

Attachment 1 – The Public Transport Authority’s responses to the Environmental Protection Authority Services’ comments regarding the Referral Information with Additional Information for the Yanchep Rail Extension: Part 1 – Butler to Eglinton proposal.

EPA Services comment	Proponent response
Proposal	
<p>1. Please provide more information on the proposed bioengineering controls. The Environmental Protection Authority (EPA) will need to consider whether any proposed management/mitigation measures are practicable and technically feasible.</p> <p>For example, it would be useful for the EPA to understand what stabilisation measures may be used in areas of slope of 4H:1V compared to areas of 2H:1V or steeper.</p>	<p>The PTA will typically use 2H:1V batters. 3H:1V batters may be used where space allows and a more stable batter is required. 2H:1V ratio batters (i.e. steeper slopes) are advantageous as they present a smaller footprint; however, erosion and revegetation management options may be limited. Batters steeper than 2H:1V may be used in areas of limestone.</p> <p>The PTA will revegetate batters with locally endemic species where practicable, considerate of creating foraging habitat for Carnaby’s Black Cockatoo in areas further than 10 m from the railway. Bioengineering controls will be used where batter gradient is too steep to support revegetation or batters are required for other operational infrastructure purposes.</p> <p>Guideline for Batter Surface Stabilisation using Vegetation (NSW Roads and Maritime Services, 2015) included as Appendix A, provides guidance with respect to the standard batter stabilisation techniques used for a variety of slopes. Batter stabilisation techniques for 2H:1V and 3H:1V ratio slopes and associated costs, time until erosion protection and suitability for slope, adapted from NSW Roads and Maritime Services (2015), is summarised in Appendix B.</p> <p>Options for revegetation of 3H:1V ratio slopes include tubestock planting, hydro-seeding and drill/broadcast seeding. There are a variety of options for stabilisation techniques for 2H:1V ratio slopes including hydro-</p>

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	<p>mulching (bonded fibre mix), erosion control blankets, 2-D turf reinforcement mats and compost blankets. The PTA has previously successfully revegetated 2H:1V slopes for the Butler Railway Extension Project using a combination of the techniques discussed above. These are techniques which are well used in Perth by Main Roads WA and there are a number of revegetation consultancies available to assist with advising on the best techniques for use in various scenarios. The PTA's delivery contractor will be required to prepare a Landscaping and Revegetation Management Plan for approval by the PTA prior to implementation of any revegetation.</p> <p>Refer to NSW Roads and Maritime Services (2015) (Appendix A) for further information and definitions of terms.</p>
<p>2. There are inconsistencies in areal extent mentioned in text and between tables. Please review and revise throughout the document for all sections.</p> <p>For example, Table 5-1 lists the extent of native vegetation in Degraded or better condition in the development envelope as 43.14 hectares (ha). However, text in section 5.3.2 (p. 41) that lists the areal extent of Vegetation Associations in Degraded or better condition sums to 43.12 ha. This is due to the inconsistent use of decimal places. The sum of Vegetation Association 949 in Table 5-1 equals 33.82 ha, but in text the areal extent is listed as 33.8 ha.</p> <p>EPA Services understands that there may be small discrepancies between numbers and values appearing in various specialist studies and assessments supporting the proposal and that some values have been rounded and the total may not exactly match the sum of the rounded numbers. Please also refer to item 5 in the Flora & Vegetation section in relation to rounding of areal extent values.</p>	<p>Refer to Appendix C for revised Tables 5-1 to 5-15 from the Flora and Vegetation section of the Part 1 Report (ELA, 2018a).</p> <p>No updates were required for Table 5-17. Table 5-4 and 5-16 have been deleted. Table 5-15 has been revised to include all TECs/PECs.</p> <p>The GHD Biological Factors Report (2019a) has also been revised and is included as Appendix D. Please note there were no changes to vegetation extents as shown in Table 8 of the Biological Factors Report.</p>

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Flora and Vegetation	
<p>1. Please review and revise the extent of each Vegetation Complex that occurs within the development envelope.</p> <p>Currently, the Vegetation Complexes presented in Tables 5-11, 5-12 and 5-13 do not correlate to the mapped Vegetation Complexes represented in Figure 5-1 (sheets 1 to 4 inclusive). Nor do the Vegetation Complexes referred to in text and tables reflect the mapping of Heddle et al. (1980) or that of the review undertaken by Webb et al. (2016).</p>	<p>Refer to Appendix C for revised Tables 5-11, 5-12 and 5-13 and Appendix D for the revised Biological Factors Report (GHD, 2019a).</p> <p>Biological Factors Report (GHD, 2019a) has been revised to remove aligned vegetation associations and complexes. GHD (2019a) now includes assessment of vegetation associations and complexes that intersect the development envelope.</p> <p>The description of the extent of each Vegetation Complex that occurs within the development envelope has been revised to remove this inconsistency.</p>
<p>2. Please review and revise the current extent of each Vegetation Complex occurring within the development envelope at each scale to ensure values correspond with the latest 2017 South West Vegetation Complex Statistics dataset (Government of Western Australia, 2018)¹.</p> <p>The subregional scale has been defined as encompassing the Local Government Areas of Wanneroo and Joondalup, therefore the extent of each Vegetation Complex at the subregional scale should reflect the extent remaining within the Cities of Wanneroo and Joondalup combined and not just the extent remaining within the City of Wanneroo as is currently the case.</p>	<p>Refer to Appendix C for revised Tables 5-11, 5-12 and 5-13 and to Appendix D for the revised Biological Factors Report (GHD, 2019a).</p> <p>The pre-European extents remaining align with the DBCA complex statistics, but the current extents are estimated using the Native Vegetation Extent (DPIRD-005) dataset. This is the same method completed by DBCA. GHD (2019a) results suggest slightly lower current extents which can be attributed to using the most recent data (i.e. the Native Vegetation Extent (DPIRD-005) dataset has been updated since the 2017 statistics were published).</p> <p>Current extents for the vegetation complexes at a</p>

¹ Government of Western Australia 2018, *2017 South West Vegetation Complex statistics current as of October 2017*, WA Department of Biodiversity, Conservation and Attractions, Perth. Available from <https://catalogue.data.wa.gov.au/dataset/dbca>

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	subregional scale have been reviewed and updated where applicable.
<p>3. Please provide a confidential copy of the Threatened and Priority Ecological Community (PEC) Database Search prepared by the Species and Communities Branch of the Department of Biodiversity, Conservation and Attractions for the Public Transport Authority for the Yanchep Rail Extension Project. This information will not be made available to the public.</p> <p>The Interim Recovery Plan for the Threatened Ecological Community (TEC) estimates that 164 ha of Floristic Community Type (FCT) SCP26a remained on the SCP and EPA Services would like to confirm the extent of this TEC (and the Northern Spearwood shrublands and woodlands PEC (SCP24)) remaining in a regional and subregional context as provided by the Species and Communities Branch.</p>	<p>A confidential copy of the Threatened and Priority Ecological Community data, as provided by DBCA, has been included as a separate electronic attachment to this submission.</p>
<p>4. Text referring to Table 5-2 states that remnant native vegetation ranges from Pristine to Degraded condition, however Table 5-2 does not differentiate between what is remnant native vegetation and what is not, and Table 5-1 indicates that some areas of native vegetation are in a Completely Degraded condition. EPA Services understands that the proponent has decided to not include areas of Completely Degraded condition native vegetation in the extent of native vegetation to be cleared.</p> <p>Table 5-2 has a total extent of vegetation in various conditions of 60.75 ha. This area does not correlate with the extent of vegetation within the development envelope (62.54 ha from Table 1). Neither does it correlate with the areas of vegetation excluding the area of re-vegetated rail corridor.</p> <p>Please check all totals of the areal extent of various aspects of the environmental values and provide corrected totals as appropriate.</p>	<p>Area of each vegetation condition by vegetation type has been included in Appendix E.</p> <p>The difference presented in Table 5-2 can be attributed to the exclusion of the 1.82 ha of rail corridor re-vegetation (presented as NA in Appendix E) and decimal place rounding discrepancies between consultancies.</p>
<p>5. The inconsistency in the use of decimal places has resulted in multiple variances in areal extents within the document. Please be consistent in the presentation of data. EPA Services is aware that some variation may occur</p>	<p>The revised Part 1 Biological Factors Report (GHD, 2019a) has been included within Appendix D. Impact area estimates have been expressed to two decimal</p>

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<p>between total areas presented in the report compared to the appendices. However, it is expected that the extent of impact is consistent throughout the report as this is what the EPAs assessment will be based on and any values that may be specified in a Ministerial Statement Schedule will need to be consistent with spatial data, EPA Report and assessment information.</p> <p>Defining the area of TEC 26a will need to occur at the scale of 100 square metres (0.01 ha), therefore please define the extent of impact in hectares to two decimal places for all impacts.</p>	<p>places throughout the report.</p> <p>The total area of TEC 26a to be cleared as part of the proposal is 1.12 ha and is used consistently throughout GHD (2019a).</p>
<p>6. It appears that the areas of Banksia dominated woodlands of the SCP IBRA region PEC and Northern Spearwood shrublands and woodlands (community type 24) PEC in a Completely Degraded condition have been included as areas of native vegetation to be cleared.</p> <p>The text indicates that 35.1 ha of the significant ecological communities present within the development envelope will be cleared. The values of the extent of each significant community sum to 35.06 ha in Table 5-5 and 35.07 ha in Table 5-6. Please provide an explanation for why native vegetation in a Completely Degraded condition has been included in the total impact to significant ecological communities but not for other remnant native vegetation within the development envelope.</p>	<p>The Biological Factors Report (GHD, 2019a) has been revised to only include PEC vegetation in degraded or better condition in the impact assessment. This approach is in line with approach for other aspects (e.g. native vegetation).</p>
<p>7. More information is required in relation to the extent of FCT 26a TEC remaining outside but directly adjacent to the development envelope. Please provide details of the extent remaining beyond the development envelope of each occurrence of FCT 26a TEC that is intersected by the development envelope.</p>	<p>Refer to Appendix F for the Targeted FCT 26a Survey memorandum (GHD 2019b), which presents the methods and findings of the targeted survey of known FCT 26a patches intersecting the YRE Development Envelope (Part 1 and Part 2).</p>
<p>8. Please provide more detail on the potential impacts, proposed mitigation and any residual impact to flora and vegetation from dust. Particularly as it relates to limestone dust that will be generated from the crushing of extracted limestone.</p>	<p>Limestone crushing activities and associated impacts, should they occur onsite, will be assessed and managed in accordance with Part V of the <i>Environmental Protection Act 1986</i> (EP Act).</p> <p>Dust generating activities during construction works</p>

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	<p>include:</p> <ul style="list-style-type: none"> • Vegetation clearing • Excavation works including cut and fill activities, material transport etc. • Stockpiling • Vehicle operation on unsealed roads • Crushing of extracted limestone (should this activity occur). <p>The potential indirect impacts from dust emissions includes:</p> <ul style="list-style-type: none"> • Disturbance to sensitive receptors, including residents, potentially causing health implications and visual impairment. • The potential for dust to deposit on vegetation disrupting ecological function. <p>Dust emissions will be managed in accordance with the following legislation, guidelines, permits, management plans and systems:</p> <ul style="list-style-type: none"> • A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (DEC, 2011). • EP Act 1986. • Environmental Factor Guideline – Air Quality (EPA, 2016). • Part V Licence to crush limestone administered under the EP Act (to be obtained by the contractor, should this activity be required onsite during construction works). • The PTA's Environmental Management System

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	<p>(EMS) which includes the following management measures:</p> <ul style="list-style-type: none"> ○ To reduce the potential for dust - <ul style="list-style-type: none"> a. check with manager to see if there are any special work instructions (e.g. times to which work is restricted); b. ensure there are appropriate and sufficient wet down areas; c. reduce vehicle speeds on unsealed surfaces; d. be aware of prevailing winds. ○ Reduce dust by: <ul style="list-style-type: none"> a. wetting down working areas; b. reducing vehicle speed on unsealed surfaces; c. being aware of prevailing winds when performing construction work; d. stabilising stockpiles and roadside batters. ● The construction contractor's site specific CEMP, which will include mitigation measures to manage dust emissions during construction works including: <ul style="list-style-type: none"> ○ Restricting unauthorised access by vehicles and personnel to the construction site and other cleared areas and access tracks. ○ Limiting construction activities in high wind conditions, where practicable, to avoid and/or minimise dust generation. ○ Utilising water carts and hydromulch to minimise dust generation, as and where required. ○ Enforcing vehicle speed limits on all sealed and unsealed roads and tracks to reduce dust disturbance.

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	<ul style="list-style-type: none"> ○ Installing wind-break fencing in high risk areas. ○ Conducting daily visual monitoring of airborne dust and modifying behaviour or activities to minimise dust emissions as required. <p>The residual impact to residents and flora and vegetation from dust emissions is expected to be minimal as dust emissions:</p> <ul style="list-style-type: none"> • Will largely be prevented through management; • Are only expected during construction works; and • Where present, will be of short-duration and will not result in permanent impacts to local amenity, health or flora and vegetation. <p>On this basis, it is considered unlikely that the proposal will result in significant environmental harm as a result of dust.</p> <p>Cumulative impacts of the proposal, as a result of dust, are likely to be minimal. The development envelope is within close proximity to a number of residential developments which are currently under construction. These construction areas may contribute airborne dust to the local area; however, the same dust management legislation, guidelines and licences apply to adjacent development sites. Therefore, it is unlikely the residual impacts of the proposal combined with existing dust sources, will cause significant harm to the social and environmental surroundings of the local area.</p>
<p>9. Please define what is meant by the term “restricted vegetation types” on page 65, section 5.5.1. Explain whether the term refers to vegetation types that are</p>	<p>The term “restricted vegetation types”, as used on page 65, Section 5.5.1 of the Assessment of</p>

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<p>restricted to the development envelope, restricted in range or extent, or some other explanation. FCT 26a may be considered a restricted vegetation type under some of these definitions.</p>	<p>Information with Additional Information (ELA, 2018a) refers to the more broadly mapped vegetation codes extending to the west and east of the proposed rail alignment (development envelope), and therefore, their existence not being 'restricted' to the development envelope (i.e. not unique to the development envelope).</p>
<p>10. Please provide a justification for why targeted significant flora surveys were not undertaken.</p>	<p>Significant survey effort has been completed over a number of seasons and years within the development envelope and within the vicinity of the development envelope (i.e. within the survey area) including spring 2010, spring 2012, spring 2016, and autumn, winter and summer 2017. Targeted survey effort was completed as part of all of these surveys, with large parts of the survey area traversed by foot. Previous Threatened and Priority flora locations recorded within the survey area were revisited during the 2016 and 2017 surveys. At these locations and in suitable vegetation types (e.g. VT02, VT03 and VT05) targeted searches (albeit opportunistic) were undertaken. It is considered that the survey effort undertaken across the survey area (inclusive of the development envelope) was sufficient to identify populations of Threatened and Priority flora where present.</p>
<p>11. Please provide the floristic community type analysis methodology. A multivariate analysis is the recommended method to determine floristic community type, comparing local surveyed quadrat data to the relevant regional floristic dataset (available from DCBA via Naturemap https://naturemap.dpaw.wa.gov.au/Forms/Tools/SourceDescription.aspx?sourc eCode=SCP 2), not just the original quadrats of Gibson et al. (1994).</p>	<p>The floristic community type analysis methodology undertaken by GHD is outlined in Section 2.2.1 under the heading statistical analysis (GHD, 2018). The dataset used for this analysis was sourced from NatureMap, specifically the Weed and native flora data for the Swan Coastal Plain. At the time of reporting, it was assumed to be the Gibson et al. (1994) dataset;</p>

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	<p>however, it is now understood to also contain other unpublished survey data and should be referred to as the SWA dataset.</p>
<p>12. Please note that it is possible that the vegetation unit VT14 <i>Acacia rostellifera</i> Tall Shrubland identified in the assessment information may have similarity to SCP 29b, a Priority 3 PEC.</p>	<p>The dominant species of VT14 was <i>Acacia rostellifera</i> with isolated occurrences of <i>Spyridium globulosum</i> and <i>Melaleuca systema</i> where the canopy of <i>Acacia</i> dropped. The community was in Good - Degraded condition with the ground layer dominated by weeds such as <i>*Lagurus ovatus</i>, <i>*Vulpia myuros</i>, <i>*Euphorbia peplus</i> and <i>*Trachyandra divaricata</i>.</p> <p>Typical species for SCP29b include <i>Acacia lasiocarpa</i>, <i>Acanthocarpus preissii</i> and <i>Rhagolda baccata</i> with herbs <i>Daucus glochidiatus</i>, <i>Lomandra maritima</i> and <i>Trachymene pilosa</i> (Gibson et al. 1994). VT14 lacked many of the typical species for this FCT and this result was not supported in the statistical analysis. Whilst, historically VT14 may have aligned with SCP29b, due to the lack of typical and common species and it's observed condition the small amount of this VT was not considered to align with SCP29b.</p>
<p>13. Please provide a detailed explanation of field data/quadrat locations and survey timing to clearly demonstrate the adequacy of vegetation survey. Please include a justification for why only two quadrats were surveyed per defined vegetation unit, resulting in less robust floristic sampling and analysis, when EPA guidance requires a minimum of three quadrats per defined vegetation unit.</p>	<p>Field data (quadrat and releve information) has previously been provided within the GHD Biological Assessment report (GHD, 2018). Information provided includes ID, date, coordinates, location (e.g. Part 1 / 2), landform, slope, soil information, fire description, leaf and wood litter, corresponding vegetation type and representative photo. Quadrat & releve locations are shown on Figure 4 of the Biological Assessment report (GHD, 2018).</p> <p>Quadrat and releve locations were established within</p>

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	<p>differing VTs and throughout the extent of the survey area to cover geographic range. Quadrats from the 2010 and 2012 surveys were also considered and used to provide background, although this data was not presented in the Biological Assessment report (GHD, 2018).</p> <p>In instances where less than three quadrats were surveyed the following justification is provided:</p> <ul style="list-style-type: none"> • VT01: only two quadrats were established within this VT due to the degraded condition of the vegetation. <i>Acacia saligna</i> was in the upper stratum; however this was probably due to old fire events and soil disturbance from off road bikes and vehicles. There were no native species in the ground layer which was dominated by weeds such as <i>*Asphodelus fistulosus</i> and <i>*Carpobrotus edulis</i>. • VT07: One quadrat was established within this VT as it occurred in one isolated patch (0.32 ha). • VT10: The two quadrats were established in this VT, which occurred as an isolated patch that was linear in shape (2.20 ha). • VT11: One quadrat was established within this VT as it occurred in one isolated location (0.26 ha). • VT15: One sample location was established in this VT as it occurred in one isolated patch (0.08ha). This vegetation was in degraded condition.
<p>14. Please provide an update on potential offsets for FCT 26a TEC and the status of discussions and/or negotiations with the Department of Biodiversity, Conservation and Attractions. Based on the currently provided information, the proposed offset for FCT 26a TEC is unclear as all possible offset types are proposed, with no specific details provided. This approach is not considered</p>	<p>Refer to Appendix G for the revised Preliminary Offsets Strategy (ELA, 2019) and Appendix H for Commonwealth Offsets Assessment Guide Excel spreadsheet.</p>

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<p>suitable to provide the EPA with confidence in the proposed offset.</p> <p>Please note that a Commonwealth Offsets Assessment Guide (“offsets calculator”) using values specific to any proposed offset site will need to be provided to demonstrate that the quantum of any offset is relevant and proportionate to the impact.</p> <p>Advice provided to EPA Services is that suitable offsets sites for acquisition or management of FCT 26a TEC are available and that there may be opportunities for on ground management of existing properties managed for conservation. Based on this advice, it is unlikely that a research offset or an offset involving management of similar environmental values would be considered a suitable approach for offsetting impacts to the FCT 26a TEC. Please remove these options from a revised offsets strategy.</p>	<p>Section 4 of the Preliminary Offsets Strategy has been revised to include the details of the suitable potential offset site in Nowergup.</p>
<p>15. Appendix A Biological Assessment – Grasses, annuals and orchids were observed during the spring 2016 survey, however "due to a lack of flowering and/or fruiting bodies were not identifiable, and as such, are likely to be underrepresented in the flora collected" (Table 4 p. 12). This is a limitation of survey that should be justified or addressed.</p>	<p>Several orchid leaves (identified to <i>Caladenia</i> sp., potentially <i>Caladenia longicauda</i> as this has been previously collected) and presumed native grasses (one identified to <i>Poaceae</i> sp.) were observed during the field survey. These species had been grazed and lacked the flowering and/or fruiting bodies to enable species identification. Therefore, it was considered these species (particularly grasses) are likely to be underrepresented (by 1-3 taxa) in the flora list.</p>
<p>16. Appendix A Biological Assessment and Table 5-1 (page 41) of assessment information – <i>Lomandra</i> sp. herbland. It is unclear if this is a mixed <i>Lomandra</i> herbland, or a herbland of an unknown <i>Lomandra</i> taxon, so requires clarification. If it is an undetermined <i>Lomandra</i> taxon, identification of the species should be addressed given it is dominant within a defined vegetation unit.</p>	<p>This vegetation type should be labelled as a <i>Lomandra maritima</i> herbland. At the time of reporting this was overlooked.</p>
<p>17. Appendix C Biological Factors Additional Information – Section 2.5.2 should have described the methodology used to align local vegetation types to regional</p>	<p>GHD Biological Factors Report (2019a), included as Appendix D has been revised to remove aligned</p>

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<p>vegetation associations or complexes in detail (also referred to in Sections 4.1.1 and Table 7). It appears that the report deviates from the multivariate analysis recommended in EPA guidance, however Appendix A refers to PRIMER analysis to compare to regional Gibson et al (1994) dataset. Please provide a detailed description of the methodology used to align local vegetation types to regional vegetation associations and/or complexes.</p> <p>Please note that Heddle vegetation complexes should be used for regional vegetation context on the Swan Coastal Plain and not Beard vegetation associations, particularly when discussing extent remaining.</p>	<p>vegetation associations and complexes.</p>
<p>18. Section 5.3.3 Table 5-5 – This table should include reference to the EPBC listed communities' conservation status. Impacts to EPBC Act listed ecological communities and species should be included. Note that Tuart Woodlands has been on the EPBC Finalised Priority Assessment List since 2016 (Minister's decision pending).</p>	<p>While the PTA acknowledges that Tuart Woodlands has been on the EPBC Finalised Priority Assessment List since 2016 (Minister's decision pending), reference to EPBC Act listed communities' conservation has not been included in Table 5-5 as this community is not currently listed as a Matter of National Environmental Significance (MNES) under the EPBC Act and the proposal is not being assessed under the EPBC Act.</p> <p>The Department of the Environment and Energy (DoEE) advised in December 2018 that the potential impacts of YRE Part 1 to MNES were captured within the six existing EPBC approvals issued for adjacent urban development sites (provided in Appendix I). As such, no further assessment of the potential impacts to MNES under the EPBC Act is being sought for YRE Part 1. Further, assessment of potential impacts to Commonwealth listed TEC(s) are beyond the scope of the EPA assessment under Part IV of the EP Act.</p> <p>Reference to EPBC Act conservation status has been included and discussed in the Biological Assessment Report (GHD, 2018) to comply with desktop assessment requirements listed in the Flora and</p>

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	Vegetation Surveys technical Guidance (Government of Western Australia, 2016). Discussion does not extend to potential impacts.
19. Section 5.5.2 – The assessment information incorrectly states that "The local and regional extent of the PEC has not been determined due to wider data deficiency and a lack of mapping of the PEC's extent" (page 76). Spatial data can be obtained from DBCA.	DBCA has now provided the PTA with the required spatial data to undertake this additional assessment. The Biological Factors Report (2019b), included as Appendix D has been revised to include local and regional extents of Threatened and Priority Ecological Communities recorded within the Part 1 project.
<p>20. The Banksia Woodlands of the Swan Coastal Plain ecological community was listed as endangered under EPBC Act on 16 September 2016. Consistent with the residual impact significance model on pages 8 - 11 of the WA Environmental Offsets Guidelines (2014), impacts to ecosystems protected by statute constitute a significant residual impact that must be offset.</p> <p>The Banksia dominated woodlands P3(iii) PEC forms part of the Commonwealth listed TEC Banksia Woodlands of the Swan Coastal Plain ecological community. As the Commonwealth listed TEC only includes areas in good or better condition the residual impact should be considered to be 12.12ha.</p> <p>Please provide a justification for not considering the impact to the Banksia Woodlands of the Swan Coastal Plain ecological community to be significant or propose a suitable offset consistent with the WA Environmental Offsets Guidelines.</p>	<p>It is acknowledged that the Commonwealth listed Banksia Woodlands of the Swan Coastal Plain TEC forms a component of the Banksia dominated woodlands P3(iii) PEC.</p> <p>As outlined in section 5.2.2 of the Assessment of Information with Additional Information (ELA, 2018a), the permanent loss of 16.45 ha of Banksia dominated woodlands PEC represents a loss of less than 0.1% of the ecological community at a regional and sub-regional scale. The occurrence of the PEC within the development envelope was not previously identified in the DBCA (2018) TEC/PEC dataset. The Commonwealth listed TEC is a 12.12 ha component of this.</p> <p>In the North-west sub-region, the Banksia dominated woodlands PEC has a relatively high level of conservation reservation (over 90%). Therefore, it is considered likely that the Commonwealth listed TEC would also have a relatively high level of conservation reservation in the North-west sub-region.</p> <p>In consideration of the significance of the impact to the</p>

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	<p>PEC and TEC in accordance with the WA Environmental Offsets Guidelines, no rare or endangered plants have been recorded in the mapped occurrences of the PEC/TEC within the development envelope, and the occurrences of the PEC/TEC impacted by the proposal are not within the formal conservation reserve system. The impact from the proposal is considered small and incremental and is not considered to cause the PEC or flora or fauna taxa to become rare or endangered.</p> <p>Given the above, the impact to the Banksia dominated woodlands PEC (including the TEC component) from the proposal is not considered significant.</p>
Terrestrial Fauna	
<p>1. Table 6-9: Footnote 1 states that no breeding habitat falls within a 1 kilometre (km) buffer of the YRE Part 1 development envelope. Please confirm whether the zero values in row three that the footnote references relate to:</p> <ul style="list-style-type: none"> the extent of breeding habitat within the YRE Part 2 development envelope that is within 1 km of the YRE Part 1 development envelope all of the potential future clearing within the ULDO areas within 1 km of the YRE Part 1 development envelope. <p>Please provide evidence to support this contention for ULDO areas if that is the case, particularly given that no surveys have been undertaken outside of the development envelope and given "...there is no reliable local or regionally publicly available data..." (GHD, 2018, p.4)² of trees of a suitable diameter at breast height to determine suitability of potential breeding habitat.</p>	<p>The Biological Factors Report (GHD, 2019a) has been revised to include analysis using publically available Carnaby's Black Cockatoo data (Western Australian Government (2019)).</p> <p>The method to assess extents of local and regional breeding habitat is described in Section 2.6.2 of the Biological Factors report (GHD, 2019a). There is no survey information available with tree specific data adjacent to or within a 1 km buffer of the development envelope to enable analysis.</p> <p>Table 6-9 has been revised to include revised data presented in GHD (2019a) and has been included in</p>

² GHD, 2018 *Public Transport Authority Yanchep Rail Extension Biological Factors – Additional Information*, June 2018

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<p>2. If fauna underpasses and overpasses are to be considered as a mitigation strategy, further details are required for assessment to determine their effectiveness.</p> <p>The ERD states that interim overpasses (non-operational road bridges) will be treated. Further details are required on what treatment will be applied and the likelihood of fauna using the overpass.</p> <p>The ERD states the entire development envelope will be cleared with some revegetation potentially occurring on batters. This implies that there will be no vegetation cover to the entrance of the fauna underpasses. Furthermore, is furniture proposed to be used in the underpasses?</p> <p>PTA has advised that there is drainage infrastructure directly south of the fauna underpass entrance. Please provide details on whether this area is likely to be fenced. If it is, please provide information on the likely length of the underpass plus the additional fenced channel area and the likelihood of fauna using the underpass.</p> <p>In view of the above please provide further information to determine the effectiveness of the under and over passes.</p>	<p>Appendix C.</p> <p>Bamford Consulting Ecologists (Bamford) were engaged to conduct the following two assessments to further inform and plan the PTA's installation of fauna crossings for the YRE Project:</p> <ul style="list-style-type: none"> • Yanchep Rail Extension Part 2 Fauna Underpass Assessment Statement (Bamford Consulting Ecologists, 2019a), included as Appendix J. • Yanchep Rail Extension Part 2 Fauna Desktop Study (Bamford Consulting Ecologists, 2019b), included as Appendix K. <p>Bamford (2019a) assesses and provides advice on the following items which can also inform assessment and planning for YRE Part 1:</p> <ul style="list-style-type: none"> • Likely efficacy of the proposed fauna underpasses with emphasis on their location and design. • Alternatives for fauna crossings through Ningana Bushland. • Potential for fauna to temporarily use the constructed road bridges prior to use by road traffic. <p>Bamford (2019a) states that interim overpasses (short-term, non-operational road bridges) may provide a short-term fauna crossing option for species that would venture into hard-paved areas, which includes few native species. Provision of shelter on interim overpasses would likely increase their use; however, foxes and cats are likely the key species to benefit from them (Bamford, 2019a). Based on this advice and the few advantages presented for the use of</p>

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	<p>interim road bridges as crossings, the PTA do not propose to present these overpasses as a fauna crossings option.</p> <p>The PTA will install a fauna underpass estimated to be 75 m long, within the Alkimos 'Parks and Recreation reservation' (Alkimos PRR) to maintain east-west local ecological linkage for fauna in this area. The fauna underpass will be designed in accordance with the advice provided in Bamford (2019a) and in direct consultation with Bamford during the detailed design of the YRE underpass. This includes vegetating the underpass at both entry points, and installing furniture. Bamford (2019a) states that some native fauna, including Brush Wallaby, Quenda, Common Brushtail Possum, Echidna, Western Grey Kangaroos, large lizards and snakes and moaning frogs will readily use box culvert design fauna underpasses.</p> <p>Drainage infrastructure will be fenced to prevent fauna access. Fencing will also act to direct fauna to the underpass opening.</p> <p>Further information is available in Bamford (2019a) (Appendix J).</p>
<p>3. The ERD does not provide sufficient information to determine whether the proposed offset for Carnaby's Cockatoos is sufficient to meet the requirements of the WA Environmental Offsets Policy and guidelines. Additionally, there remains an impact of 1.16 ha of foraging habitat and three potential breeding trees after considering existing EPBC Offsets.</p> <p>Consistent with the WA offsets guidelines, the EPA <u>may</u> consider that offsets already provided under the EPBC Act as contributing to the State's requirements. This is not in contention. However, EPA Services has requested that further details of the sites acquired for the EPBC Act offsets is provided,</p>	<p>Refer to Appendix G for the revised Preliminary Offsets Strategy (ELA, 2019) and Appendix H for the Commonwealth Offsets Assessment Guide Excel spreadsheet.</p> <p>Sections 7 and 8 of the Preliminary Offsets Strategy (ELA, 2019) have been revised to include further information for each of the developer offsets sites acquired to demonstrate adequacy in providing the</p>

EPA Services comment	Proponent response
<p>including location and environmental values of the site to provide certainty that State values can be offset. Given the assessment information states these properties have already been acquired, this information should be provided to demonstrate that the existing offset meets the WA offset requirements.</p> <p>Please propose an offset to counterbalance the significant residual impact for the remaining 1.16 ha of Carnaby's black cockatoo foraging habitat and three potential breeding trees. Based on recent precedent, offsets for Carnaby's black cockatoo breeding trees attract a ratio of 3:1.</p>	<p>foraging offset requirement. In consultation with the DBCA, the PTA has been advised that each of the acquired sites was identified by DBCA as being of high conservation significance and providing foraging habitat for Carnaby's Black Cockatoo.</p> <p>As outlined in Section 7 of ELA (2019), the 1.16 ha of foraging habitat outside the previous EPBC Act referral boundaries will be incorporated into the Part 2 Offsets Strategy (land acquisition offset). Section 8 of ELA (2019) outlines that all of the 21 potential breeding trees impacted will be offset and also incorporated into the Part 2 Offsets Strategy. This includes a land acquisition offset of land/s located on the Swan Coastal Plain near Gingin for transfer to the conservation estate.</p>
Inland Waters	
<p>1. Please provide an updated figure 10-3 showing the most up-to-date location of wellhead protection zones associated with drinking water production bores. It is not necessary to include the location of production bores as it assumed that these will be in the centre of the wellhead production zone.</p>	<p>A revised version of the Yanchep Rail Extension (Part 1) Hydrology Figure 10-3, with the most recent Water Corporation wellhead protection zones data, is included in Appendix L.</p>
<p>2. Please note that reference should not be made to the Swan Coastal Plain Lakes EPP as this was revoked in 2015.</p>	<p>A specific reference to this policy could not be located within the Part 1 Assessment of Information (ELA, 2018a) or its attachments; however, this has been noted.</p>
General	
<p>1. Section 2.7 – Mitchell, Williams and Desmond (2002) is not a contemporary text to reference for quantifying the extent of regional vegetation reserved for conservation purposes (page 28). Please use publicly available statistics for</p>	<p>Relevant Section 2.7 text has been revised below to include the more contemporary reference, as follows:</p>

EPA Services comment	Proponent response
<p>2017 status of remaining Swan Coastal Plain vegetation published on WA Data website.</p>	<p><i>Based on publicly available data (Government of Western Australia, 2019) it is estimated that approximately 472 896 ha, or 41% of the Swan Coastal Plain has been reserved for conservation purposes under the following classifications:</i></p> <ul style="list-style-type: none"> • <i>Bush Forever</i> • <i>State Forests</i> • <i>Regional Parks</i> • <i>Lakes / Swamps</i> • <i>Wetlands.</i>
<p>2. Please provide a revised Offset Strategy.</p> <p>The majority of information presented in Appendix L relates to assessment and more appropriately belongs in chapter 13 of the <i>Yanchep Rail Extension: Part 1 – Butler to Eglinton Environmental Review Document</i> (ecological Australia, 2018). For example, discussion related to avoidance and mitigation, and determination of significant residual impacts of the proposal. Much of the information presented also repeats information presented in ecological Australia (2018) rather than relating to proposed offsets.</p> <p>A revised preliminary offsets strategy should be provided which removes assessment information and includes more detail related to the proposed offsets.</p> <p>Please note:</p> <ul style="list-style-type: none"> • The WA Environmental Offsets Guidelines are not an EPA publication and should be referenced as Government of Western Australia (2014). • Ensure the correct species is identified in the IUCN status table at the top of each Offsets Assessment Guide (offset calculator). Provide copies of the offsets calculator in excel format. • It is unnecessary to quote large chunks of text from the WA Environmental Offsets Guidelines. 	<p>Refer to Appendix G for the revised Preliminary Offsets Strategy (ELA, 2019) which include the following edits:</p> <ul style="list-style-type: none"> • Some of the assessment detail (e.g. avoidance and mitigation) has been removed. • Section 4 has been revised to include detail relating to the suitable potential offset site in Nowergup. • References to the WA Environmental Offsets Guidelines (Government of Western Australia 2014) have been revised accordingly. • Offsets Assessment Guides (offset calculators) provided for each proposed offset with correct species is identified in the IUCN status table at the top. • Large sections quoted from the WA Environmental Offsets Guidelines have been removed.

