC Act on 27 September 2018, impacts to the TEC cannot be considered under the EPBC Act.

The EPA's assessment of the proposal's likely environmental impacts to the State Priority 3 Tuart PEC is provided in section 4 of this report.

## Summary

The EPA has recommended the following environmental conditions to minimise impacts on MNES:

- Limit the location and authorised extent of the clearing of vegetation to 57.7 ha in Table 2 of Schedule 1 that includes:
  - 8.1 ha of Banksia woodlands TEC
  - 56.3 ha of Carnaby's cockatoo foraging habitat
  - 2.1 ha of Carnaby's cockatoo potential breeding habitat
  - 45 potential Carnaby's cockatoo breeding trees.
- Condition 7 which ensures hygiene protocols and weeds are managed during construction and there are no indirect impacts to native vegetation of BF Site Ningana Bushland adjacent to the development envelope.
- Condition 9 which ensures the proponent survey potential Carnaby's cockatoo breeding trees prior to clearing and avoids clearing within 10 m of any tree being used for nesting.

The EPA considers there would be a significant residual impact from the clearing of 8.1 ha of Banksia TEC, 56.3 ha of Carnaby's cockatoo foraging habitat, 2.1 ha of Carnaby's cockatoo potential breeding habitat, and 45 potential Carnaby's cockatoo breeding trees. The EPA has recommended offsets (section 5) in condition 11 which takes into account the significant residual impacts described above.

The EPA's view is that the impacts from the proposal on the above-listed MNES are therefore not expected to result in an unacceptable or unsustainable impact on the listed threatened species and communities.

## 7. Conclusion

The EPA has considered the proponent's proposal to construct and operate an extension to the Joondalup Railway line by 7.2 km from the future Eglinton Station to the suburb of Yanchep in the City of Wanneroo.

### Application of mitigation hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts including:

- construction and access areas selected to coincide with proposed future urban development and future roads
- proposed construction of green bridges to maintain the ecological linkage within BF 289 Ningana Bushland
- planting of batters and affected dune formations with local species.

### Offsets

The EPA considers the proposal would have a significant residual impact from:

- clearing of 0.05 ha of TEC SCP 26a '*Melaleuca huegellii* – *Melaleuca systena* shrublands on limestone ridges (Gibson et al. 1994 type 26a)'
- clearing of 56.3 ha of Carnaby's cockatoo foraging habitat
- clearing of 2.1 ha of Carnaby's cockatoo potential breeding habitat
- clearing of 45 Carnaby's cockatoo potential breeding trees
- clearing of 8.1 ha of Banksia PEC
- clearing of 27.7 ha of native vegetation within BF 289 Ningana Bushland.

The EPA has recommended conditions for a Land Acquisition Strategy to offset TEC SCP 26a, and a Land Acquisition and Rehabilitation Offsets Strategy to offset Carnaby's cockatoo habitat and breeding trees, Banksia PEC and BF 289 Ningana Bushland. These strategies will propose an offset and demonstrate that the offset/or offsets adequately counterbalance the significant residual impact.

### Conclusion

The EPA has taken the following into account in its assessment of the proposal as a whole, including the:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures including the construction of 'green bridges' to maintain the ecological linkage within BF 289 Ningana Bushland
- relevant EP Act principles and the EPA's objectives for the factors of Flora and Vegetation, Terrestrial Fauna and Social Surroundings

- EPA's view that the impacts to Flora and Vegetation, Terrestrial Fauna and Social Surroundings are manageable, provided the recommended conditions are imposed.

Given the above, the EPA has concluded the proposal is environmentally acceptable and therefore recommends that the proposal may be implemented subject to the conditions recommended in Appendix 4.

## 8. Other Advice

Section 44(2a) of the EP Act provides that the EPA may include other information, advice or recommendations in its assessment report.

### **BF 289 Ningana Bushland ecological linkage**

In releasing this report and recommendations, the EPA has taken a holistic view of the likely impacts of the proposal, particularly in relation to the ecological linkage through BF 289 Ningana Bushland. The EPA has recommended condition 6 in this regard.

The EPA notes the information provided by the proponent in the ERD (ecological Australia, 2019) regarding the Urban Land Development Outlook 2016/17 (WAPC 2017). This document indicates that of the land within the northwest sub-region, approximately 1,350 ha will support future residential and/or commercial development over the next five years.

The EPA considers this means the potential environmental impacts from development, and the significance of BF 289 Ningana Bushland as an urban bushland area, will only increase. The EPA understand that there is no significant reservation for conservation of the Quindalup dune system in the metropolitan region that conserves a continuous sequence of the Quindalup and Spearwood dune systems.

The EPA is supportive of the implementation of land use planning measures to minimise impacts to BF 289 Ningana Bushland, and maintain the ‘coast to woodland’ ecological linkage between BF 397 (a Coastal Strip from Wilbinga to Mindarie) and BF 288 (Yanchep National Park and Adjacent Bushland). BF 289 Ningana Bushland is part of a greater regional ecological linkage through to BF 381 Ridges and Adjacent Bushland, Yanchep/Nowergup, the Gnangara-Moore River State Forest and Yeal Nature Reserve.

The EPA recommends that its Environmental Protection Bulletin No. 20 *Protection of naturally vegetated areas through planning and development* (EPA 2013) should be considered regarding the design of urban and peri-urban development proposals in order to protect naturally vegetated areas. The EPA also recommends that prior to approving any structure plans, subdivisions or development proposals, the WAPC and City of Wanneroo should consult with the DBCA and consider ways in which potential indirect impacts to BF 289 Ningana Bushland can be avoided and/or managed.

### **Threatened Ecological Community SCP 26a**

As a result of this proposal, the EPA considers it appropriate to reiterate its ‘Other Advice’ from its Assessment Report 1634 on Yanchep Rail Extension Part 1 regarding potential cumulative impacts on the TEC SCP 26a.

The EPA is conscious that areas surrounding the development envelope are zoned as ‘Urban’ and ‘Central city area’ under the MRS and notes that areas of

TEC SCP 26a have been identified in the local area that have not previously been mapped by the DBCA. The EPA also acknowledges that a significant portion of the area has not yet been developed according to its zoning.

The EPA is supportive of the implementation of land use planning measures to minimise clearing of TEC SCP 26a in the future. The EPA notes that individual occurrences of the TEC are generally small in extent and may be suitable for retention. The EPA recommends that prior to approving any structure plans, subdivisions or development proposals, the WAPC and City of Wanneroo should consult with the DBCA and consider ways in which recently mapped occurrences of the TEC (surveyed and mapped by PTA) can be best retained and managed.

### **Priority Ecological Community FCT 24**

As a result of this proposal, the EPA considers it appropriate to reiterate its 'Other Advice' from its Assessment Report 1634 on Yanchep Rail Extension Part 1 regarding potential cumulative impacts on the Priority Ecological Community FCT 24.

As described in section 4.1, the EPA considers that the potential impacts of this proposal to the FCT 24 ecological community are not likely to be significant and therefore no offset is required.

However, according to the WAPC North-West Sub-Regional Planning Framework (WAPC, 2018), the north-west corridor has been one of the fastest growing areas in the Perth and Peel regions, and nationally, for the past five to ten years. It is estimated that there is over 7,300 ha of undeveloped Urban and Urban Deferred zoned land available for development (WAPC 2018).

The majority of native vegetation within the north-west sub-regional planning framework area is earmarked for development. The EPA understands that within the next 10 years, vegetation clearing in the sub-region will accelerate, fragmenting otherwise intact native vegetation and reducing the extent of regional vegetation communities, including of the FCT 24 PEC.

In view of the above the EPA will pay particular attention to any proposal and/or scheme that has the potential to impact on the FCT 24 PEC by:

- requiring proponents and responsible authorities to address the potential cumulative impacts with other existing or reasonably foreseeable activities, developments and land uses
- obtaining advice from the DBCA about any updates to the status of the community under the *Biodiversity Conservation Act 2016*.
- encouraging planning authorities to examine opportunities at the regional planning level for the ecological community to be strategically retained and managed, before deciding whether the residual impacts are significant, and whether offsets should be required.

## **Air Quality**

In scoping for the proposal, the EPA requested that the proponent discuss and compare net greenhouse gas emissions (tonnes of carbon dioxide equivalent per annum) between rail transport and conventional vehicle modes of transport. The EPA also requested a description and discussion of the potential reduction in transport emissions (such as particulate matter, oxides of nitrogen and carbon monoxide) associated with reducing the number of motor vehicle journeys following construction of the Yanchep rail extension.

The proponent prepared both a qualitative air quality assessment (Appendix S) and a carbon and energy assessment report (Appendix T) to accompany the environmental review document.

The proponent considers that the greatest greenhouse gas and transport emission mitigation to be delivered by the proposal will be the shift in passenger transport mode from more emission intensive modes such as private motor vehicle to less intensive modes such as passenger rail.

Based on these assessment reports, the EPA advises that the proposal will not result in a significant increase to greenhouse gas emissions and will likely reduce transport emissions.



## 9. Recommendations

That the Minister for Environment notes:

1. The proposal assessed is to construct and operate a 7.2 km extension to the Joondalup Railway line from the future Eglinton Station to the suburb of Yanchep in the City of Wanneroo. The proposal also includes the construction of a new station at Yanchep.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna and Social Surrounding, as set out in section 4.
3. The EPA has concluded that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 4. Matters addresses in the conditions include the following:
  - a) actions to minimise impacts and maintain the ecological linkage within BF 289 Ningana Bushland including the requirement to construct and maintain three green bridges
  - b) an environmental management plan to minimise impacts to BF 289 Ningana Bushland
  - c) the need to minimise impacts of noise and vibration during construction and operation
  - d) offset to counterbalance impact to TEC SCP 26a, Carnaby's cockatoos, Banksia PEC and BF 289 Ningana Bushland.
4. Other information, advice and recommendations provided by the EPA, set out in section 8 about minimising impacts from future activities to BF 289 Ningana Bushland, the TEC SCP 26a in the area and cumulative impacts to the PEC FCT 24, and air quality.

## References

Commonwealth of Australia 2012, *Commonwealth EPBC Act Environmental Offsets Policy*, Department of Sustainability, Environment, Water, Populations and Communities, Canberra, ACT.

Commonwealth of Australia 2014, *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi*, Department of the Environment, Canberra, ACT.

Commonwealth of Australia 2016, *Approved conservation advice (incorporating listing advice) for the Banksia woodlands of the Swan Coastal Plain Ecological Community*, Department of the Environment and Energy, Canberra, ACT.

Commonwealth of Australia 2019, *Approved conservation advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community*, Department of the Environment and Energy, Canberra, ACT.

Department of Parks and Wildlife 2013, *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Department of Parks and Wildlife, Perth, WA

ecological Australia 2018, *Yanchep Rail Extension: Part 1 –Alkimos to Eglinton Environmental Review Document*, prepared for Public Transport Authority, Perth, WA.

ecological Australia 2019, *Yanchep Rail Extension: Part 2 –Eglinton to Yanchep Environmental Review Document*, prepared for Public Transport Authority, Perth, WA.

EPA 2004, *Technical Guidance – Terrestrial Fauna Surveys*, Environmental Protection Authority, Perth, WA.

EPA 2010, *Technical Guidance – Sampling Methods for Terrestrial Vertebrate Fauna*, Environmental Protection Authority, Perth, WA.

EPA 2013, *Environmental Protection Bulletin No. 20 Protection of naturally vegetated areas through planning and development*, Environmental Protection Authority, Perth, WA.

EPA 2015, *Perth and Peel @ 3.5 million Environmental impacts, risks and remedies, Interim strategic advice to the Minister for Environment under section 16(e) of the Environmental Protection Act 1986*, Environmental Protection Authority, Perth, WA.

EPA 2016a, *Environmental Factor Guideline – Flora and Vegetation*, Environmental Protection Authority, Perth, WA.

EPA 2016b, *Environmental Factor Guideline – Social Surroundings*, Environmental Protection Authority, Perth, WA.

EPA 2016c, *Environmental Factor Guideline – Terrestrial Fauna*, Environmental Protection Authority, Perth, WA.

EPA 2016d, *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016*, EPA, Perth, WA.

EPA 2016e, *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016*, EPA, Perth, WA.

EPA 2016f, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, Environmental Protection Authority, Perth, WA.

EPA 2018, *Statement of Environmental Principles, Factors and Objectives*, Environmental Protection Authority, Perth, WA.

EPA 2019, *EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region, Advice of the Environmental Protection Authority under section 16(j) of the Environmental Protection Act 1986* Environmental Protection Authority, Perth, WA

GHD 2012, *Northern Suburbs Railway Alignment Butler to Yanchep Environmental Investigation*, unpublished report for the Public Transport Authority.

GHD 2018, *Yanchep Rail Extension Biological Assessment*, prepared for Public Transport Authority, Perth, WA.

Government of Western Australia 2011, *WA Environmental Offsets Policy*, Perth WA.

Government of Western Australia 2014, *WA Environmental Offsets Guidelines*, Perth WA.

Government of Western Australia 2015, *Perth and Peel Green Growth Plan for 3.5 million, Draft EPBC Act Strategic Impact Assessment Report*, Perth WA.

Luu R and English V 2005, *Melaleuca huegelii – Melaleuca systema shrublands of limestone ridges (Swan Coastal Plain Community type 26a – Gibson et al. 1994) Interim Recovery Plan 2004-2009*, Department of Conservation and Land Management Western Australian Threatened Species and Communities Unit, Wanneroo, WA.

Public Transport Authority 2019, Response to additional matters raised by Environmental Protection Authority Services & public submissions, PTA, Perth, WA.

Warren et al. 2019, *Conservation management for the long-term survivorship of black cockatoos endemic to the south-west of Western Australia: the application of*

*telemetry to determine spatial ecology on the Perth-Peel Coastal Plain, south-west forest region and key breeding sites in response to a changing environment.*  
Murdoch University, Perth WA.

Western Australian Planning Commission 2017, *Urban Land Development Outlook Perth metropolitan region and Peel sub-region 2016-17*, Western Australian Planning Commission, Perth, Western Australia.

Western Australian Planning Commission 2018 *Northwest Sub-regional Planning Framework*. Western Australian Planning Commission, Perth, Western Australia

Western Australian Planning Commission 2019, *State Planning Policy 5.4 – Road and Rail Noise*, Western Australian Planning Commission, Perth, Western Australia.

## **Appendix 1: List of submitters**

### **Organisations:**

Department of the Environment and Energy  
Department of Biodiversity, Conservation and Attractions  
Department of Planning, Lands and Heritage  
Department of Water and Environmental Regulation  
City of Wanneroo  
Quinns Rock Environmental Group Inc.  
Urban Bushland Council WA Inc.  
Wildflower Society WA Inc.  
Wilderness Society WA  
Sustainable Populations Australia Inc. (WA Branch)

### **Individuals:**

Dave Blackburn  
Peter Condon  
Paul and Meg Wilson  
Leonie Stubbs  
Carolyn Bloye

## Appendix 2: Consideration of principles

EP Act Principle	Consideration
<p><b>1. The precautionary principle</b></p> <p><i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by –</i></p> <ul style="list-style-type: none"> <li><i>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</i></li> <li><i>b) an assessment of the risk-weighted consequences of various options.</i></li> </ul>	<p>In considering this principle, the EPA notes that Flora and Vegetation, Terrestrial Fauna and Social Surroundings could be significantly impacted by the proposal. The assessment of these impacts is provided in this report.</p> <p>Investigations into the biological and physical environment undertaken by the proponent have provided sufficient certainty to assess the risks and identify measures to avoid, minimise or offset impacts.</p> <p>The EPA notes the proponent’s avoidance and mitigation measures to allocate construction and access areas to coincide with future urban development areas. The proponent has also proposed the maintenance of the ecological linkage including the provision of ‘green bridges’, minimising the impact to and offsetting the significant residual impact to conservation significant species and communities, and providing appropriate stabilisation of the disturbed dune. The EPA notes the proponent has proposed measures to mitigate and manage impacts associated with noise and vibration through the provision of vibration ballast matting and noise walls. Construction noise and vibration impacts are expected to meet the requirements of the Noise Regulations.</p> <p>The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts.</p> <p>From its assessment of this proposal the EPA has concluded that there is no threat of serious or irreversible harm.</p>

<p style="text-align: center;"><b>EP Act Principle</b></p>	<p style="text-align: center;"><b>Consideration</b></p>
<p><b>2. The principle of intergenerational equity</b></p> <p><i>The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>This principle is a fundamental and relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation, Terrestrial Fauna and Social Surroundings.</p> <p>The EPA notes that the proponent has identified measures to avoid or minimise impacts. The EPA has considered these measures during its assessment, and has recommended conditions to ensure that appropriate measures, including avoidance of impacts, are implemented.</p> <p>The proposal has the potential to contribute to a reduction in greenhouse gases and particulate matter emissions that would contribute positively on the health of the environment for the benefit of future generations.</p> <p>The EPA is confident that the health, diversity and productivity of the environment should be maintained and enhanced through the proponent’s application of the mitigation hierarchy and proposed management measures.</p> <p>The EPA has also considered to what extent the potential impacts from the proposal can be ameliorated by recommended conditions, including offsets. The EPA has concluded that the proposed offsets are likely to ameliorate impacts to the health, diversity and productivity of the environment, and that the aim of the proposed offsets is to increase the extent of communities and habitat in secure tenure and managed for conservation, which will provide for future generations.</p>
<p><b>3. The principle of the conservation of biological diversity and ecological integrity</b></p> <p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>This principle is a fundamental and relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation, Terrestrial Fauna and Social Surroundings.</p>

EP Act Principle	Consideration
	<p>The EPA notes the proponent has identified measures to minimise or manage impacts. The EPA has considered these measures during its assessment.</p> <p>The EPA concluded that there remained a significant residual impact to Bush Forever 289, conservation significant species and communities that may affect biological diversity and ecological integrity due to loss of intact occurrences of communities or loss of important habitat and has recommended offsets be applied to ensure that biological diversity and ecological integrity are maintained.</p> <p>The EPA has also considered to what extent the potential impacts from the proposal can be ameliorated by recommended conditions, including offsets. The EPA has concluded that the proposed conditions and offsets are likely to ameliorate the impacts of the loss of biological diversity and ecological integrity, and meet the aim to increase the extent of communities and habitat in secure tenure and managed for conservation.</p>
<p><b>4. Principles relating to improved valuation, pricing and incentive mechanisms</b></p> <p><i>(1) Environmental factors should be included in the valuation of assets and services.</i></p> <p><i>(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</i></p> <p><i>(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</i></p> <p><i>(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing</i></p>	<p>In considering this principle, the EPA notes that the proponent would bear the costs relating to mitigation and management of proposal related noise and vibration, severance of an ecological linkage, significant residual impacts to flora and vegetation and terrestrial fauna and disturbance of the Quindalup dune system.</p> <p>The EPA notes the proponent has proposed measures to mitigate and manage impacts associated with noise and vibration through the provision of vibration ballast matting and noise walls, maintenance of fauna movement including the provision of a fauna underpass, minimising the impact to and offsetting the significant residual impact to conservation significant species and communities, and providing appropriate stabilisation of the disturbed dune.</p>



<b>EP Act Principle</b>	<b>Consideration</b>
<p><i>incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.</i></p>	<p>The EPA has had regard to this principle during the assessment of the proposal.</p>
<p><b>5. The principle of waste minimisation</b></p> <p><i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i></p>	<p>In considering this principle, the EPA notes that the proponent proposes to minimise waste by adopting the hierarchy of waste controls (avoid, minimise, reuse, recycle, and safe disposal).</p> <p>The EPA notes that significant quantities of sand and limestone will be required to be removed from the development envelope and that the proponent is investigating beneficial use opportunities for the excess sand and limestone in close proximity to the proposal.</p> <p>The EPA has had regard to this principle during the assessment of the proposal.</p>

## Appendix 3: Evaluation of other environmental factors

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
<b>LAND</b>			
Subterranean Fauna	<p>Direct impacts to subterranean fauna habitat due to clearing activities and cut and fill.</p> <p>Potential indirect impacts to subterranean fauna including:</p> <ul style="list-style-type: none"> <li>• reduction of organic carbon entering subterranean environment due to clearing of vegetation</li> <li>• changes to surface and subsurface hydrology from construction of the railway line, excavations and clearing</li> <li>• changes to groundwater levels due to groundwater abstraction</li> </ul>	<p><b>Agency comments</b></p> <p>The Department of Biodiversity, Conservation and Attractions (DBCA): Should any ground water draw-down (lowering of ground water levels) required, the impact on the nearby <i>Aquatic root mat community of caves of the Swan Coastal Plain</i> (ARMC) threatened ecological community (TEC) and associated subterranean fauna may be significant. If this occurs, the risk to the TEC needs to be properly assessed following detailed geotechnical site investigations and the impacts on the ARMC and associated cave fauna in the surrounding area will need to be properly monitored and assessed. The DBCA is also concerned that any lowering of groundwater levels by dewatering in this area (even if only a 0.5m drop), there is a high likelihood of further significant drying of Lake McNess and Lake Yonderup in the Yanchep National Park.</p> <p>The Department of Water and Environmental Regulation (DWER): Impacts on ARMC threatened ecological community may not be effectively managed under a groundwater</p>	<p>Subterranean Fauna was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• dewatering and abstraction are not proposed for the proposal</li> <li>• potentially limited subterranean fauna habitat within the development envelope as it is predominantly Safety Bay Sand where there is limited potential for karstic voids and cavities to form habitat, and there are no established caves or areas of clay flats</li> <li>• average excavation depth of 5-6 m from existing natural surface level, allowing for continued potential habitat below the excavation to the top of the groundwater level</li> <li>• the desktop review and risk assessment of Subterranean Fauna undertaken by the proponent (Appendix I) finding a potentially low likelihood of overall impact to subterranean fauna</li> </ul>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
	<ul style="list-style-type: none"> <li>• groundwater contamination due to spills impacting habitat</li> <li>• vibration from railway operations</li> </ul>	<p>licence and an alternative implementation process is recommended.</p> <p><b>Public comments</b>                      Wilderness Society WA: The ERD concludes that there are minimal impacts on subterranean fauna as there are no established caves or aquatic root mat in the area. However, given the general lack of research and data on subterranean fauna in Western Australia and the Swan Coastal Plain area, and the limited field study, these conclusions are not convincing.</p> <p>Land clearing and fragmentation also impacts the groundwater required for the habitat to survive. It is unclear whether the proponent has considered the impact of the land clearing on the groundwater that feeds into the ARMC.</p> <p>Further study should be done to ensure that SRE species in the 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>	<ul style="list-style-type: none"> <li>• unlikely for impacts to ARMC as none of the identified locations of the ARMC occur within the development envelope, and all occurrences of Tuart vegetation within the development envelope are located in low likelihood karstic geological areas</li> <li>• the proponents proposed management in their Construction Environmental Management Plan (CEMP) including, temporarily suspending construction activities if significant caves or voids are encountered to assess potential impacts and implement appropriate mitigation measures and correctly storing fuel</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i></li> </ul> <p>the EPA considers it is unlikely that the proposal would have a significant impact on Subterranean Fauna and that the impacts to this factor are manageable.</p> <p>Accordingly, the <b>EPA did not consider Subterranean Fauna to be a key environmental factor</b> at the conclusion of its assessment.</p>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Landforms	<p>Alteration to 17.54 ha of two phases of the Quindalup dune system, causing impacts due to permanent loss, and alteration of shape and stability from cut and fill construction activities.</p> <p>Potential indirect impacts from blowouts, erosion and sand deposition.</p> <p>The proposal may also impact on Tamala Limestone in the development envelope due to excavation during construction.</p>	<p><b>Agency comments</b>                      DBCA: Ningana Bushland has value as a fully functional coastal dune. Any proposed fauna overpasses could use the existing dunes to provide a natural ramp for wildlife.</p> <p><b>Public comments</b>                      Urban Bushland Council: The proponent has not considered the significance of impacts to the Quindalup dunes; these dunes provide complex habitat. Development will have major impact, and will result in destruction of the existing Quindalup dune form. The proposal will cause significant erosion and impacts from blowouts.</p>	<p>Landforms was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• the limited direct impacts to the Quindalup dune system; 0.56% of the current extent regionally</li> <li>• the proponents proposed management in their CEMP including minimising of excavation by using retaining walls, battering and raising vertical alignment of the rail line, creation of a stable landform post construction by plating with local endemic species and bio engineering controls</li> <li>• program of monthly visual inspections to confirm ongoing dune stability</li> <li>• the proponent proposes to excavate about six metres from the existing natural surface level and impacts to the Tamala Limestone are not likely to be significant as the limestone would be retained below the excavation</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i></li> </ul>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<p>the EPA considers it is unlikely that the proposal would have a significant impact on Landforms and that the impacts to this factor are manageable.</p> <p>Accordingly, the <b>EPA did not consider Landforms to be a key environmental factor</b> at the conclusion of its assessment.</p>
<b>WATER</b>			
Inland Waters	<p>Potential impacts to surface and groundwater resources due to construction and operation of the proposal as a result of:</p> <ul style="list-style-type: none"> <li>• changes to groundwater levels due to groundwater abstraction</li> <li>• alteration of surface water flows and groundwater recharge</li> <li>• groundwater contamination due to spills.</li> </ul>	<p><b>Agency comments</b>                      The Department of Water and Environmental Regulation (DWER): The matter of identifying, protecting and managing potential pollution matters associated with the construction of the project in and around Wellhead Protection should be further addressed.</p> <p>The DWER is satisfied with the proposal collaborative implementation of Water Sensitive Urban Design (WSUD) at later stages of the project.</p> <p><b>Public comments</b>                      Wilderness Society WA: Clearing can result in excessive water in some areas and reduced in others, an oversupply of nutrients and acidification</p>	<p>Inland Waters was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• the ERD stating that no dewatering or abstraction of groundwater is proposed</li> <li>• any abstraction of groundwater will require licensing under the <i>Rights in Water and Irrigation Act 1914</i></li> <li>• the proponent has prepared a CEMP which contains measure to manage any impacts, for example no storage of fuels and chemicals in a wellhead protection zone</li> <li>• the average depth to groundwater from the natural ground surface is approximately 23m, therefore it is not expected there are any groundwater</li> </ul>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<p>dependent ecosystems within or directly adjacent to the development envelope</p> <ul style="list-style-type: none"> <li>• no surface water features such as rivers or wetlands are present within the development envelope</li> <li>• incorporation of WSUD principles in the proposal design, including maintenance of existing water flows and quality, landscaped drainage and water management features</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> </ul> <p>the EPA considers it is unlikely that the proposal would have a significant impact on Inland Waters and that the impacts to this factor are manageable.</p> <p>Accordingly, the <b>EPA did not consider Inland Waters to be a key environmental factor</b> at the conclusion of its assessment.</p>
<b>AIR</b>			
Air Quality		<p><b>Public comments</b>                      Wildflower Society: The carbon emissions associated with the project are a substantial underestimation, and the carbon emissions calculations need to be revised</p>	<p>Air Quality was not identified as a preliminary key environmental factor+ when the EPA decided to assess the proposal.</p>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<p>Having regard to:</p> <ul style="list-style-type: none"> <li>the proponent’s qualitative air quality assessment and carbon and energy assessment report</li> <li>the proponent’s estimation of the shift in passenger transport mode from more emission intensive private motor vehicle to less emission intensive passenger rail</li> <li>the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> </ul> <p>the EPA considers it unlikely that the proposal will result in a significant increase to greenhouse gas emissions and will likely reduce transport emissions.</p> <p>Accordingly, the <b>EPA did not consider Air Quality to be a key environmental factor</b> at the conclusion of its assessment.</p>
<b>PEOPLE</b>			
Social Surroundings (Aboriginal Heritage)	Disturbance or damage to artefacts or other items of Aboriginal cultural significance.	None received for this factor.	<p>Social Surroundings (Aboriginal Heritage) was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<ul style="list-style-type: none"> <li>• no heritage places listed on the State Register of Heritage Places have been identified within the development envelope</li> <li>• the proponent commitment to ensure an Aboriginal monitor will be on-site during clearing and initial groundworks at the Yanchep station sites, to identify and manage potential artefacts or objects of Aboriginal cultural significance</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>, the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings (Aboriginal Heritage) and that the impacts to this factor are manageable.</li> </ul> <p>Accordingly, while the <b>EPA did not consider Social Surroundings (Aboriginal Heritage) to be a key environmental factor</b>, the EPA has considered Social Surroundings (Amenity) in its assessment (See section 4.3).</p> <p>The EPA notes that the proponent is aware of its obligations under the</p>



Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<p><i>Aboriginal Heritage Act 1972</i> and that any clearing of registered Aboriginal heritage sites can be managed under this Act.</p>
<p>Social Surroundings (Dust)</p>	<p>Dust disturbance to sensitive receptors as a result of construction of the proposal.</p>	<p>None received for this factor.</p>	<p>Social Surroundings (Dust) was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• the proponent’s preparation and implementation of a CEMP which include specific dust control measures including the use of water carts and hydromulch to minimise dust generation</li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> </ul> <p>the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings (Dust) and that the impacts to this factor are manageable.</p> <p>Accordingly, while the <b>EPA did not consider Social Surroundings (Dust) to be a key environmental factor</b>, the EPA has considered Social Surroundings (Amenity) in its assessment (See section 4.3).</p>

Environmental factor	Description of the proposal’s likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Social Surroundings (Bushfire)	Risk of bushfire from construction and operation of the proposal.	<p><b>Agency comment</b></p> <p>City of Wanneroo: Ongoing formal management of the regional open space is supported. Management of the regional open space by the DBCA should be formalised and appropriate infrastructure installed including conservation fencing, controlled access (vehicular and pedestrian), fire access and so on.</p> <p>Sustainable Populations Australia (WA Branch): Provision of fire or emergency access across the rail line has not been considered</p> <p><b>Public comments</b></p> <p>None received for this factor.</p>	<p>Social Surroundings (Bushfire) was identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> <li>• Bushfire risk management actions and full risk assessment to be provided in a pre-construction Bushfire Risk Management Plan</li> <li>• State Planning Policy 3.7 <i>Planning in bushfire prone areas</i></li> <li>• the significance considerations in the <i>Statement of Environmental Principles, Factors and Objectives</i>,</li> </ul> <p>the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings (Bushfire) and that the impacts to this factor are manageable.</p> <p>Accordingly, while the <b>EPA did not consider Social Surroundings (Bushfire) to be a key environmental factor</b>, the EPA has considered Social Surroundings (Amenity) in its assessment (See section 4.3).</p>

## Appendix 4: Identified Decision-Making Authorities and Recommended Environmental Conditions

### Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities (DMAs), and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified:

<b>Decision-making Authority</b>	<b>Legislation (and Approval)</b>
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> (taking of flora and fauna)
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> (licence to take water)
3. Minister for Planning	<i>Planning and Development Act 2005</i> (scheme amendments)
4. Minister for Transport	<i>Land Administration Act 1997</i> – s. 183 (authority to enter land and do anything that is authorised to be done under the rail enabling legislation (once enacted))
5. Minister for Aboriginal Affairs	<i>Aboriginal Heritage Act 1972</i> – s.18 disturbance of a site of Aboriginal heritage significance
6. Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> – Part V (native vegetation clearing permit; crushing of excess limestone during construction; works approval and licence to construct and operate concrete batching plants)
7. Executive Director, Chief Dangerous Goods Officer, Department of Mines, Industry, Regulation and Safety	<i>Dangerous Goods Safety Act 2004</i> (storage and handling of hazardous materials)
8. Chair, Western Australian Planning Commission	<i>Planning and Development Act 2005</i> (Development applications for station precincts)

<p>9. Chief Health Officer, Department of Health – Public Health Division</p>	<p><i>Health Act 1911 (s.107 (2)(b) Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 (Reg 4A Drains, sanitary conveniences, and any apparatus for the treatment of sewage intended to serve a building that is not a single dwelling or any other building that produces more than 540 litres of sewage per day.)</i></p>
<p>10. Chief Executive Officer, City of Wanneroo</p>	<p><i>Health Act (Underground Water Supply) Regulation 1959 – Reg 11 Prior approval required for a well or other underground source of water supply</i></p>

Note: In this instance, agreement is only required with DMA 1, 2, 3, 4 and 5 since these DMAs are Ministers.

**RECOMMENDED ENVIRONMENTAL CONDITIONS**  
**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED**  
***(Environmental Protection Act 1986)***

**YANCHEP RAIL EXTENSION PART 2 – EGLINTON TO YANCHEP**

**Proposal:** The proposal is to construct and operate a 7.2 kilometre extension to the existing Joondalup railway line from Eglinton Station to the suburb of Yanchep in the City of Wanneroo

**Proponent:** Public Transport Authority of Western Australia  
Australian Business Number 61 850 109 576

**Proponent Address:** Public Transport Centre, West Parade  
PERTH WA 6000

**Assessment Number:** 2174

**Report of the Environmental Protection Authority:** 1656

Pursuant to section 45 of the *Environmental Protection Act 1986*, it has been agreed that the proposal described and documented in Table 1 of Schedule 1 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

**1 Proposal Implementation**

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in Table 2 of Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

**2 Contact Details**

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

### **3 Time Limit for Proposal Implementation**

- 3-1 The proponent shall not commence implementation of the proposal after five (5) years from the date of this Statement, and any commencement, prior to this date, must be substantial.
- 3-2 Any commencement of implementation of the proposal, on or before five (5) years from the date of this Statement, must be demonstrated as substantial by providing the CEO with written evidence, on or before the expiration of five (5) years from the date of this Statement.

### **4 Compliance Reporting**

- 4-1 The proponent shall prepare, and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 4-6, or prior to implementation of the proposal, whichever is sooner.
- 4-2 The Compliance Assessment Plan shall indicate:
- (1) the frequency of compliance reporting;
  - (2) the approach and timing of compliance assessments;
  - (3) the retention of compliance assessments;
  - (4) the method of reporting of potential non-compliances and corrective actions taken;
  - (5) the table of contents of Compliance Assessment Reports; and
  - (6) public availability of Compliance Assessment Reports.
- 4-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 4-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 4-1 and shall make those reports available when requested by the CEO.
- 4-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.
- 4-6 The proponent shall submit to the CEO the first Compliance Assessment Report fifteen (15) months from the date of issue of this Statement addressing the twelve (12) month period from the date of issue of this Statement and then

annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

- (1) be endorsed by the proponent's Chief Executive Officer or a person delegated to sign on the Chief Executive Officer's behalf;
- (2) include a statement as to whether the proponent has complied with the conditions;
- (3) identify all potential non-compliances and describe corrective and preventative actions taken;
- (4) be made publicly available in accordance with the approved Compliance Assessment Plan; and
- (5) indicate any proposed changes to the Compliance Assessment Plan required by condition 4-1.

## **5 Public Availability of Data**

5-1 Subject to condition 5-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)), management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

5-2 If any data referred to in condition 5-1 contains particulars of:

- (1) a secret formula or process; or
- (2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

## **6 Green Bridges (Structures) Ningana Bushland – Flora and Vegetation – Terrestrial Fauna**

6-1 The proponent shall implement the proposal to meet the following environmental objective:

- (1) maintain the ecological linkage across Bush Forever site 289.

- 6-2 To verify that the objective of condition 6-1(1) is being met, the proponent shall construct no less than three (3) **green bridges** across the proposal within Bush Forever site 289. The **green bridges** shall:
- (1) be of at least thirty (30) metres in width;
  - (2) directly connect areas of **intact native vegetation** to provide a continuously vegetated link;
  - (3) be located in the southern and central extent of Bush Forever site 289 intersected by the proposal;
  - (4) provide vegetative cover and **fauna habitat** across the extent of each **green bridge** to ensure no more than twenty (20) per cent bare ground; and
  - (5) provide suitable **pollinator habitat**.
- 6-3 Prior to ground-disturbing activities within Bush Forever site 289, the proponent shall prepare, in consultation with the DBCA, and submit, a Green Bridge Design and Management Plan to the requirements of the CEO.
- 6-4 The Green Bridge Design and Management Plan required by condition 6-3 shall:
- (1) specify the indicative locations of the **green bridges** required by condition 6-2;
  - (2) include minimum specifications for the **green bridges** required by condition 6-2 including dimensions, depth of the soil profile, selection of locally native flora species, reticulation of vegetation, width of the vegetated portion, pedestrian access (where appropriate), provision of **fauna habitat**, entry design, and drainage provisions;
  - (3) include completion criteria for the provision of vegetative cover and **fauna habitat** to meet condition 6-2(4);
  - (4) specify on-ground **management actions** to be undertaken at the entry to and on the **green bridges**, for:
    - (a) feral animal control;
    - (b) weed control;
    - (c) access control; and
    - (d) hygiene control;
  - (5) detail ongoing management and maintenance responsibilities.



- 6-5 The Green Bridge Design and Management Plan required by condition 6-3 shall be approved by notice in writing from the CEO prior to the commencement of ground-disturbing activities within Bush Forever site 289.
- 6-6 After receiving notice in writing from the CEO, on advice of the DBCA, that the Green Bridge Design and Management Plan satisfies the requirements of condition 6-4, the proponent shall implement the Green Bridge Design and Management Plan.
- 6-7 The proponent:
- (1) may review and revise the Green Bridge Design and Management Plan; or
  - (2) shall review and revise the Green Bridge Design and Management Plan as and when directed by the CEO.
- 6-8 The proponent shall implement the latest version of the Green Bridge Design and Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 6-4.

## **7 Environmental Management Plan – Ningana Bushland Indirect Impacts (Flora and Vegetation and Terrestrial Fauna)**

- 7-1 The proponent shall ensure that the proposal is implemented to meet the following environmental objective:
- (1) **indirect impacts** to flora and vegetation and terrestrial fauna are minimised directly outside the development envelope within Bush Forever site 289.
- 7-2 In order to meet the objective of condition 7-1(1), the proponent shall, prior to ground-disturbing activities within Bush Forever site 289, prepare and submit an Environmental Management Plan to the satisfaction of the CEO, on advice of the DBCA.
- 7-3 The Environmental Management Plan required by condition 7-2 shall:
- (1) specify risk-based **management actions** that will be implemented to meet the environmental objective specified in condition 7-1(1);
  - (2) specify measurable **management target(s)** to determine the effectiveness of the risk-based **management actions** required by condition 7-3(1);
  - (3) specify monitoring parameters to measure the effectiveness of **management actions** against the **management target(s)** required by condition 7-3(2);

- (4) specify the location(s), frequency and timing of monitoring;
  - (5) specify a process for revision of **management actions** and changes to proposal activities, in the event that the **management target(s)** are not achieved. The process shall include an investigation to determine the cause of **management target(s)** not being achieved; and
  - (6) provide the format and timing to demonstrate that condition 7-1 has been met for the reporting period in the Compliance Assessment Report required by condition 4-6 including, but not limited to:
    - (a) verification of the implementation of **management actions**; and
    - (b) reporting on the effectiveness of **management actions** against the **management target(s)**.
- 7-4 The Environmental Management Plan required by condition 7-2 shall be approved by notice in writing from the CEO prior to the commencement of ground-disturbing activities within Bush Forever site 289.
- 7-5 After receiving notice in writing from the CEO that the Environmental Management Plan required by condition 7-2 satisfies the requirements of condition 7-3, the proponent shall:
- (1) implement the Environmental Management Plan within Bush Forever site 289; and
  - (2) continue to implement the Environmental Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the objective specified in condition 7-1(1) have been met.
- 7-6 In the event that monitoring or investigations indicate **management target(s)** specified in the Environmental Management Plan have not been achieved, the proponent shall:
- (1) provide a report to the CEO in writing within twenty-one (21) days of the identification of the **management target(s)** not being achieved;
  - (2) investigate to determine the cause of the **management target(s)** not being achieved; and
  - (3) provide a report to the CEO within sixty (60) days of the reported identification of the **management target(s)** not being achieved as required by condition 7-6(1). The report shall include:
    - (a) cause of management targets not being achieved;
    - (b) the findings of the investigation required by condition 7-6(2);

- (c) details of revised and/or additional **management actions** to be implemented to achieve **management target(s)**; and
- (d) relevant changes to proposal activities.

7-7 In the event that monitoring or investigations indicate that one or more **management actions** specified in the Environmental Management Plan required by condition 7-2 have not been implemented, the proponent shall:

- (1) report the failure to implement **management actions** in writing to the CEO within seven (7) days of identification;
- (2) investigate to determine the cause of the **management actions** not being implemented;
- (3) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to the failure to implement **management actions**; and
- (4) provide a report to the CEO within twenty-one (21) days of the reporting required by condition 7-7(1). The report shall include:
  - (a) cause for failure to implement management actions;
  - (b) the findings of the investigation required by condition 7-7(2) and 7-7(3);
  - (c) relevant changes to proposal activities; and
  - (d) measures to prevent, control or abate the environmental harm which may have occurred.

7-8 The proponent:

- (1) may review and revise the Environmental Management Plan; or
- (2) shall review and revise the Environmental Management Plan as and when directed by the CEO.

The proponent shall implement the latest revision of the Environmental Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 7-3.

## **8 Revegetation Management Plan – Ningana Bushland (Flora and Vegetation)**

8-1 The proponent shall ensure that the proposal is implemented to meet the following environmental objective:

- (1) areas of native vegetation cleared within Bush Forever site 289 not required for ongoing operations are revegetated within twenty-four (24) months of completion of construction activities.
- 8-2 To verify that the objective of condition 8-1(1) will be met, the proponent shall, within twelve (12) months of the publication of this Statement, or as otherwise agreed by the CEO, prepare and submit a Revegetation Management Plan to the satisfaction of the CEO, on advice of the DBCA.
- 8-3 The Revegetation Management Plan required by condition 8-2 shall:
- (1) identify and map indicative areas to be revegetated as required by condition 8-1(1);
  - (2) specify risk-based **management actions** that will be implemented to meet the environmental objective specified in condition 8-1(1);
  - (3) specify measurable **management target(s)** to determine the effectiveness of the risk-based **management actions** required by condition 8-3(2), including revegetation completion criteria using locally native species;
  - (4) specify monitoring parameters to measure the effectiveness of **management actions** against the **management target(s)** required by condition 8-3(3);
  - (5) specify the location(s), frequency and timing of monitoring;
  - (6) specify a process for revision of **management actions** and changes to proposal activities, in the event that the **management target(s)** are not achieved. The process shall include an investigation to determine the cause of **management target(s)** not being achieved; and
  - (7) provide the format and timing to demonstrate that condition 8-1(1) has been met for the reporting period in the Compliance Assessment Report required by condition 4-6 including, but not limited to:
    - (a) verification of the implementation of **management actions**; and
    - (b) reporting on the effectiveness of **management actions** against the **management target(s)**.
- 8-4 Those areas to be revegetated as identified in condition 8-3(1) shall not include areas required for ongoing operations including, but not limited to, drainage basins and embankments.

- 8-5 The proponent shall not plant known species of foraging habitat for black cockatoos, including but not limited to, *Banksia* spp., *Hakea* spp., *Grevillea* spp. and *Eucalyptus* spp., within ten (10) m of the constructed railway.
- 8-6 After receiving notice in writing from the CEO that the Revegetation Management Plan required by condition 8-2 satisfies the requirements of condition 8-3, the proponent shall:
- (1) implement the Revegetation Management Plan within Bush Forever site 289 within six (6) months of completion of construction; and
  - (2) continue to implement the Revegetation Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated that the completion criteria in the Revegetation Management Plan have been met.
- 8-7 In the event that monitoring or investigations indicate **management target(s)** specified in the Revegetation Management Plan have not been achieved, the proponent shall:
- (1) provide a report to the CEO in writing within twenty-one (21) days of the identification of the **management target(s)** not being achieved;
  - (2) investigate to determine the cause of the **management target(s)** not being achieved; and
  - (3) provide a report to the CEO within sixty (60) days of the reported identification of the **management target(s)** not being achieved as required by condition 8-7(1). The report shall include:
    - (a) cause of management targets not being achieved;
    - (b) the findings of the investigation required by condition 8-7(2);
    - (c) details of revised and/or additional **management actions** to be implemented to achieve **management target(s)**; and
    - (d) relevant changes to proposal activities.
- 8-8 In the event that monitoring or investigations indicate that one or more **management actions** specified in the Revegetation Management Plan required by condition 8-2 have not been implemented, the proponent shall:
- (1) report the failure to implement **management actions** in writing to the CEO within seven (7) days of identification;
  - (2) investigate to determine the cause of the **management actions** not being implemented;

- (3) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to the failure to implement **management actions**; and
- (4) provide a report to the CEO within twenty-one (21) days of the reporting required by condition 8-8(1). The report shall include:
  - (a) cause for failure to implement management actions;
  - (b) the findings of the investigation required by condition 8-8(2) and 8-8(3);
  - (c) relevant changes to proposal activities; and
  - (d) measures to prevent, control or abate the environmental harm which may have occurred.

8-9 The proponent:

- (1) may review and revise the Revegetation Management Plan; or
- (2) shall review and revise the Revegetation Management Plan as and when directed by the CEO.

8-10 The proponent shall implement the latest revision of the Revegetation Management Plan required by condition 8-2 which the CEO has confirmed by notice in writing meets the requirements of condition 8-3.

8-11 The proponent shall continue to implement the latest revision of the Revegetation Management Plan, until the CEO has confirmed by notice in writing that the proponent has demonstrated that the completion criteria in the Revegetation Management Plan have been met.

## **9 Terrestrial Fauna – Construction Impacts**

9-1 Prior to ground-disturbing activities associated with the proposal, the proponent shall undertake the following actions to minimise impacts to terrestrial fauna:

- (1) during Carnaby's cockatoo (*Calyptorhynchus latirostris*) breeding season (1 July to 31 December), appropriately qualified and licensed terrestrial fauna spotter(s) with experience in surveying for black cockatoos shall inspect all **potential nesting trees** with hollows within seven (7) days prior to clearing of **potential nesting trees**, to determine if there are any hollows being used by Carnaby's cockatoos (*Calyptorhynchus latirostris*); and
- (2) if any Carnaby's cockatoos (*Calyptorhynchus latirostris*) are found to be using hollows the proponent shall not clear the nesting tree, or vegetation

within a ten (10) metre radius of the nesting tree, until an appropriately qualified and licensed terrestrial fauna spotter has verified that the hollows are no longer being used by the Carnaby's cockatoo(s) (*Calyptorhynchus latirostris*).

9-2 During activities associated with the construction of the proposal the proponent shall undertake as required the following actions to minimise impacts to terrestrial fauna:

- (1) undertake the trapping and relocation of ground dwelling **conservation significant vertebrate fauna** no more than seven (7) days prior to clearing activities;
- (2) ensure the use of appropriately qualified and licensed terrestrial fauna spotters during clearing activities;
- (3) ensure that during trenching activities inspection for, and clearing of, fauna from open trenches by appropriately qualified and licensed terrestrial fauna rescue personnel occurs at least twice daily and not more than one hour prior to backfilling of trenches, with the first daily inspection and clearing to be undertaken no later than three (3) hours after sunrise prior to any construction, and the second inspection and clearing to be undertaken daily between the hours of 3:00 pm and 6:00 pm;
- (4) ensure that open trench lengths do not exceed a length capable of being inspected and cleared by appropriately qualified and licensed fauna rescue personnel within the required times set out in condition 9-2(3); and
- (5) provide egress points, ramps and/or fauna refuges that provide suitable shelter from the sun and predators for trapped fauna in open trenches at intervals not exceeding fifty (50) metres.

## 10 Social surroundings

10-1 The proponent shall implement the proposal to meet the following environmental objective:

- (1) minimise operational noise and vibration impacts on existing **noise sensitive receptors** as far as practicable.

10-2 At least three (3) months prior to the operation of the proposal, in order to meet the requirements of condition 10-1(1), the proponent shall revise the Noise and Vibration Management Plan – Metronet – Yanchep Rail Extension (Reference: 17074053-02; 30 May 2018) to include:

- (1) an update to Section 3.3 Design and Construction of Noise Mitigation Measures, to show the locations and minimum heights of noise walls; and
  - (2) demonstration that the design and construction of noise mitigation measures will meet the noise and vibration management targets set out in Section 3.2 Management Actions and Targets.
- 10-3 The proponent shall implement the revised Noise and Vibration Management Plan – Metronet – Yanchep Rail Extension, or the most recent version, which the CEO has confirmed by notice in writing satisfies the requirements of condition 10-2.
- 10-4 The proponent shall continue to implement the revised Noise and Vibration Management Plan – Metronet – Yanchep Rail Extension, or any subsequently approved revisions until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objective in condition 10-1(1) is being and will continue to be met.
- 10-5 In the event of failure to implement management actions detailed in the approved Noise and Vibration Management Plan – Metronet – Yanchep Rail Extension, the proponent shall meet the requirements of condition 4-5 (Compliance Reporting) and shall implement the measures outlined in the approved Noise and Vibration Management Plan – Metronet – Yanchep Rail Extension, including, but not limited to, actions and investigations to be undertaken.

## **11 Offsets**

- 11-1 The proponent shall undertake offsets with the objective of counterbalancing the significant residual impact on the environmental values of:
- (1) 0.05 ha Threatened Ecological Community SCP 26a '*Melaleuca huegelii* – *Melaleuca systena* shrublands on limestone ridges (Gibson et al. 1994 type 26a)';
  - (2) 8.1 ha of Banksia Woodlands of the Swan Coastal Plain Priority Ecological Community;
  - (3) 56.3 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) foraging habitat, inclusive of 2.1 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) potential breeding habitat;
  - (4) 45 Carnaby's cockatoo (*Calyptorhynchus latirostris*) potential breeding trees; and
  - (5) 27.7 ha of Bush Forever site 289,



as a result of the implementation of the proposal, as defined in Table 2 of Schedule 1 and delineated by coordinates in Schedule 2.

**Threatened Ecological Community ‘*Melaleuca huegelii* – *Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)’ Land Acquisition Strategy**

- 11-2 Within six (6) months of the publication of this Statement, or as otherwise agreed by the CEO, the proponent shall prepare and submit a Threatened Ecological Community ‘*Melaleuca huegelii* – *Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)’ Land Acquisition Strategy to the requirements of the CEO with the objective of counterbalancing the significant residual impact to 0.05 ha of Threatened Ecological Community ‘*Melaleuca huegelii* – *Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)’.
- 11-3 The Threatened Ecological Community ‘*Melaleuca huegelii* – *Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)’ Land Acquisition Strategy as required by condition 11-2 shall:
- (1) identify an initially unprotected area or areas to be acquired and protected for conservation that contains vegetation commensurate with the values identified in condition 11-1(1);
  - (2) demonstrate how the proposed offset counterbalances the significant residual impact as identified in condition 11-1(1) through application of the principles and completion of the WA Offsets Template, as described in the WA Environmental Offsets Guidelines 2014, and the *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy Assessment Guide (October 2012), or any approved updates of these documents;
  - (3) identify the environmental values of the offset area(s);
  - (4) identify and commit to a protection mechanism for any area(s) of land acquisition, being either the area(s) is ceded to the Crown for the purpose of management for conservation, or the area(s) is managed under other suitable mechanism(s) for the purpose of conservation as agreed by the CEO;
  - (5) for any land identified in condition 11-3(4), the proponent will identify:
    - (a) the quantum of, and provide funds for, the upfront works associated with establishing the conservation area;
    - (b) the quantum of, and provide a contribution of funds for, the management of this area for seven (7) years; and

- (c) an appropriate management body for the identified land.
  - (6) define the role of the proponent and/or any relevant management authority.
- 11-4 After receiving notice in writing from the CEO, on advice of the DBCA, that the Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy satisfies the requirements of conditions 11-2 and 11-3, the proponent shall implement the approved Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy.
- 11-5 The proponent:
- (1) may review and revise the Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy; or
  - (2) shall review and revise the Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy as and when directed by the CEO.
- 11-6 The proponent shall implement the latest version of the Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of conditions 11-2 and 11-3.
- 11-7 The proponent shall continue to implement the approved Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objectives and targets in the Threatened Ecological Community '*Melaleuca huegelii – Melaleuca systema* shrublands on limestone ridges (Gibson et al. 1994 type 26a)' Land Acquisition Strategy have been met and therefore the implementation of the actions is no longer required.

### **Land Acquisition and Rehabilitation Offsets Strategy**

- 11-8 Within twelve (12) months of the publication of this Statement, or as otherwise agreed by the CEO, the proponent shall prepare and submit a Land Acquisition and Rehabilitation Offsets Strategy to the requirements of the CEO, with the environmental objective of counterbalancing the significant residual impact to:

- (1) 8.1 ha of Banksia Woodlands of the Swan Coastal Plain Priority Ecological Community;
- (2) 56.3 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) foraging habitat, inclusive of 2.1 ha of Carnaby's cockatoo (*Calyptorhynchus latirostris*) potential breeding habitat;
- (3) 45 Carnaby's cockatoo (*Calyptorhynchus latirostris*) potential breeding trees; and
- (4) 27.7 ha of Bush Forever site 289.

11-9 The Land Acquisition and Rehabilitation Offsets Strategy required by condition 11-8 shall:

- (1) identify an area, or areas to be acquired and protected, managed and/or **rehabilitated** for conservation to counterbalance the significant residual impact to the environmental values identified in condition 11-8(1) to 11-8(3) which counterbalances the significant residual impacts as required by condition 11-9(3);
- (2) spatially define the area(s) of Bush Forever site 289 outside the development envelope to be, **rehabilitated**, improved and managed to counterbalance the significant residual impact to Bush Forever identified in condition 11-8 (4) which counterbalances the significant residual impact as required by condition 11-9(3);
- (3) demonstrate how the proposed offsets counterbalances the significant residual impact to the environmental values identified in condition 11-8, through application of the principles of the WA Offsets Policy 2011, completion of the WA Offsets Template as described in the WA Environmental Offsets Guidelines 2014, and the *Environmental Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy Assessment Guide (October 2012), or any approved updates of these documents;
- (4) identify the environmental values of the offset area(s) required by conditions 11-9(1) and 11-9(2);
- (5) demonstrate how the proposed offset aligns with the *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan*, or any subsequent revisions of the plan;
- (6) identify and commit to a protection mechanism for any area(s) of land identified in conditions 11-9(1) and 11-9(2), being either the area(s) is ceded to the Crown for the purpose of management for conservation, or

the area(s) is managed under other suitable mechanism(s) for the purpose of conservation as agreed by the CEO;

- (7) for any land identified in conditions 11-9(1) and 11-9(2), the proponent will identify:
  - (a) the quantum of, and provide funds for, the upfront works associated with establishing the conservation area;
  - (b) the quantum of, and provide a contribution of funds for, the management of this area for at least seven (7) years; and
  - (c) an appropriate management body for the identified land;
- (8) where rehabilitation and/or other on-ground actions are proposed, state the objectives and targets to be achieved, including completion criteria, which demonstrate:
  - (a) how on-ground management or rehabilitation actions will result in a tangible improvement to the environmental value(s) being offset; and
  - (b) the consistency of the objectives and targets with the objectives of any relevant Recovery Plans or area management plans;
- (9) detail the management and/or rehabilitation actions and a timeframe for the actions to be undertaken;
- (10) detail any funding arrangements and timing of funding for management and/or rehabilitation actions;
- (11) detail the monitoring, reporting and evaluation mechanisms for management and/or rehabilitation actions; and
- (12) define the role of the proponent and/or any relevant management authority.

11-10 Where research project(s) are proposed to offset a portion of the significant residual impacts to foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), the proponent shall prepare and submit with the Land Acquisition and Rehabilitation Offsets Strategy required by condition 11-8, a Carnaby's Cockatoo Research Plan to the requirements of the CEO. The Carnaby's Cockatoo Research Plan shall:

- (1) identify how the research will increase the scientific knowledge of Carnaby's cockatoo (*Calyptorhynchus latirostris*) relevant to improving the conservation and management of the species and its habitat in the Perth and Peel regions;

- (2) demonstrate how the research project(s) will provide a positive and long-term conservation outcome for Carnaby's cockatoo (*Calyptorhynchus latirostris*) and address agreed research priorities, considering key knowledge gaps identified in the EPA Technical Report: *Carnaby's cockatoo in environmental impact assessment in the Perth and Peel regions* (2019), the relevant recovery plan and/or other research priorities agreed with the DBCA;
- (3) identify the objectives and intended outcomes, and details of success criteria;
- (4) provide an implementation schedule including an outline of key activities, deliverables, stages of implementation, and milestones towards completion;
- (5) identify the agreed governance arrangements including stakeholder responsibilities for implementing the research, and agreements with any third parties involved and legal obligations;
- (6) identify any potential risks involved and appropriate contingency measures;
- (7) identify monitoring activities to assess progress with research implementation and for compliance purposes;
- (8) provide details on the:
  - (a) financial and financial auditing arrangements including project budget and recipients of funds if project(s) are to be undertaken by any third parties;
  - (b) funding arrangements including the methodology to determine the amount of funding to be spent on research project(s); and
  - (c) timing of funding for the research project(s);
- (9) identify procedures for reporting to the CEO and the DBCA, including the content, format, timing and frequency for reporting and provisions of data and information against the objectives and outcomes identified in condition 11-10(3); and
- (10) identify how the results of the research offset will be communicated and/or published in an open access format for the benefit of future assessments and public understanding of the species.

11-11 Within six (6) months of receiving notice in writing from the CEO, on advice of the DBCA and the WAPC, that the Land Acquisition and Rehabilitation Offsets Strategy satisfies the requirements of conditions 11-8, 11-9 and 11-10, the

proponent shall substantially commence implementation of the actions within the approved Land Acquisition and Rehabilitation Offsets Strategy.

11-12 The proponent:

- (1) may review and revise the Land Acquisition and Rehabilitation Offsets Strategy; or
- (2) shall review and revise the Land Acquisition and Rehabilitation Offsets Strategy as and when directed by the CEO.

11-13 The proponent shall implement the latest version of the Land Acquisition and Rehabilitation Offsets Strategy, which the CEO has confirmed by notice in writing, satisfies the requirements of conditions 11-8, 11-9 and 11-10.

11-14 The proponent shall continue to implement the approved Land Acquisition and Rehabilitation Offsets Strategy until the CEO has confirmed by notice in writing that the proponent has demonstrated that the objectives and targets in the Land Acquisition and Rehabilitation Offsets Strategy have been met.

**Schedule 1**

**Table 1: Summary of the Proposal**

<b>Proposal Title</b>	Yanchep Rail Extension Part 2 – Eglinton to Yanchep
<b>Short Description</b>	The proposal is to construct and operate a 7.2 kilometre extension to the Joondalup railway line from the future Eglinton Station to the suburb of Yanchep in the City of Wanneroo. The proposal will also include one new intermodal transit station at Yanchep, Principal Shared Path, bridge infrastructure, and construction and access areas.

**Table 2: Location and authorised extent of physical and operational elements**

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
<b>Element</b>	<b>Location</b>	<b>Authorised Extent</b>
Clearing and disturbance for construction of the railway, stations, principal shared path, drainage structures, construction laydown and access, fauna fencing, bridges, noise walls.	Located within the development envelope shown in Figure 1.	<p>Clearing and disturbance of no more than 62.3 ha which includes no more than:</p> <ul style="list-style-type: none"> <li>• 57.7 ha of native vegetation including:                             <ul style="list-style-type: none"> <li>○ 0.05 ha of <i>Melaleuca huegelii</i> – <i>Melaleuca systema</i> shrublands on limestone ridges (Gibson et al. 1994 type 26a);</li> <li>○ 8.8 ha of Banksia dominated woodlands of the Swan Coastal Plain IBRA Region</li> </ul> </li> <li>• 28.8 ha of Bush Forever site 289.</li> <li>• 56.3 ha of Carnaby’s cockatoo foraging habitat, inclusive of 2.1 ha of Carnaby’s cockatoo potential breeding habitat</li> <li>• 45 potential Carnaby’s cockatoo potential breeding trees</li> </ul> <p>within a 72.9 ha development envelope.</p>

**Table 3: Abbreviations and Definitions**

<b>Acronym or Abbreviation</b>	<b>Definition or Term</b>
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or his delegate.
conservation significant vertebrate fauna	Specially protected (threatened) fauna under the <i>Biodiversity Conservation Act 2016</i> and Department of Biodiversity, Conservation and Attractions listed priority fauna and its habitat.
DBCA	The Department of Biodiversity, Conservation and Attractions, or the state government agency responsible for the administration of the <i>Conservation and Land Management Act 1985</i> .
EP Act	<i>Environmental Protection Act 1986</i>
fauna habitat	The natural environment of an animal or assemblage of animals, including biotic and abiotic elements, that provides a suitable place for them to live (e.g. breed, forage, roost or seek refuge).
green bridges	An engineered vegetated infrastructure overpass that provides an ecological linkage between areas containing environmental values.
ha	Hectare
indirect impacts	Any potential impacts outside the development envelope as a result of the clearing and disturbance authorised in Table 2 of Schedule 1. This includes but is not limited to: hydrological change, weed invasion, altered fire regimes, introduction or spread of disease, changes in erosion/deposition/accretion, noise, feral predation and edge effects.
intact native vegetation	Native vegetation in 'Degraded' or better condition.
pollinator habitat	Habitat made up of flora species that provide pollen and nectar resources suitable for avian and invertebrate pollinator species.
management action	Identified actions undertaken to mitigate the impacts of implementation of a proposal on the environment and achieve the condition environmental objective.
management target	A measurable boundary of acceptable impact with proposal or site-specific parameters, that assesses the efficacy of management actions against the condition environmental objective and beyond which management actions have to be reviewed and revised. Proposal- or site-specific parameters may include location, scale, time period, specific species/population/community and a relative benchmark (e.g. baseline or reference).
noise sensitive receptor	A building, or a part of a building, on the premises that is used for a noise sensitive purpose, in accordance with those premises defined in Schedule 1 Part C of the <i>Environmental Protection (Noise) Regulations 1997</i> .
potential nesting tree	Any existing tree of a species known to support breeding which either has a hollow or has a diameter at breast height of 500 millimetres or greater and therefore may develop a nest hollow.



rehabilitated	The end result of rehabilitation as defined in the WA Environmental Offsets Guidelines as <i>repair of ecosystem processes and management of weeds, disease or feral animals</i> .
spp.	Species (plural)
trenching activities	Trenches used for utilities such as communications. Trenches do not include excavation for the sinking of the railway line.
WAPC	The Western Australian Planning Commission; or statutory authority of the Government of Western Australia with functions and authority to undertake and regulate land use planning and development established under the <i>Planning and Development Act 2005</i> .

**Figure (attached)**

Figure 1 Yanchep Rail Extension Part 2 – Eglinton to Yanchep development envelope (this figure is a representation of the co-ordinates referred to in Schedule 2).

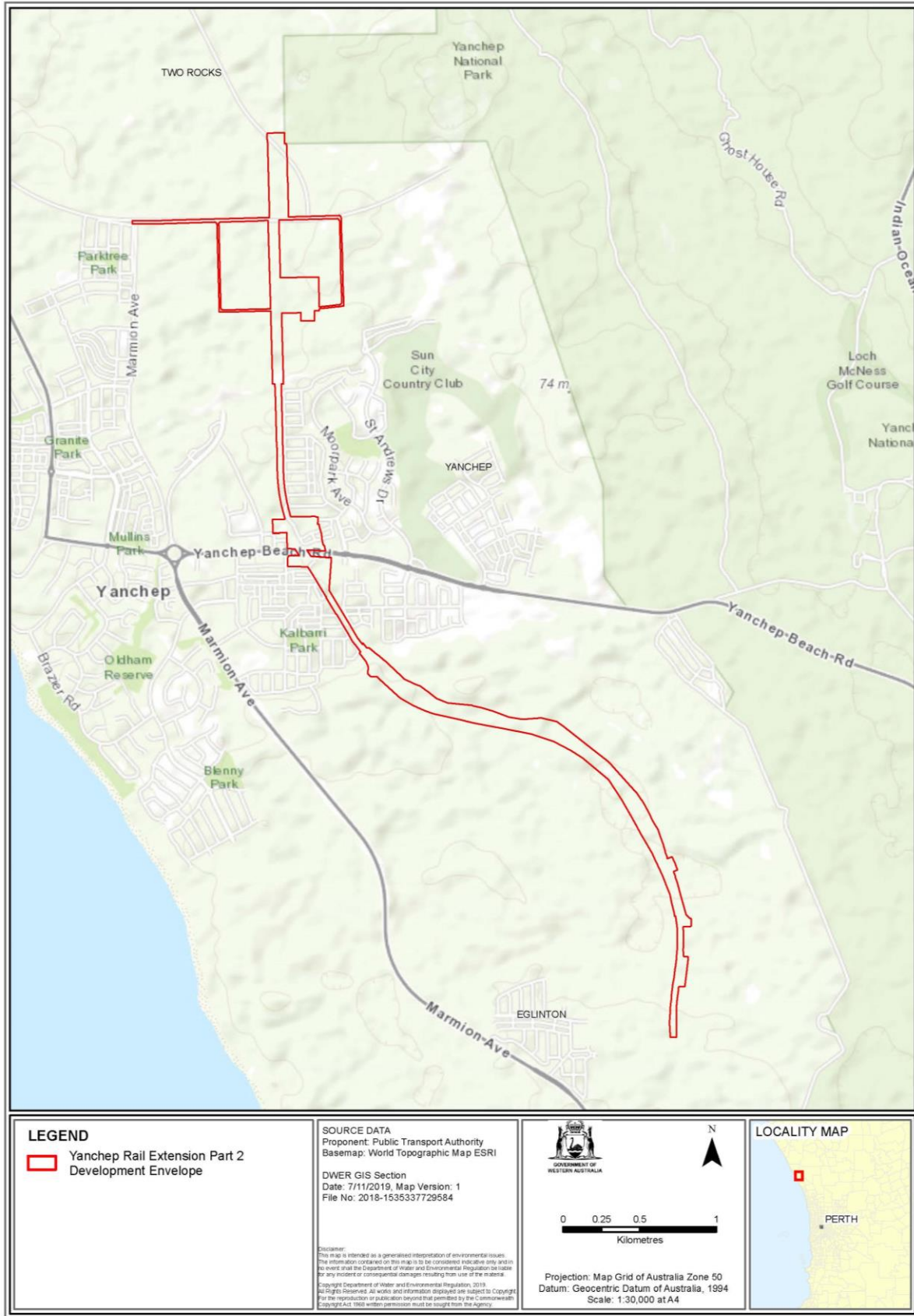


Figure 1 Yanchep Rail Extension Part 2 – Eglinton to Yanchep development envelope.

## **Schedule 2**

Coordinates defining the Yanchep Rail Extension Part 2 – Eglinton to Yanchep Development Envelope in Figure 1 are held by the Department of Water and Environmental Regulation, Document Reference Number 2018-1535337629742.