

Attachment 1 – The PTA’s response to EPA Services comments regarding the proposal.

Attachment 1 – PTA Response to EPA Services comments on the TCL Proposal

Environmental Protection Authority (EPA) Services' Comment TCL proposal comments	The Public Transport Authority's (PTA) response
General	
<p>1. Please provide the clearing and disturbance area of the proposal that excludes:</p> <ul style="list-style-type: none"> • any areas within the tree protection zones that will not be cleared • areas that will not be cleared at Ranford Road (including any and all options) • any areas within the wellhead protection zones and Underground Water Pollution Control Areas (UWPCA) that will not be cleared. <p>Provide spatial data of the areas and environmental values to be retained within the development envelope.</p> <p>Provide the final list of significant residual impacts to environmental values for the whole proposal for the preferred and/or all options of the Ranford Road Station layout design.</p>	<p>Quantification and mapping of the revised disturbance footprint of the proposal (that excludes areas to be retained in Native Vegetation Retention Areas) has been included in Attachment 11 – Revised TCL development envelope (PTA, 2019d).</p> <p><u>Development envelope</u></p> <p>The project development envelope has been reviewed and revised to remove areas of retention, i.e. areas not proposed to be cleared to minimise and quantify actual environmental impacts and reduce ambiguity. The total area of the development envelope is 116.87 ha.</p> <p><u>Disturbance footprint</u></p> <p>A new disturbance footprint has been created has been based on exclusion of the two Native Vegetation Retention Areas (previously 'Tree Protection Zones') and preliminary design for Ranford Road Station (which incorporates buffers should the design change). The total area of the disturbance footprint is 115.19 ha.</p> <p><u>Temporary Construction Areas</u></p> <p>The boundaries of the four Temporary Construction Areas have been defined for:</p> <ul style="list-style-type: none"> • East of Karel Avenue • North of Ranford Road Station

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	<ul style="list-style-type: none"> • Tom Bateman Reserve • Adjacent to the Canning River <p>The Inland Waters – Additional Information Report (PTA, 2019a) (Attachment 4) shows each of the four Temporary Construction Areas.</p> <p><u>Restricted Activity Zones</u></p> <p>Portions of three of the Temporary Construction Areas are designated as Restricted Activity Zones:</p> <ul style="list-style-type: none"> • East of Karel Avenue • Tom Bateman Reserve • Adjacent to the Canning River <p>The following activities will be prohibited from occurring within the Restricted Activity Zone:</p> <ul style="list-style-type: none"> • Storage of dangerous goods/chemicals. • Storage of mobile or permanent (>12 months) fuel storage tanks. • Installation/storage of underground chemical storage tanks (equal to or greater than 250 L). • Discharge of stormwater or groundwater. • Refuelling, repair or maintenance of vehicles. • Location of onsite wastewater treatment systems.

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	<ul style="list-style-type: none"> • Use of landscaping materials that include organic matter rich soils and mulches. • Concrete wash down activities. <p><u>Native Vegetation Retention Areas</u></p> <p>Two Native Vegetation Retention Areas are designated within the development envelope and are excluded from the disturbance footprint. The purpose of these areas is to retain patches of native vegetation.</p> <p>The PTA will avoid clearing of native vegetation within these areas by implementing following controls during construction:</p> <ul style="list-style-type: none"> • Identification on project mapping and demarcation in the field • Each patch will be demarcated with fencing/flagging for retention. • Weekly inspections of this Native Vegetation Retention Area will be conducted to ensure all demarcated vegetated areas are retained. <p><u>Ranford Road Station</u></p> <p>The final list of significant residual impacts to environmental values for both of the Ranford Road Station layout design options is provided in Attachment 7 – Ranford Road Station report (PTA, 2019b).</p>

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	<p>In summary, the PTA proposes to construct Option 1 as the final footprint as it retains a larger amount of remnant native vegetation outside of the proposal's development envelope; and provides for increased long-term viability of this remnant:</p> <ul style="list-style-type: none"> • Reduced native vegetation clearing overall (4.06 ha, versus 5.33 ha in Option 2). • Reduced clearing of Bush Forever Site 388 (3.34 ha, versus 4.56 ha in Option 2). • Increased viability of remaining native vegetation due to larger size of the retained native vegetation (2.38 ha, versus 1.07 ha in Option 2). • No fragmentation of the retained 2.59 ha vegetation remnant as it is adjacent to, and maintains connectivity to Bush Forever Site 388. • Reduced native vegetation clearing of suitable and supporting Caladenia huegelii habitat (3.20 ha, versus 4.56 ha in Option 2). • Reduced clearing of Conservation Category Wetlands UFI 6911 and UFI 13332 (3.20 ha, versus 4.56 ha in Option 2), and avoidance of clearing Conservation Category Wetland UFI 6912. • Reduced risk of further spread of dieback by minimising the project footprint, and retaining the vegetation remnant outside of the proposal's development envelope. <p><u>Revised Potential Impacts – Environmental Values</u></p>

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	<p>Quantification and mapping of the revised disturbance footprint of the proposal (that excludes areas to be retained in Native Vegetation Retention Areas has been included in Attachment 11 – Revised TCL development envelope (PTA, 2019d).</p> <p>The significant residual environmental impacts for the whole proposal are summarised as follows:</p> <ul style="list-style-type: none"> • Clearing of 2.87 ha Banksia Woodlands of the Swan Coastal Plain (SCP) Threatened Ecological Community (TEC). • Clearing of 26.90 ha of Bush Forever vegetation (i.e. the area of Bush Forever vegetation in a Degraded or Better condition, excluding the areas reserved for Railway Purposes). • Clearing of 8.72 ha of significant wetlands (CCWs UFI 13332, 6911, 7446, 14900). • Clearing of 23.96 ha of Black Cockatoos foraging habitat and up to 48 potential breeding trees (for Carnaby's and Forest Red-tailed Black Cockatoos). <p><i>*Note: The wetland category UFI 13332 has been changed from REW to CCW based on the DBCA review of mapping in the Geomorphic Wetland dataset.</i></p> <p><u>Spatial Data</u></p> <p>Spatial data of the following is provided electronically with this Attachment:</p> <ul style="list-style-type: none"> • Development Envelope

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	<ul style="list-style-type: none"> • Disturbance Footprint • Temporary Construction Areas • Restricted Activity Zones • Native Vegetation Retention Areas • Banksia Woodlands of the SCP TEC* • <i>Caladenia huegelii</i> suitable and supporting habitat <p>The spatial data will also be provided to the Commonwealth.</p> <p><i>*Note: the spatial data for the extent of the Banksia Woodlands of the SCP TEC has been revised based on the response to the DoEE provided in Attachment 3.</i></p>
Flora and Vegetation	
<p>2. Please provide further information in relation to the Tree Protection Zones (TPZ). Including:</p> <ul style="list-style-type: none"> • a definition of mature tree, larger mature habitat tree, live mature trees, and habitat tree as variously described throughout the Referral Information with Additional Information and the Construction Environmental Management Plan • if available, a spatial layer that defines the tree protection zones or pinpoints the trees that will be protected • whether TPZ areas have been excluded from the total clearing area • whether stag trees within tree protection zones are planned 	<p>The Inland Waters – Additional Information Report (PTA, 2019a) (Attachment 4) provides further information on the project activities, potential impacts and mitigation for the Inland Waters environmental factor.</p> <p>The Tree Protection Zones are now designated as Native Vegetation Retention Areas and two are proposed within the development envelope. Both Native Vegetation Retention Areas are excluded from the disturbance footprint as described above (i.e. total clearing area).</p> <p>Two Native Vegetation Retention Areas are designated within the development envelope and are excluded from the disturbance</p>

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<p>to be cleared given large stag trees may provide important habitat for terrestrial fauna or avifauna.</p>	<p>footprint. One is located within the Tom Bateman Reserve Construction Area and the other in the Construction Area adjacent to Canning River (southern side of river). The purpose of these areas is to retain patches of native vegetation.</p> <p>The PTA will avoid clearing of native vegetation within these areas by implementing following controls during construction:</p> <ul style="list-style-type: none"> • Identification on project mapping and demarcation in the field • Each patch will be demarcated with fencing/flagging for retention. • Weekly inspections of this Native Vegetation Retention Area will be conducted to ensure all demarcated vegetated areas are retained. <p>Both Native Vegetation Retention Areas are shown in Figures 5a, 5b, 7a and 7b, of the Inland Waters Additional Information Report (Attachment 4, PTA, 2019a)</p> <p>The vegetation to be retained within the Tom Bateman Reserve Native Vegetation Retention Area comprises two vegetation types:</p> <ul style="list-style-type: none"> • VT03 - <i>Melaleuca preissiana raphiophylla</i> open woodland • VT06 - Scattered natives amongst weeds <p>The vegetation to be retained within the Canning River Native Vegetation Retention Area comprises VT06 - Scattered natives amongst weeds.</p>

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	The spatial data for both of the Native Vegetation Retention Areas is attached electronically.
<p>3. UFI 7446 (Conservation Category Wetland (CCW)) - may be directly impacted by the construction of a limestone track, 0.25 ha of that is within a tree protection zone. The assessment on p. 226 seems to indicate that the 0.25 ha within the TPZ will be directly impacted by the proposal, and would result in the loss of this area of the CCW. Please define the tree protection zones to better reflect what will or will not be protected.</p>	<p>The PTA confirms that 0.08 ha of CCW UFI 7446 will be directly impacted by construction of the limestone access track within Tom Bateman Reserve and 0.25 ha for disturbance footprint associated with the Temporary Construction Area (Figure 5b within the Inland Waters – Additional Information Report (Attachment 4, PTA, 2019a)). This area falls outside the Native Vegetation Retention Area, as shown in Figure 5a (Attachment 4).</p>
<p>4. Please describe 'other exclusion zones' referred to in Table AA and include a description of the activities that will be excluded from these zones.</p>	<p>The 'exclusion zones' referred to in Table AA have been updated to be 'Restricted Activity Zones' and are described in Thornlie Cockburn Link Inland Waters – Additional Information Report (Attachment 4, PTA, 2019a) included as Attachment 4.</p> <p>Portions of three of the Temporary Construction Areas are designated as Restricted Activity Zones:</p> <ul style="list-style-type: none"> • Karel Avenue – as shown on Figure 2a and 2b within PTA (2019a). • Tom Bateman Reserve– as shown on Figure 5a and 5b within PTA (2019a). • Adjacent to Canning River - as shown in Figure 7b within PTA (2019a). <p>To comply with Government of Western Australia (2016) activity restrictions within the UWPCA and WHPZs areas, the following activities will be prohibited from occurring within the Restricted</p>

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	<p>Activity Zones:</p> <ul style="list-style-type: none"> • Storage of dangerous goods/chemicals. • Storage of mobile or permanent (>12 months) fuel storage tanks. • Installation/storage of underground chemical storage tanks (equal to or greater than 250 L). • Discharge of stormwater or groundwater. • Refuelling, repair or maintenance of vehicles. • Location of onsite wastewater treatment systems. • Use of landscaping materials that include organic matter rich soils and mulches. • Concrete wash down activities. <p>Refer to Attachment 4 (PTA 2019a) for further information.</p>
<p>5. An assessment of the impacts of each of the proposed Ranford Road Station layout options is required. It is not currently clear how either option will minimise impacts to Banksia woodland, <i>Caladenia huegelii</i> habitat, black cockatoos, wetland communities and Bush Forever.</p> <p>Please provide an assessment of the impacts of the layout options at Ranford Road Station to inform the assessment as it relates to impacts to:</p> <ul style="list-style-type: none"> • Banksia woodlands of the Swan Coastal Plain Threatened Ecological Community • Black cockatoo foraging habitat 	<p>Please refer to the Ranford Road Station Report (PTA, 2019b) included as Attachment 7, which outlines the assessment of listed impacts based on the final revised footprint and development envelope.</p>

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<ul style="list-style-type: none"> • <i>Caladenia huegelii</i> potential habitat • Bush Forever site 388 • Conservation Category Wetlands • Resource Enhancement Wetlands. 	
<p>6. Table Y sets out the areas of bushland within Bush Forever sites that may be cleared. The column headed "Area (ha)" is cited as based on Bush Forever 2000 layer presented on NationalMap (2018). The areas of each Bush Forever site presented in Table Y are incorrect and therefore the extent of the impact of the proposal in each Bush Forever site is incorrectly considered.</p> <p>Please reassess the impact to Bush Forever sites including impact to Banksia TEC and terrestrial fauna habitat with consideration to the correct areas.</p> <p>Please note: the Bush Forever 2000 (DOP-071) spatial data on NationalMap appears to depict Activity Centre and Structure plans and does not depict the Bush Forever Areas 2000 (DOP-071) layer available via the Shared Location Information Platform (SLIP) (www.data.wa.gov.au) by request. The area of each Bush Forever site is also available in the publication Bush Forever Volume 2: Directory of Bush Forever Sites.</p>	<p>Please refer to the Attachment 8 which summarises the Bush Forever impacts (Aurora Environmental, 2019a).</p> <p>The DPLH stated in correspondence issued to the PTA on 18 June 2019 that the railway reserve (that intersect Ken Hurst Park and Canning River Bush Forever sites) was gazetted after Bush Forever initiation, therefore all 5.39 ha should be offset in accordance with SPP 2.8 section 5.1.2.3 (i)(c) and Appendix 4.</p> <p>The PTA can confirm that the rail reserve that intersects with Bush Forever site 388 (Ken Hurst Park) and the Canning River Bush Forever sites was acquired in 1972 under the <i>Standard Gauge Railway Act 1961-1963</i> which pre dates the initiation of Bush Forever which occurred in 2000. This refers to the rail reserve only and not any station land. As such, the PTA does not propose to offset impacts to Bush Forever within the rail corridor.</p> <p>The significant residual impact to Bush Forever vegetation from the proposal is clearing of 26.91 ha (i.e. the area of Bush Forever vegetation in a Degraded or Better condition but excluding the areas on land reserved for Railway Purposes).</p>

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<p>7. It is noted that the proponent is not proposing to revegetate Temporary Construction Areas at Tom Bateman Reserve and Ranford Road (north of rail). Please provide further details on how these areas will be managed to minimise impacts such as erosion and dust following construction.</p> <p>Furthermore, if the hard stand area within the temporary laydown area at Tom Bateman Reserve is to be retained permanently within the 50 m wetland buffer, please provide details of how the site will be used and what activities are likely to be undertaken. Please include details of the potential environmental impacts to the wetland from the hard stand and limestone track and any proposed mitigation and ongoing management measures.</p>	<p><u>Tom Bateman Temporary Construction Area</u></p> <p>The PTA proposes to remove the crushed limestone hardstand area within the Tom Bateman Reserve Temporary Construction Area and revegetate the disturbance footprint in consultation with the City of Gosnells. The revegetation works will include stabilisation of the ground surface to minimise potential erosion and dust impacts.</p> <p>The crushed limestone access track will remain permanently following construction. The track will be used as an emergency access track for the PTA to the rail corridor and by the City of Gosnells for maintenance access (Figure 5b within the Inland Waters – Additional Information Report (PTA, 2019a) (Attachment 4). The limestone access track will remain within the boundary of CCW UFI 7446 and intersects approximately 0.08 ha.</p> <p>Therefore, following construction of the proposal the access track may have the following potential impacts:</p> <ul style="list-style-type: none"> • Changes to surface water hydrology • Changes to infiltration rates • Changes to groundwater quality • Alkalisiation of the soils and groundwater • Increased potential for contamination e.g. fuel from vehicle using the access track • Increased potential for indirect impacts e.g. weeds and dieback • Dust deposition • Unauthorised access.

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	<p>Potential impacts from the construction of the access track will be managed in accordance with the CEMP, and in consultation with the City of Gosnells who will likely assume management of the track following construction of the project. The track will be monitored for scour and rectified if required.</p> <p>The PTA consulted with the City of Gosnells prior to the City's recent revegetation works along the boundary of CCW UFI 7446 within the development envelope (in winter 2018), and arranged for the footprint of the access track to be excluded from revegetation. As a result, the potential impacts to these revegetation areas have been minimised as far as practicable.</p> <p><u>Ranford Road Station Temporary Construction Area</u></p> <p>For the Temporary Construction Area north of the proposed Ranford Road Station, the crushed limestone hardstand area will remain following construction of the proposal, in consultation with the City of Canning. The hardstand area will be treated with hydro mulch to minimise erosion and dust impacts (Figure 3a of the Inland Waters – Additional Information Report (PTA, 2019a) (Attachment 4).</p> <p>The above information is also presented in the Inland Waters – Additional Information Report (PTA, 2019a) (Attachment 4).</p>
Inland Waters	
8. Provide details on the commitments and information requested and agreed to at the workshop held on the 29 May 2019 and	The commitments and information requested and agreed to in relation to minimising impacts to water quality, UWPCA, Wellhead

Environmental Protection Authority (EPA) Services' Comment TCL proposal comments	The Public Transport Authority's (PTA) response
<p>sent via email dated 11 June 2019, in relation to minimising impacts to water quality, UWPCA, Wellhead Protection Zones, wetlands, TECs and the Canning River.</p>	<p>Protection Zones, wetlands, TECs and the Canning River at the May 2019 workshop are detailed within the Thornlie Cockburn Link Inland Waters – Additional Information Report (PTA, 2019a) included as Attachment 4.</p>
<p>9. Further clarification is required on the exact activities to occur in the laydown areas located within or adjacent to the Priority 1 Public Drinking Water Source Areas (P1 Areas) and the Wellhead Protection Zones (WHPZ). The information should differentiate between activities in the P1 Areas and the WHPZ.</p> <p>PTA should note there are a number of activities listed which are not acceptable in P1 Areas for example 'landscaping materials - organic matter rich soils and mulches', 'excavated soils - requiring ASS or contamination treatment', 'water storage dams/basins', and 'concrete wash down'.</p> <p>Further detail is required on the precise location (in relation to the P1 areas) and management measures to protect groundwater quality (more detail than the bunding criteria provided (e.g. form of hardstand [compacted limestone?], etc.). Furthermore, confirmation should be provided on where fuel, chemicals, contaminated waste/soils and refuelling are to occur/be stored, noting that storage of fuel or chemicals is generally considered to be prohibited within P1 areas.</p>	<p>Further clarification on the exact activities to occur in the Temporary Construction Areas and limestone hardstand areas located within or adjacent to the Priority 1 Public Drinking Water Source Areas (P1 Areas) and the Wellhead Protection Zones (WHPZ) is provided in the Thornlie Cockburn Link Inland Waters – Additional Information Report (PTA, 2019a) included as Attachment 4.</p> <p>Portions of three of the Temporary Construction Areas are designated as Restricted Activity Zones to prohibit certain activities:</p> <ul style="list-style-type: none"> • East of Karel Avenue • Tom Bateman Reserve • Adjacent to the Canning River <p>To comply with Government of Western Australia (2016) activity restrictions within the UWPCA and WHPZs areas, the following activities will be prohibited from occurring within the Restricted Activity Zones:</p> <ul style="list-style-type: none"> • Storage of dangerous goods/chemicals. • Storage of mobile or permanent (>12 months) fuel storage tanks. • Installation/storage of underground chemical storage tanks (equal to or greater than 250 L).

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	<ul style="list-style-type: none"> • Discharge of stormwater or groundwater. • Refuelling, repair or maintenance of vehicles. • Location of onsite wastewater treatment systems. • Use of landscaping materials that include organic matter rich soils and mulches. • Concrete wash down activities.
<p>10. The spread of contaminated groundwater via dewatering or groundwater abstractions is considered a significant risk. The preliminary hydrogeological assessment (Golder, June 2019) has not assessed the dewatering (and potential groundwater abstraction) impacts from works proposed at the Ranford Road Station. Please provide as per actions from the workshop held on the 29 May 2019.</p>	<p>Due to depth to groundwater, dewatering is not anticipated to be required to construct Ranford Road Station. Groundwater levels within the vicinity of the proposed Ranford Road Station average approximately 21.80 mAHD. Station platforms and associated infrastructure are expected to be constructed to a maximum depth of 275.5 mAHD, which is approximately 5.2 mAHD above the groundwater level. Further information is provided within Thornlie Cockburn Link Inland Waters – Additional Information Report (PTA, 2019a) included as Attachment 4.</p>
<p>11. Revegetation activities appear to have occurred at the wetland (UFI-7446) at Tom Bateman Reserve in the wetland buffer where the limestone hardstand area is proposed. The proponent should consider locating the hardstand area outside of the 50 metre wetland buffer in an existing cleared area to minimise the impacts to this site.</p>	<p>A 50 m buffer from UFI 7446 within the Tom Bateman Temporary Construction Area has been categorised as a Restricted Activity Zone (refer to Figure 5b within PTA 2019a). The following activities will be prohibited from occurring within the Restricted Activity Zone, including the construction of hardstand:</p> <ul style="list-style-type: none"> • Storage of dangerous goods/chemicals. • Storage of mobile or permanent (>12 months) fuel storage tanks. • Installation/storage of underground chemical storage tanks (equal to or greater than 250 L). • Discharge of storm and groundwater. • Refuelling, repair or maintenance of vehicles.

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	<ul style="list-style-type: none"> • Location of onsite wastewater treatment systems. • Use and storage of landscaping materials that include organic matter rich soils and mulches. • Concrete wash down activities. <p>Refer to Attachment 4 (PTA 2019a) for further information.</p>
<p>12. The construction of drainage basins within wetland areas and Bush Forever sites is not supported. If relocation is not possible further information will need to be provided that the drainage with not result in further impacts other than the known impacts to these values.</p>	<p>Further information on the proposed location, design and management of drainage basins is provided within the Thornlie Cockburn Link Inland Waters – Additional Information Report (PTA, 2019a) included in Attachment 4.</p>
<p>Social Surrounds – Aboriginal Heritage</p>	
<p>13. The information provided in the assessment documentation does not provide an assessment of impacts to Aboriginal heritage, instead lists the conditions of the Section 18 approval. The EPA needs to undertake an assessment of the impacts to determine significance.</p> <p>Please provide what activities will impact Aboriginal heritage i.e. are the bridge footings in the Aboriginal heritage boundary, how much area is within the Aboriginal heritage boundary and also how much is likely to be directly disturbed.</p>	<p>The TCL proposal has the potential to impact on one known Aboriginal site – the Canning River. Approximately 0.25 ha of the proposal development envelope lies within the registered site. It is estimated that less than 0.1ha of the registered site will be directly disturbed via vegetation clearing or ground disturbance.</p> <p>Potential impacts to this site, as identified by the survey participants, are:</p> <ul style="list-style-type: none"> • Disturbance to the river bed and banks to the 100 year flood level from earthworks and installation of bridge piers. • Disruption to the river water flow from bridge piers. • Decline in river water quality from in appropriate management of fuel and chemical storage. • Disturbance to buried archaeological artefacts.

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	<p>Disturbance to the river bed and banks and water flow will be minimised by ensuring no bridge piers are placed within the middle of the river bed. New piers will be placed in line with or further back from the piers from the existing rail bridge. The existing piers are within the 100 year flood level but cannot be moved due to the presence of an existing principal shared path. The survey participants advised that their preference was for no piers to be located within the 100 year flood level; however it was agreed that given the site constraints locating the new bridge piers in line with the existing bridge piers was acceptable.</p> <p>Potential impacts to river water quality will be minimised by ensuring no direct stormwater drainage into the river and no fuel or chemical storage within the Restricted Activity Zone.</p> <p>Potential disturbance to buried archaeological artefacts will be minimised by ensuring that Aboriginal monitors are in place for initial ground disturbance within the boundary of the Canning River registered site. Monitors will inspect excavated material to identify potential artefacts and recommend appropriate action if artefacts are found.</p> <p>It is considered unlikely that the proposal will impact on unknown Aboriginal heritage sites due to the extent of historical disturbance to the proposal's development envelope and the surveys having been undertaken with relevant Aboriginal knowledge holders.</p>

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Offsets	
<p>14. Please consult with DBCA early regarding any proposed funding for on ground management of wetlands proposed to offset direct wetland impacts as outlined in Section 12.9.</p>	<p>The PTA will consult with the DBCA as soon as practicable regarding proposed funding for on-ground management of wetlands proposed to offset direct wetland impacts as outlined in Section 12.9.</p>
<p>15. It appears surveys undertaken for <i>C. huegelii</i> at the Ranford Road Station site were undertaken late in the flowering season and according to Appendix 5 (Figure 2) the intensity of the survey at this site was lower within the development envelope. In addition, surveying for threatened orchid species should occur over at least two good seasons to gain an adequate understanding of the distribution and extent.</p> <p>Given only one targeted survey has been undertaken, there is uncertainty whether survey intensity and seasonal conditions were favourable and/or the latter part of the targeted survey period was adequate to detect <i>C. huegelii</i>.</p> <p>Further offsets may be required to counterbalance the significant residual impacts to potential <i>C. huegelii</i> habitat.</p>	<p>The eastern portion of the Ranford Road Station Site (including areas of Good and Good-Degraded vegetation) was initially surveyed as part of a detailed flora and vegetation survey for the project in September 2017. The targeted surveys for <i>C. huegelii</i> across the targeted flora survey area (which includes the entire Ranford Road Station site) were undertaken from 19 September – 11 October 2018. Post this survey, the TCL survey area was then extended to include the western part of the Ranford Road Station site and a detailed survey (i.e. quadrat based sampling) completed on 11 October 2018.</p> <p>Survey effort over the Ranford Road Station Site has been conducted over two seasons with the area traversed in September 2017, September 2018 and October 2018. Tracklogs were captured for the targeted flora survey.</p> <p>The 2018 targeted flora survey identified <i>C. huegelii</i> present (and in flower) in the adjacent Caladenia Grove Wetland Reserve and within the northern section of Ken Hurst Park at the time of survey. These areas are not going to be impacted by the project, but were surveyed to confirm known records could be identified and were in flower during the survey period. These areas were not surveyed as part of the 2017 survey due to access restrictions. The presence of</p>

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	<p>flowering individuals at the time of the targeted 2018 survey indicates the survey timing was suitable for detecting the species if they were present. No individuals of <i>C. huegelii</i> have been detected in the Ranford Road Station site during the 2017 or 2018 surveys of the area. The survey timing during 2017 and 2018 aligned with the flowering period reported in the Department of the Environment and Energy's Species Profile and Threats Database and Western Australian Herbarium FloraBase.</p> <p>The PTA therefore believes that the surveys conducted were sufficient to determine that <i>C. huegelii</i> was unlikely to be present within the proposal's development envelope between 2017 and 2018. However it is acknowledged that <i>C. huegelii</i> is a cryptic species and therefore it cannot be discounted that individuals are present which were not flowering during 2017 or 2018.</p> <p>The PTA therefore acknowledges that the proposal may result in a significant residual environmental impact to potential <i>C. huegelii</i> suitable and supporting habitat. These terms have been defined in Attachment 7 - Ranford Road Station Report (PTA, 2019b).</p> <p>Based on these definitions, the development envelope will potentially impact a total of 4.23 ha of <i>Caladenia huegelii</i> habitat comprised:</p> <ul style="list-style-type: none"> • 3.65 ha of suitable <i>Banksia menziesii</i> and <i>B. attenuata</i> woodland (VT01) habitat for <i>Caladenia huegelii</i>. • 0.58 ha of supporting <i>Banksia</i> spp. isolated trees <i>Regelia inops</i> <i>Hypocalymma angustifolium</i> shrubland (VT02a) and <i>Regelia inops</i> <i>Hypocalymma angustifolia</i> shrubland (VT02) habitat for

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	<p><i>Caladenia huegelii.</i></p> <p>The PTA will provide a direct offset to counterbalance the significant residual environmental impacts to suitable <i>C. Huegelii</i> habitat listed above. This equates to a total impact to 4.23 ha of suitable and supporting <i>C. Huegelii</i> habitat.</p> <p>With reference to the Commonwealth offsets calculator and based on a <i>C Huegelii</i> vegetation quality rating of 7, the total quantum impact is 2.96 ha.</p> <p>A State-owned site in Mardella, referred to as Lowlands is proposed to directly offset significant residual environmental impacts of the project including MNES. Mardella is also known to contain <i>C. Huegelii</i> habitat and will be used to offset impacts to <i>C. Huegelii</i>.</p> <p>With reference to the Commonwealth offsets calculator and based on calculator inputs including an assumed starting habitat quality of 7 at Mardella, the PTA is required to provide 26.03 ha suitable and supporting <i>C. Huegelii</i> habitat as an offset.</p> <p>The PTA has engaged a consultant to conduct a survey of Lowlands to assess and map the extent of <i>C. Huegelii</i> habitat within Lowlands. Funding will also be provided to the DBCA to manage <i>C. Huegelii</i> habitat within Lowlands to improve habitat condition.</p> <p>The TCL Offset Strategy will be revised to include a discussion of the offset strategy for <i>C. Huegelii</i>. In addition to a detailed chapter discussion the proposed offset, the following information will be provided within the revised TCL Offset Strategy to support the PTA's proposal to offset impacts to <i>C. Huegelii</i>, to be submitted to the State and Commonwealth for assessment:</p> <ul style="list-style-type: none"> • Verification that sufficient habitat extent is present within Mardella

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	<p>to put Mardella forward as an offset.</p> <ul style="list-style-type: none"> • Final Commonwealth Offsets Calculator • WA Offsets Template • TCL RISM Table.

References:

Aurora Environmental (2019). Bush Forever Impacts. June 2019. Aurora Environmental, Perth WA.

Government of Western Australia (2016). Land use compatibility tables for public drinking water source areas. April 2016. Department of Water, Perth WA

PTA (2019a). Thornlie-Cockburn Link Inland Waters – Additional Information. June 2019. Public Transport Authority (PTA), Perth WA. Attachment 4.

PTA (2019b). Ranford Road Station report. June 2019, Public Transport Authority (PTA), Perth WA. Attachment 7.

PTA (2019c). Additional Offsets Information report. June 2019, Public Transport Authority (PTA), Perth WA. Attachment 9.

PTA (2019d). Revised TCL development envelope report. June 2019, Public Transport Authority (PTA), Perth WA. Attachment 11.