

EPA Comment No.	EPA Factor	EPA Comment	City's Response	Relevant Sections
1	General	<p>All technical surveys/reports and assessments referenced within the s.38 Referral Supporting Document (RSD) (360 Environmental 2022) are to be provided to the EPA, which includes but is not limited to:</p> <ul style="list-style-type: none"> a. Woodman Environmental Consulting Pty Ltd (2004) Vegetation and Declared Rare and Priority Flora Assessment – Garden Street Extension b. ENV Australia (2010) Ecological Assessment of Sutherlands Bushland City of Gosnells c. 360 Environmental (2014) Targeted Flora Survey – Garden St Extension and Widening, Southern River d. Natural Area Consulting Management Services (2016) Holmes Street Bushland North: Revegetation and Weed Management Plan e. RPS Australia West Pty Ltd (2018) Floristic Analysis Report – Garden Street Wetlands f. Spineless Wonders (2017) Native Bee Survey of Proposed Garden Street Extension, Southern River, Perth WA g. PGV Environmental (2016) Targeted Conservation Significant Species Survey – Garden Street, Southern River h. Natural Area Consulting Management Services (2016) Fauna Management Plan Holmes Street Bushland North i. Terrestrial Ecosystems (2014) Black Cockatoo Assessment – Garden Street Extension j. ENV Australia (2010) Ecological Assessment of Sutherlands Parks Bushland – City of Gosnells k. Natural Area Consulting Management Services (2016) Garden Street Road Reserve Environmental Assessment l. Terrestrial Ecosystems (2016) Australasian Bittern Survey m. PGV Environmental (2018) Garden Street Extension, Southern River: Targeted Wetland Vegetation Assessment. 	<p>These documents were provided to the EPA Services on 3 November 2023 via SharePoint. The EPA Services acknowledged receipt of these documents on 6 November 2023. Note that the ENV 2010 report is listed twice under point 1b and 1j.</p>	N/A
2	General	<p>All management plans associated with the proposal's mitigation hierarchy (management of potential impacts) are to be prepared in accordance with the EPA's instructions (here) and provided as part of the assessment:</p> <ul style="list-style-type: none"> a. Dewatering Management Plan (DMP) (if required, refer to scope item No.3) b. Construction Environmental Management Plan (CEMP): covering environmental factors- Inland waters, Flora and vegetation, Terrestrial fauna, and Aboriginal heritage (if required, refer to scope 27) c. Post Development Management and Monitoring Plan (PDMMP): covering environmental factors- Inland waters (Groundwater and surface water levels and water quality), Flora and vegetation, Terrestrial fauna d. Cultural Heritage Management Plan (CHMP): covering environmental factor- Social surroundings (if required, refer to scope 27) e. Revegetation Management Plan (RMP) or equivalent. 	<p>a) No dewatering will be needed for the construction of the Garden Street extension project. The Proposal will be constructed in summer when groundwater levels are at their lowest. All services will be above summer groundwater levels. The culverts are the lowest point of proposed construction works and will be above the summer groundwater levels (base of the lowest culvert south of the alignment (west side of road) is 20.121m AHD and summer GWL, determined from levels BH06 and BH08, is 18.923m AHD at this point).</p> <p>The drainage plan (e90-18-017) has been revised to show maximum groundwater levels and minimum groundwater levels that show groundwater will not be intercepted for construction of the road during summer. The drainage plan has also been revised to show how groundwater levels vary across the length of the road using the groundwater monitoring bore levels along the alignment in Urbaqua's Groundwater Monitoring Report (2021). The previous version of the plan only showed the maximum groundwater level across the length of the road as a worst-case scenario.</p> <p>b) A Construction Environmental Management Plan (CEMP) has been prepared for the following environmental factors:</p> <ul style="list-style-type: none"> - Inland Waters - Flora and Vegetation - Terrestrial Fauna <p>c) A Revegetation and Post Development Management and Monitoring Plan (RPDMMP) has been prepared that covers environmental factors:</p> <ul style="list-style-type: none"> - Inland waters - Flora and Vegetation - Terrestrial Fauna <p>d) A desktop review of the Aboriginal Cultural Heritage sites database has been completed and did not identify any heritage places within or close to the Development Envelope. The nearest registered Aboriginal site, Site 3511 'Southern River', is approximately 1.35 km east of the Development Envelope. Considering the absence of cultural heritage features within or close to the Development Envelope, a Cultural Heritage Management Plan was deemed not necessary.</p> <p>e) The Revegetation and Post Development Management and Monitoring Plan (RPDMMP) incorporates the requested Revegetation Management Plan and covers proposed revegetation within the disturbed parts of the Development Envelope (ie. batters) following the road being constructed.</p>	<ul style="list-style-type: none"> a) RSD Section 6.5.3 and Appendix J - Engineering Plans b) Appendix N - CEMP c) Appendix O - RPDMMMP d) RSD Section 6.6.2.1 and 6.6.3.1 e) Appendix O - RPDMMMP
3	Inland Waters	<p>Please confirm whether dewatering will be required for the construction of the road. If this activity is required, provide an assessment which addresses (but not limited to):</p> <ul style="list-style-type: none"> a. Dewatering volumes and drawdown contours b. Direct and indirect impacts to wetland vegetation and Acid Sulphate Soil risk c. Mitigation and management measures, including any proposed management plans (refer to scope 2a). 	<p>No dewatering will be needed for the construction of the Garden Street extension project. The Proposal will be constructed in summer when groundwater levels are at their lowest. All services will be above summer groundwater levels. The culverts are the lowest point of proposed construction works and will be above the summer groundwater levels (base of the lowest culvert south of the alignment (west side of road) is 20.121m AHD and summer GWL, determined from levels BH06 and BH08, is 18.923m AHD at this point).</p> <p>The drainage plan (e90-18-017) has been revised to show maximum groundwater levels and minimum groundwater levels that show groundwater will not be intercepted for construction of the road during summer. The drainage plan has also been revised to show how groundwater levels vary across the length of the road using the groundwater monitoring bore levels along the alignment in Urbaqua's Groundwater Monitoring Report (2021). The previous version of the plan only showed the maximum groundwater level across the length of the road as a worst-case scenario.</p>	RSD Section 6.5.3 and Appendix J - Engineering Plans

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4	Inland Waters	<p>Demonstrate how best practice water sensitive design principles will be implemented in the design of the infrastructure and in stormwater and drainage components to ensure hydrological regimes and groundwater quality are maintained. This should include:</p> <p>a. Identification and discussion on the type of gross pollutant traps proposed to be installed and the efficacy to remove oil and other typical chemical contaminants for roads.</p> <p>b. The efficacy for removal of typical levels of contaminant for larger rainfall event passing through the vegetated batters. Include references to support any conclusions.</p> <p>c. A description of the culvert design considerations that have been made, including their size and location along the proposed road to minimise significant alterations to surface water regimes and allow for the movement of fauna (refer to Terrestrial fauna factor scope 18).</p>	<p>a) The type of gross pollutant traps proposed to be installed and the efficacy to remove oil and other typical chemical contaminants for roads has been addressed.</p> <p>At the proposed gross pollutant trap (GPT) locations, a Spel Ecoseparator or similar will be installed. The Ecoseparator is to be able to intercept 93% of hydrocarbons and 95% of Gross pollutants from first flush events (1:1 year event: first 15 mm) making them ideal to treat road runoff as Hydrocarbons are known to be typical pollutants present in road runoff (Stormwater Management Manual for Western Australia 2004). The Spel Ecoseparator specifications are attached as "SPEL-Ecoseparator-Product-Brochure.pdf" for your reference. Each drainage pit within the proposed drainage network will also include a 300 mm sediment trap which serves a secondary treatment function that supplements the Spel Ecoseparator by removing nutrients and other contaminants bound within captured sediment. The trap within the drainage pits is a standard City specification for all of the City's drainage system. The Spel Ecoseparator and drainage pits will be maintained by the City's Operation team. This will ensure the systems operational longevity, and effectiveness at treating the runoff.</p> <p>b) The efficacy for removal of typical levels of contaminant for larger rainfall event passing through the vegetated batters has been addressed.</p> <p>Treatment systems are typically designed to treat the first flush events as first flush volumes have the highest concentration of pollutants. The concentration of contaminants in larger events (up to 1% AEP) that might overtop the road kerb would have its first flush volumes already intercepted by the GPT and Pit systems, as such, it is expected that the pollutant concentration of these overtopped volumes would be substantially diluted and are expected to have minimal risk to water quality in the wetland (Urbaqua 2022). It is also not practical to treat larger storm events due to the large spatial requirements of these systems to accommodate and retain the large water volumes.</p> <p>Nonetheless, in the infrequent event of stormwater overtopping the top of kerb, the batters will aid in the treatment of contaminants as they will be planted with nutrient retentive species (in line with the Monash University Vegetation guidelines for stormwater biofilters in the south-west of WA, 2014).</p> <p>c) A description of culvert design was considered by Urbaqua and included in the RSD. The proposed steep batters and fencing will direct fauna to the culverts/fauna crossings to prevent them crossing the road. The size of the culverts is sufficient for the fauna that are known/likely to be present at the Bush Forever site ie. no kangaroos. In addition, a culvert has been provided in the dry bushland part of the Development Envelope and two culverts have been provided in the wetland part of the DE to allow sufficient crossings for both terrestrial and wetland fauna species.</p>	<p>a) RSD Section 6.5.6 and Appendix F - SPEL Ecoceptor Product Brochure</p> <p>b) RSD Section 6.5.4 and Section 6.5.6</p> <p>c) RSD Section 6.4.4</p>
5	Inland Waters	<p>Provide a risk assessment matrix of potential impacts, management measures and monitoring for the Conservation Category Wetland (CCW). For example, chemical spills, or other pollution events. Refer to scope 2b and 2c.</p>	<p>The wetland risk assessment matrix of potential impacts, management measures and monitoring has been provided in the RSD. Additional information about the monitoring and management of the CCW within the Development Area has been provided. Tables 7 & 10 in the Construction Environmental Management Plan and Tables 11 and 14 in the RPDMP address potential impacts, management and monitoring of the CCW, these are also summarized in Section 6.5.3 and 6.5.4 of the RSD.</p>	<p>RSD Table 22 and Sections 6.5.3, 6.5.4 & 6.5.5 Appendix N - CEMP: Table 7 and 10 Appendix O - RPDMP: Tables 11 & 14</p>
6	Inland Waters	<p>It is recommended that Appendix D (Urbaqua 2022) Water balance modelling and outcomes be reviewed by an independent person or independent persons with relevant expertise. The review should assess whether these are adequate and whether the hydrological and wetland function impacts have been adequately addressed. The review should be provided as part of the revised documentation.</p>	<p>Urbaqua were engaged to undertake a detailed groundwater monitoring program (capturing peak and minimum groundwater levels) which was used to prepare the Hydrology Study and Impact Assessment. Urbaqua are a reputable and qualified Hydrology consultant and highly regarded by the State Government as they are responsible for the drafting of the key Planning Policies and guidelines in the water management space (ie. Draft SPP2.9: Planning for Water). There is no EPA guidance that requires peer reviews of technical documentation. Given the City engaged a reputable Hydrology consultant and as DWER has in-house hydrologists that can assess such technical documents the City does not believe a peer review is warranted. In addition, the supporting document that brings together all of the technical documents has been prepared by a third-party consultant, SLR. If DWER's in-house hydrologists have specific queries on the Hydrology Study and Impact Assessment, the City would be happy to address these.</p>	<p>N/A</p>
7	Flora and Vegetation	<p>Appendix B (Biologic 2022) does not meet the EPA's technical guidance (EPA, 2016a) and, therefore, the conclusions and assumptions within the referral supporting document cannot be verified. Items required to be addressed include the following:</p> <p>a. Detailed surveys of linear infrastructure should incorporate vegetation unit characterisation of an area from 500m to 1000m on both sides of the infrastructure corridor. Refer to Section 6.6 of EPA (2016a). Provide additional survey information or justification to why the information is not required to support conclusions within the referral package. If additional survey information is provided, please amend Appendix B, specifically sections 3 and 4, to discuss the survey findings and assessment of impacts against the proposal.</p> <p>b. Provide justification for the number of quadrats for each vegetation type and discuss how the current number adequately identifies the vegetation characteristics. Additional quadrats (three per vegetation type) may be required if appropriate justification is not provided.</p> <p>c. Provide a brief outline in Table 3.2 of Appendix B stating methods, limitations, and compliance with EPA technical guidance for each historical survey referenced.</p> <p>d. Map the locations of the historical surveys referenced and current surveys including the locations of quadrats and relevés in relation to the development envelope and disturbance footprint.</p> <p>e. Update Figure 4.6: Vegetation types in the Study Area and Figure 4.9: Vegetation Condition in the Study Area to include the vegetation surrounding the development envelope and the quadrat locations.</p> <p>f. Vegetation mapping outside the development envelope has not been provided. The extent of the TEC within the development envelope (and disturbance footprint) including the full patch size of the impacted areas is unknown and, therefore impacts of the proposal on the community (beyond the development envelope) cannot be assessed. Update Figure 4.7 to include all patches of Banksia Woodland Threatened Ecological Community (TEC) which intersect with the development envelope.</p> <p>g. Update Figure 4.4 to include all the locations of flora of 'other significance' for context and visual comparison.</p>	<p>The issues highlighted in this comment have been addressed in the updated Biologic Ecological Survey Report (2023) which is included as Appendix B in the RSD report. Sections 6.3.2 and 6.3.2.2 of the RSD also addresses the queries A to G. Including:</p> <p>a. A 500-1000 buffer around the entire Study Area is not appropriate given the level of urbanisation and fragmentation (see Appendix B Section 3.5.4). Previous vegetation mapping covering adjacent bushland was conducted by Natural Area (2016c) and is shown in Figure 4.8 (Appendix B). Biologic's vegetation types have been matched to these existing vegetation units (Appendix B Table 4.7); but due to the differences in scale and linework, it was not possible to consolidate both mapping layers together. The current report should be considered the most up-to-date vegetation mapping for the Study Area, and Natural Area (2016c) vegetation mapping is the most up-to-date for the surrounding context area.</p> <p>b. Additional information and discussion around quadrat sampling provided in Appendix B Section 3.5.1, Section 3.5.4, Table 4.8, Section 3.9.1 and Table 3.11.</p> <p>c. Limitations added to Appendix B Table 3.2. Methods and results for all flora and vegetation historical surveys were provided in Appendix B. An additional table has been added detailing targeted surveys within and overlapping the Study Area (Appendix B Table 4.5).</p> <p>d. Location of previous surveys in relation to Study Area has been provided in an additional figure (note: just the overlapping and adjacent surveys have been included on the figure, Appendix B Table 3.2 has details of all surveys and their distance from the Study Area).</p> <p>e. Previous vegetation mapping surrounding the Study Area was conducted by Natural Area (2016c) (provided in Appendix B Figure 4.8). This has been matched to current vegetation types as far as possible (Appendix B Table 4.7). Quadrat locations of previous surveys provided in Appendix B Figure 3.4. Vegetation condition for both the current survey and that of Natural Area (2016c) has been provided in Appendix B Figure 4.12.</p> <p>f. Mapping for the Banksia woodland TEC/PEC has been extended outside the Study Area (based on vegetation mapping from Natural Area (2016c)) to allow impacts to be assessed. The TEC assessment is now based on the full extent of each patch (see Appendix B Section 4.2.9.1, Table 4.10, Figure 4.9).</p> <p>g. Flora of other significance provided in a separate figure (Appendix B Figure 4.5).</p>	<p>a) Appendix B (Ecological Survey, Biologic 2023) Section 3.5.4, Figure 4.8 and Table 4.7</p> <p>b) Appendix B Section 3.5.1, Section 3.5.4, Table 4.8, Section 3.9.1 and Table 3.11</p> <p>c) Appendix B Table 3.2</p> <p>d) Appendix B Table 3.2</p> <p>e) Appendix B Table 4.7, Figure 4.8 and Figure 4.12</p> <p>f) Appendix B Section 4.2.9.1, Figure 4.9 and Table 4.10</p> <p>g) Appendix B Section 4.2.5 Figure 4.5</p>

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8	Flora and Vegetation	Provide the impact assessment of the proposal on the Southern River Vegetation Complex in the context of the Perth Metropolitan Region rather than the South-West Region. Please include statistics in this assessment.	State vegetation statistics are reported on a IBRA bioregion and LGA basis. The report provides statistics for the Southern River complex on an LGA and IBRA bioregion basis (note that this complex only occurs within the Perth Metropolitan Region (PMR), so the data for the bioregion is the same as for the metro area). Section 2.3.7 of the RSD includes State vegetation statistics reported only on an IBRA and LGA basis. Vegetation complexes only occur in the PMR, so the data for the bioregion is the same for PMR.	Appendix B: Section 2.2.2 and 4.2.10.1 RSD Section 2.3.7
9	Flora and Vegetation	The EPA considers flora to be significant for a range of reasons in addition to threatened and priority listing, such as range extensions and new records. Provide an impact assessment for impacts to 'other' significant flora or justification of why further consideration is not required.	Additional information on flora of other significance provided in Appendix B Section 4.2.4.1, Table 4.6 and Figure 4.5. An impact assessment for impacts to "other" significant flora or justification of why further consideration is not required is addressed in RSD Section 6.3.2.4 and Table 16.	Appendix B: Section 4.2.4.1, Figure 4.5 and Table 4.6 RSD Section 6.3.2.4 and Table 16
10	Flora and Vegetation	Provide further detail and description of the environmental significance of BFS 125 in a local and regional context. The RSD does not adequately assess the impacts of fragmentation of BFS 125 on flora and vegetation values. Matters to be considered includes (but not limited to) ongoing impacts to vegetation from existing roads together with the proposed Garden Street extension. This should include increased disturbance (weed invasion) and edge effects) and increased risk of Phytophthora dieback.	Further details for the environmental significance of the BFS 125 have been provided in Section 6.3 of the RSD. This includes discussion on the environmental values associated with the BFS 125, including the CCW, vegetation associations and representation of the Banksia Woodlands of the Swan Coastal Plain TEC patches that overlap the anticipated extent outside the Development Envelope. Mitigation measures to reduce the impact of weeds and Phytophthora dieback from the Proposal on BFS 125 have been considered in Section 6.3.4.	RSD Section 6.3.3.4 and 6.3.4
11	Flora and Vegetation	Discuss long-term monitoring of the vegetation within the CCW. Provide detail within the PDMMP and include management measures to ensure that predicted (direct and indirect) impacts are not exceeded, provide triggers and threshold criteria, including contingency identified measures. Refer to scope 2c and 2b.	Long-term monitoring of the vegetation within the CCW has been addressed in the RPDMMMP with a 50m maintenance and monitoring area proposed to be implemented for 5 years post development.	RSD Section 6.3.4 Appendix O - RPDMMMP: Tables 11 and 14
12	Flora and Vegetation	Records indicate that the development envelope is in close proximity to populations of <i>Caledonia huegelii</i> and <i>Drakea elastica</i> and is also likely to contain suitable habitat for these threatened flora species. Table 12 of the RSD indicates that there have been several targeted flora surveys for these species across the development envelope since 2003. It is unknown whether historical surveys were conducted at the appropriate times. Appropriate timing, survey area and intensity of these flora surveys, in line with EPA technical guidance (2016a) needs to be demonstrated.	Information on all targeted surveys is provided in Appendix B, Table 4.5, including clarification that these were conducted at the appropriate timing and intensity to target <i>Caladenia huegelii</i> and <i>Drakea elastica</i> . Study Areas for these surveys are presented in Appendix B, Figure 3.1. Appropriate timing, survey area and intensity for the targeted surveys, were in line with EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment. Perth, Western Australia: Environmental Protection Authority. Survey timeframes for reports identified in RSD Table 12 have been included and Section 6.3.2.4 identifies that five targeted flora surveys were undertaken during suitable timing for <i>C. huegelii</i> and four during suitable timing for <i>D. elastica</i> . This survey effort is sufficient to identify the presence or absence of species within the Development Envelope. Given that no individuals in population 37b of <i>C. huegelii</i> (recorded in 2004 in the Development Envelope) have been recorded in over 19 years, it is likely this location represents a locally extinct record for this taxon. No further targeted flora surveys are deemed necessary.	Appendix B: Section 4.2.4.1, Figure 3.1 and Table 4.5 RSD Section 6.3.2.4 and Table 12
13	Flora and Vegetation	Please provide the following further information (including surveys or investigations) to support the referral: a. Data for quadrats in potential areas of the Claypans of the Swan Coastal Plain TEC should be analysed using the floristic data from Gibson et al. (2005) (Threatened plant communities of Western Australia, 2). The seasonal clay-based wetland communities of the South West). Biologic (2022) used a combination of cluster analyses and similarity testing to compare floristic data against Gibson et al. (1994) and Keighery (2012) data to determine which floristic communities the quadrats mostly resembled. The statistical analysis results should be provided in the documentation and the analyses should include comparison to data from Gibson et al. (2005). In addition, the vegetation associated with the Claypans of the Swan Coastal Plain TEC is mapped differently in the earlier EPBC Act referral to the current survey (Biologic 2022). Please confirm the vegetation composition and spatial extent. b. Candidate <i>C. huegelii</i> leaves and fruit were found within the site. <i>C. huegelii</i> sprouts from a subterranean tuber after autumn rains, does not always produce a flower, is deciduous, and can remain dormant for a season without sprouting a leaf. A supplementary survey after autumn rains that includes a targeted search for <i>C. huegelii</i> and other threatened orchids that were determined to 'likely' occur in the site, such as <i>D. elastica</i> that is also known to sprout after autumn rains, should be conducted. If a supplementary survey is not undertaken provide justification and what other scientific information was used to confirm whether these species are or are not present.	a. It is standard practise to conduct FCT analysis with Gibson et al. (1994) and Keighery et al. (2012) (Biologic, 2023). More detail on FCT analysis has been included in Appendix B Section 3.5.5.3. Dendrograms have been added in Appendix D of Appendix B. Vegetation mapping has been updated since the earlier EPBC Act referral submission and Biologic's 2020 two phase spring survey contained in this report should be considered the most up-to-date survey information. The Claypans TEC was inferred to occur within the Study Area based on the DBCAs database (Biologic, 2023). Biologic and RPS have conducted FCT analysis for the vegetation of the Study Area and have both concluded that none of the vegetation within the Study Area is associated with the Claypans TEC (see Appendix B Section 4.2.9.2). b. Five targeted spring flora surveys have been undertaken during suitable timing for <i>C. huegelii</i> , four of which were suitable timing for <i>D. elastica</i> (360 Environmental 2014a, Natural Area, 2016b; PGV, 2016; Woodman, 2004; Biologic 2023 within Biologic, 2023). One survey was conducted over two seasons, including after Autumn rains and was followed up by a spring survey (360 Environmental 2014a, 360 Environmental 2014b within Biologic, 2023). No additional targeted flora surveys are required. Justification is provided in Appendix B Section 4.2.4.1 and Table 4.5. Section 6.3.2.2 and 6.3.2.4 of the RSD has updated information on survey dates and how they adhere to the EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment. Perth, Western Australia: Environmental Protection Authority. A total of five targeted surveys undertaken during suitable times confirm the absence of <i>C. huegelii</i> within the Development Envelope.	a) Appendix B Section 3.5.5.3 and 4.2.9.2 and Appendix D within Appendix B. RSD Section 6.3.2.2 b) Appendix B Section 4.2.4.1 and Table 4.5. RSD Section 6.3.2.4
14	Flora and Vegetation	Review the previous Dieback study (2015) to determine the risk rating and whether updated dieback mapping is required. If not, the RSD needs to state that the mapping is conditional data due to its date validity. Mitigation and management of Dieback should be addressed in CEMP. Refer to scope 2b.	Dieback mapping was undertaken in September 2019 by Dieback Treatment Services and in 2023 by Great Southern Bio Logic. The CEMP addresses the mitigation and management of dieback within the Development Envelope. The City's management measures ensure high quality hygiene practices to avoid spread of dieback. In addition, the City is committed to revising the dieback surveys within the Development Envelope prior to clearing to ensure the "uninfested areas" are accurately mapped and corrected.	RSD Section 6.3.3.3 Appendix N CEMP

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15	Terrestrial Fauna	<p>Items required to be addressed in Appendix B (Biologic 2022) include the following:</p> <p>a. Appropriate figures that show the following</p> <ul style="list-style-type: none"> Fauna habitat as the base layer, to include (where necessary) fauna habitat extending outside of the development envelope Survey sites/locations, to include the historical surveys <p>b. Please amend Figure 5.1 using different symbology and colours to differentiate between species records, currently the figure is unclear or provide a zoomed insert for the cluster of records adjacent to Nicholson Road.</p> <p>c. The records do not appear to correspond with habitat relevant to these bird groups at the illustrated locations. Please verify the records for the waterbirds, shorebirds and seabirds, and amend Figure 5.1 appropriately.</p> <p>d. A single, basic survey (2020) has been provided to support the RSD (Appendix B) and additional historical surveys have been briefly discussed as part of the desktop review. Some of the historical surveys potentially occurred within the development envelope. Please provide a summary of the methods and location (including maps) of the historical surveys identified in the desktop study that have been used to support the RSD.</p> <p>e. It is stated that further investigation is required to confirm the presence of the Perth slider and black striped snake, and that future development of the study area should consider the impacts to these species and the fork-tailed swift, in particular, the further fragmentation of existing populations. Demonstrate that there has been adequate survey for reptiles, swift and quenda, after the further surveys are undertaken, together with providing details of historical surveys where applicable.</p>	<p>The issues highlighted in this comment have been addressed in the updated Biologic Ecological Survey Report (2023) which is included as Appendix B in the RSD report. Including:</p> <p>a. Location of previous surveys have been included in the report and figures, in relation to Study Area and extending outside the Study Area, where relevant and information available.</p> <p>b. Figure 5.1 (Appendix B) updated to include an inset to more clearly show the fauna records adjacent to Nicholson Rd</p> <p>c. Section 5.1.2 and Section 5.2.3 updated and the waterbird, shorebird and seabird records are confirmed.</p> <p>d. The location and survey effort of previous surveys (identified in the desktop assessment) have been included in the relevant sections, figures and tables of the report.</p> <p>e. Although the fork-tailed swift, Perth slider and black-striped snake were identified within the desktop assessment, they were assessed as possibly occurring within the Study Area and Development Envelope. This assessment is based on the lack of records of the species within the Study Area (either during previous studies or the current survey), limited number of species records within the vicinity of the Study Area (closest records 4-6 km from the Study Area all recorded via NatureMap only), the Study Area not occurring within the species core distribution, and in the case of the Perth slider and black-striped snake only marginally suitable habitat present within the Study Area. The current assessment and associated sampling effort was undertaken to determine any species that should be of consideration for potential impacts, whether confirmed or considered highly likely, likely or possible to occur.</p> <p>Further information on previous surveys conducted within and surrounding the Study Area have been included within the Biologic report (Appendix B). While the sampling methods undertaken during the current survey were unlikely to detect these species, a previous survey undertaken in 2015 undertook specific sampling (i.e. raking of leaf litter or pitfall trapping) targeting reptile species. The three species were not detected during previous surveys and the current survey within the Study Area; however, based on the presence of suitable habitat and proximity of previous records, the species are considered possible to occur still.</p> <p>Details to demonstrate the adequacy of surveys for reptiles (including the Perth slider and black-striped snake), the fork-tailed swift and quenda and further details of historical surveys have been updated in the RSD.</p>	<p>a) Appendix B Section 3.2.1, Figure 3.1 and Figure 3.5</p> <p>b) Appendix B Figure 5.1</p> <p>c) Appendix B Section 5.1.2 and 5.2.3</p> <p>d) Appendix B Section 3.2.1 and 5.2.3, Figure 3.1, figure 3.5, Table 3.2, Table 3.4, Appendix N within Appendix B</p> <p>e) Appendix B Section 6.2 and Appendix M within Appendix B</p>
16	Terrestrial Fauna	<p>Discuss whether there are any potential significant impacts from the proposal on aquatic invertebrate fauna within the CCW.</p>	<p>No significant effects to aquatic invertebrate fauna are expected to occur due to the seasonal and shallow nature of inundation at the site, and assemblage of aquatic species that may occur in winter-wet depressions. The habitat assessment (Section 5.2) has been amended and an aquatic invertebrates (Section 6.3) has been added to the Short-range endemic and significant invertebrate desktop assessment for the Garden Street Extension Project, Phoenix, 2023 (Appendix C) to reflect consideration of aquatic invertebrates.</p> <p>The identification and discussion of any potential significant impacts from the proposal on aquatic invertebrate fauna within the CCW have been update in the RSD.</p>	<p>Appendix C (SRE Report, Phoenix 2023): Section 6.3</p> <p>RSD Section 6.4.2.3 and 6.4.2.5</p>
17	Terrestrial Fauna	<p>As part of the mitigation hierarchy assessment within the RSD (and CEMP) outline the specific management measures (construction and post construction) that are relevant to the fauna recorded. Refer to scopes 2b and 2c.</p>	<p>Management measures relevant to fauna recorded within the Development Envelope (construction and post construction) have been updated in the RSD, CEMP and RPDMMMP.</p>	<p>RSD Section 6.4.4</p> <p>Appendix N: CEMP</p> <p>Appendix O: RPDMMMP</p>
18	Terrestrial Fauna	<p>Provide detail on the underpasses/culverts, including justification of how the design and placement considers the fauna groups and fauna populations within Bush forever site 125. Refer to Inland waters scope 4c.</p>	<p>Urbaqua has modelled a top water level of 20.87mAHD (highest) for the northern part of the wetland during a 10-year storm event and 20.68 mAHD (highest) in the southern part of the wetland (Table 5 - Urbaqua 2022). At this top water level, neither of the culverts in the wetland will be fully submerged. The lowest culvert in the southern part of the wetland will have a gap of 41mm between the water and top of the culvert and the northern culvert running through the wetland will have a gap of 386 mm between the water and top of the culvert during a modelled 10-year storm event. This is shown on the cross sections of the drainage plan (e90-18-017 in Appendix J). The higher culvert outside of the wetland footprint will remain dry all year round. Based on this, one culvert will be fully accessible to all types of fauna all year round, and two will be partially submerged during larger storm events, but still have a gap for aquatic fauna such as ducks to use.</p> <p>The proposed steep batters and fencing will direct fauna to the culverts/fauna crossings to prevent them crossing the road. The size of the culverts is sufficient for the fauna that are known/likely to be present at the Bush Forever site ie. no kangaroos. In addition, a culvert has been provided in the dry bushland part of the Development Envelope and two culverts have been provided in the wetland part of the DE to allow sufficient crossings for both <u>terrestrial and wetland fauna species</u>.</p>	<p>RSD Section 6.4.4</p> <p>Appendix J - Engineering Plans</p> <p>Appendix D- Hydrology Study & Impact Assessment - Table 5</p>
19	Terrestrial Fauna	<p>Discuss the impacts to those native fauna species which will not benefit from proposed mitigation measures. Fauna species that may not utilise the underpasses, such as invertebrates, should be identified.</p>	<p>SREs are capable of movement if no barriers are present. They may use the underpass at suitable times such as at night. Many other invertebrates are capable of dispersal by flying (Phoenix 2023).</p> <p>Fauna species that will not benefit from the proposed mitigation measure have been discussed and catered for in the RSD.</p>	<p>RSD Section 6.4.5.3</p> <p>Appendix C</p>
20	Terrestrial Fauna	<p>Describe how the underpasses/culverts will be managed and monitored for use by the targeted fauna and what are the contingencies in the event the structures are not being used or if predation risks are increased. Refer to scope 2c.</p>	<p>The culverts will be managed as follows:</p> <ul style="list-style-type: none"> The City will commit to undertaking feral animal trapping twice a year in spring and autumn for a period of one week for each trapping period. Infra-red motion sensor cameras will be set up at all culvert entrances/exits for a period of 5 years to monitor fauna use, as a minimum during spring and autumn. Infra-red motion sensor cameras are to monitor for predator activity for a minimum of one week prior to trapping events. <p>These measures have been incorporated in the RPDMMMP and the RSD.</p>	<p>RSD Section 6.4.4</p> <p>Appendix O RPDMMMP</p>
21	Terrestrial Fauna	<p>Provide further detail and description of the environmental significance of BFS 125 in a local and regional context, including the cumulative impacts resulting from the bisection of the bushland remnant by existing roads. This includes description of potential loss of local populations of recorded Short Range Endemics (SRE's), increased predator activity, decreased movement of fauna. Refer to scope 31.</p>	<p>The environmental significance of the Bush Forever Site No. 125 in a local and regional context has been updated in the RSD to include SRE habitat and terrestrial fauna impacts on the Bush Forever Site resulting from the bisection of the bushland remnant by existing roads.</p>	<p>RSD Section 6.4.5.1 and 6.4.5.3</p>

EPA Comment No.	EPA Factor	EPA Comment	City's Response	Relevant Sections
22	Terrestrial Fauna	<p>Appendix C (Phoenix 2022) notes that there are potential SRE habitats within the development envelope however these habitats are also located outside the development envelope within 40km of the proposal.</p> <p>a. It is recommended that mapping in Figures 5 and 6 be expanded to support conclusion and assumptions that habitats (and species) are known outside the development envelope (particularly within the Bush forever site 125). This may assist in addressing survey requirements as presented in section 3.1.4 (risk-based approach) of the EPA's technical guidance (2016b) and presumption that SRE habitats are associated with "any habitat in excellent or better condition" for bee species.</p> <p>b. Should a targeted surveys for SRE taxa be required at a suitable time of the year (May-October), using appropriate methods and survey effort, and in all potential habitat (not just excellent) should be undertaken. Provide site specific rainfall and temperature data for the collection period.</p>	<p>Appendix C (Phoenix, 2023) includes updated map figures, with extrapolated habitat mapping for Bush Forever Site 125, included the mapping undertaken within Holmes Street Bushland, and a more detailed analysis of habitats from within the remainder of Bush Forever Site 125. The area of potential SRE habitat within the Development Envelope is minor (0.9 ha).</p>	Appendix C: Figure 5, 6 and 7
23	Terrestrial Fauna	<p>One targeted survey for native bees has been undertaken in the development envelope (Spineless Wonders 2017). The desktop assessment (Phoenix 2022) provides additional information on the potential occurrence of threatened native bees in the development envelope. Survey effort is insufficient, with only a small section of the development envelope being sampled and no sites outside the disturbance footprint. As acknowledged in the survey, the timing of the survey (15 -17 March 2017) was not at the most suitable time to target threatened and priority bees and recommended an additional survey be conducted in November/December when most native bees are likely to be active. Undertake a targeted survey for Critically Endangered bees, at a suitable time of the year, using appropriate methods and survey effort, and in all potential habitat (not just excellent) Provide site specific rainfall and temperature data for the collection period. If a targeted survey is not undertaken, provide justification and provision of further evidence/information to support conclusions and outcomes within Appendix C.</p>	<p>Further evidence justifying why a targeted bee survey is not required has been provided in Appendix C, including the size of habitat present within the study area/ Development Envelope being insufficient to support a bee population. The area of potential bee habitat within the Development Envelope is minor compared the area of potential habitat throughout the adjacent Bush Forever Site 125.</p>	Appendix C: Section 6.2.1 RSD Section 6.4.2.5
24	Terrestrial Fauna	<p>The RSD should be updated to include the following: a. Survey findings and as part of the mitigation hierarchy avoidance and management measures for SRE and invertebrates.</p>	<p>SRE and significant invertebrate habitat occurs within the Development Envelope but the area of potential habitat within the Development Envelope is very small, and it extends widely beyond the Development Envelope into neighbouring areas, particularly Bush Forever Site 125. Recommended mitigations measures would be to avoid as much of the potential habitat as possible, however, if this isn't possible, then management measures include: avoid further damage or alterations to remaining habitat, including soil structure, vegetation structure and cover, drainage, and fence off other areas of remnant vegetation (Phoenix 2023).</p>	RSD Section 6.4.4
25	Social Surroundings	<p>The traffic impact study (Appendix A) and GHG assessment report (Appendix G), suggests that traffic volumes over 25,000 vpd are expected by 2036, which is within that 15-20 year planning horizon. It is noted that the proposal may trigger State Planning Policy (SPP) 5.4 Road and Rail Noise. Please provide a noise assessment outlining the predicted noise levels as nearby sensitive premises consistent with State Planning Policy 5.4. Please outline the proposed mitigation measures to minimise noise impacts and achieve the noise targets within State Planning Policy 5.4.</p>	<p>A Traffic Noise Assessment by WSP has been completed for the Proposal (Appendix G). The RSD has been updated to incorporate the findings of the Traffic Noise Assessment including the proposed mitigation measures. The Peer Review Traffic Noise Assessment (Herring Storer Acoustics, 2023 - Appendix I) advises the City to install noise walls to address the increased noise levels from the extension of Garden Street. The report presents two options for consideration i.e. placing the walls (minimum 2.4 m high) adjacent to the carriageway or along the property boundaries. Both options guarantee no impact on the existing Development Envelope, whilst having the same result in reducing noise levels. If the walls are installed along the property boundaries, the works can be undertaken from within the property owners backyards to avoid impacting native vegetation. This approach prioritises the conservation of the natural environment and minimises visual disruption in the area. To determine the preferred option on noise walls, the City will initiate a consultation process with the property owners, however will not proceed with this until a determination on the Proposal is made by the Minister for Environment. Both options align with the established environmental constraints and comply with the requirements in SPP5.4, and as outlined do not require any additional removal of vegetation or change to the Development Envelope.</p>	Appendix G - Traffic Noise Assessment (WSP) Appendix I - Peer Review Traffic Noise Assessment (HSA) RSD Section 6.6.2.2, 6.6.3.2 and 6.6.5.1
26	Social Surroundings	<p>Consider whether the proposal will have a visual impact upon residential properties adjacent to the development envelope. If so, apply and discuss the mitigation hierarchy.</p>	<p>The installation of a 2.4m to 3m high noise wall (to be determined following community consultation) between the road and the residential area not only fulfills the requirement for noise reduction but also offers the additional benefit of shielding residents from any visual traffic disruptions. A visual impact assessment undertaken by the City's Engineering Design Team, has confirmed that a minimum fence height of 2.3m is necessary for specifically addressing the scenarios in which the proposed road could compromise residential privacy, heighten visibility from vehicles, pedestrians, or cyclists into residences, or lead to a greater amount of headlight glare penetrating the residential area. The suggested noise wall height, ranging from 2.4m to 3m, complies with this requirement. Refer to Plate 5 for a cross section of the visual impact assessment. The plot and house number of each residential dwelling that will have a noise wall along or adjoining their property boundary, which will have a dual purpose of providing privacy from the road extension is shown in the cross sectional drawing in Plate 5. Houses along Dalyp Road will have vegetation (consisting of trees) as a visual barrier between their properties and the road extension.</p>	RSD Plate 6, Section 6.6.3.3 and 6.6.5.2
27	Social Surroundings	<p>Identify whether there are any Aboriginal heritage and cultural values that are going to be directly or indirectly impacted by the proposal. If there is a potential impact: a. Assess the impacts of the proposal on heritage sites and/or cultural associations as a result of implementation of the proposal, including those arising from changes to the environment which may impact on ethnographic and archaeological heritage significance. b. Characterise the heritage and cultural values of the development envelopes and any other areas that may be indirectly impacted to identify sites of significance and their relevance within a wider regional context. c. Provide detail on any consultation undertaken with Traditional Owners and incorporate feedback on management and mitigation measures that could be implemented over time to reduce impacts to Aboriginal heritage i.e. CHMP.</p>	<p>A review of the Aboriginal Cultural Heritage Inquiry System (ACHIS) did not identify any cultural heritage sites within the Development Envelope. The RSD has been updated to consider the potential impacts to unexpected artifacts and the CEMP considers the management of unexpected artifacts that could occur found construction.</p>	RSD Section 6.6.2.1, 6.6.3.1 and 6.6.4 Appendix N: CEMP

EPA Comment No.	EPA Factor	EPA Comment	City's Response	Relevant Sections
28	Offsets	Determine the significance of any significant residual impacts on the identified environmental values by applying the Residual Impact Significance Model and WA Offset Template in the WA Environmental Offsets Guidelines (2014).	Table 33 of the Referral Supporting document summarises the significant residual impacts of the Proposal through the application of the Residual Impact Significance Model. It is noted that this table was provided with the original referral. Following receipt of the comments, EPA advised the City that this was a generic comment used to ensure that all potential residual impacts (across all environmental factors) are considered. For example Inland waters - if there was residual impact to flora and vegetation/terrestrial fauna from dewatering activities. The City has advised that dewatering will not be an activity as part of the Proposal. This table appropriately considers all potential residual impacts associated with all environmental factors that have been addressed in the Offset Strategy. As dewatering is not required for this Proposal, there will be no further residual impacts to be included in Table 33.	RSD Table 34
29	Offsets	Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guideline. Spatial data defining the area of significant residual impacts for each environmental value should be provided.	An Offset Strategy has been prepared for significant residual impacts remaining after the mitigation hierarchy avoidance and management measures have been implemented.	Appendix P: Offset Strategy
30	Offsets	Discuss how the proposed offsets package is consistent with State Planning Policy 2.8: Bushland policy for the Perth metropolitan area and offset requirements for BFS 125.	The offset strategy prepared for the Proposal identifies how the proposed offset package is consistent with State Planning Policy 2.8: Bushland policy for the Perth metropolitan area and offset requirements for BFS 125.	Appendix P: Offset Strategy
31	Cumulative Impact	Provide a cumulative environmental impact assessment of the proposal. Cumulative environmental impacts are the successive, incremental and interactive impacts on the environment of a proposal with one or more past, present and reasonably foreseeable future activities. Refer to the EPA's Procedures Manual for further information on reasonably foreseeable future activities. Identify the activities, boundaries and values relevant for the cumulative impact assessment in relation to each factor. Describe and assess the extent of any cumulative impacts within local, regional and state contexts as appropriate. Consider any individual values and overlapping values (such as areas remaining that contain Southern River vegetation complex, CCW [sumpland] and Bennett Brook Consanguineous wetland suite).	The cumulative impact assessment tables have been updated to include a wider range of proposals such as scheme amendments.	RSD Section 11, Table 35, 36 & 37