



Environmental
Protection
Authority

Garden Street Extension, Southern River

City of Gosnells

Report 1771

October 2024

OFFICIAL

This assessment report has been prepared by the Environmental Protection Authority (EPA) under s. 44 of the *Environmental Protection Act 1986* (WA). It describes the outcomes of the EPA's assessment of the Garden Street Extension, Southern River proposal by the City of Gosnells.

This assessment report is for the Western Australian Minister for Environment and sets out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented and, if it recommends that implementation be allowed, the conditions and procedures, if any, to which implementation should be subject
- other information, advice and recommendations as the EPA thinks fit.



Lee McIntosh
Deputy Chair
Environmental Protection Authority

4 October 2024

Contents

1	Proposal.....	5
2	Assessment of key environmental factors	11
2.1	Flora and vegetation	11
2.2	Terrestrial fauna	17
2.3	Inland waters	23
3	Holistic Assessment	31
4	Offsets	32
5	Recommendations	37
6	Other advice	38

Figures

Figure 1: Proposal location.....	8
Figure 2: Development envelope and disturbance footprint.....	9
Figure 3: Conservation areas	10
Figure 4: Offset Locations (360 Environmental, 2023c).....	36

Tables

Table 1: Proposal content document (City of Gosnells 2022).....	5
Table 2: Assessment of impacts to flora and vegetation values, recommended regulation and environmental outcomes	12
Table 3: Assessment of impacts to terrestrial fauna values, recommended regulation and environmental outcomes	18
Table 4: Assessment of impacts to inland water values, recommended regulation and environmental outcomes	24
Table 5: Proposed offsets	33

Appendices

Summary	2
Appendix A: Recommended conditions.....	39
Appendix B: Regulation by other DMA processes	61
Appendix C: Decision-making authorities.....	62
Appendix D: Environmental Protection Act principles.....	63
Appendix E: Other environmental factors	67
Appendix F: List of submitters.....	69
Appendix G: Assessment timeline	70
References	71

Summary

Proposal

The Garden Street Road extension is a proposal to extend Garden Street between Harpenden Street and Holmes Street in Southern River, which will involve the construction of an 840 m section of a dual carriageway (two lanes each direction) within a 2.65 ha development envelope (the proposal).

The proposal is located approximately 17 kilometres south-east of Perth Central Business District, in the suburb of Southern River (Figure 1). The development envelope is within an existing 'Other Regional Roads' reserve under the Metropolitan Region Scheme (MRS).

The proponent for the proposal is the City of Gosnells (the City).

Context

The proposal will include clearing of no more than 2.04 ha of native vegetation which includes Central *Banksia attenuata* – *Banksia menziesii* woodlands of the Swan Coastal Plain (SCP) community (Floristic Community Type) (FCT23a), and two flora species Department of Biodiversity, Conservation and Attraction (DBCA) listed as priority 3. The proposal will intersect a Conservation Category Wetland (CCW) and Bush Forever Site (BFS) 125. The development footprint includes road and drainage infrastructure (Figure 1).

Assessment of key environmental factors

Flora and vegetation, terrestrial fauna and inland waters are the key environmental factors that may be impacted by the proposal.

The EPA has considered potential impacts to other environmental factors such as social surroundings and greenhouse gas emissions in Appendix E.

Assessment of key environmental factors

Flora and vegetation, terrestrial fauna and inland waters are the key environmental factors that may be impacted by the proposal.

The EPA has considered potential impacts to other environmental factors, such as terrestrial environmental quality, greenhouse gas emissions, and social surroundings in Appendix E.

Environmental factor: Flora and vegetation	
Residual impact on key value	Assessment finding/ environmental outcome (Summary)
<p>Potential impacts from:</p> <ul style="list-style-type: none"> clearing of up to: <ul style="list-style-type: none"> 2.04 ha of vegetation which includes 1.58 ha of <i>Banksia</i> woodland (FCT 23a) and 0.45 ha associated with CCW 10 individuals of P3 flora including seven individuals of <i>Jacksonia gracillima</i> and three individuals of <i>Styphelia filifolia</i> 1.2 ha of vegetation within BFS 125. fragmentation and loss of ecological connectivity of remnant vegetation. 	<p>The EPA advises that the proposal would result in a small overall impact to the total mapped extent of Central <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands of the Swan Coastal Plain (SCP) (FCT23a). The EPA has assessed the impact to the <i>Banksia</i> woodlands community as a significant residual impact given the threat of ongoing clearing of representative occurrences from development on the Swan Coastal Plain (SCP), particularly in the Perth Metropolitan Region. The EPA therefore considers that, subject to recommended conditions to limitations of extent (condition A1-1), environmental outcomes (condition B1-1) and counter-balancing of the significant residual impact through an offset strategy and plan (condition B5), the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.</p>

Environmental factor: Terrestrial fauna	
Residual impact on key value	Assessment finding/ environmental outcome (Summary)
<p>Potential impact from:</p> <ul style="list-style-type: none"> clearing of up to: <ul style="list-style-type: none"> 1.59 ha of very high quality foraging habitat for black cockatoos 0.45 ha of low-quality foraging habitat for black cockatoos 2.04 ha quenda habitat 0.95 ha of potential Short Range Endemic (SRE) habitat 0.45 ha of <i>Melaleuca</i> thicket providing potentially suitable habitat for two threatened bee species. fragmentation and loss of ecological connectivity of fauna habitat. 	<p>The EPA advises that while the proposal would result in a small overall impact to the total mapped extent of black cockatoo foraging habitat in the Perth Metropolitan Region, the EPA has assessed the impact to black cockatoos as a significant residual impact given the threat of ongoing clearing of foraging habitat from development on the SCP, particularly in the Perth Metropolitan Region.</p> <p>The EPA therefore considers that, subject to recommended conditions to limitations of extent (condition A1-1), environmental outcomes (condition B2-1) and counter-balancing of the significant residual impact through an offset strategy and plan (condition B5), the environmental outcome is likely to be consistent with the EPA objective for terrestrial fauna.</p>

Environmental factor: Inland waters	
Residual impact on key value	Assessment finding/ environmental outcome (Summary)
<p>Potential impact from:</p> <ul style="list-style-type: none"> clearing of 0.58ha of the CCW wetland clearing of 0.45ha of wetland vegetation associated with the CCW permanent alteration of the local hydrological regime, including surface water drainage and groundwater. increase in pollutants which affect water quality decreased available wetland storage volume and increased impervious drainage catchment. 	<p>The EPA advises the potential impacts to the wetland and maintaining the CCW management status can be regulated through reasonable conditions including recommended conditions A1-1 (set clearing limits), condition B3-1 (maintaining hydrological regimes) and B4 (offsets). Subject to the above recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for inland waters.</p> <p>The EPA supports the proponent's proposed mitigation of water quality impacts and recommends that the potential impact to surface and groundwater quality from hydrocarbon spills can be regulated through recommended conditions B3-1 (environmental outcome), B3-3(2) (no refuelling), and B3-4 (RPDMMP). Subject to these recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for this factor.</p>

Holistic assessment

The EPA considered the connections and interactions between relevant environmental factors and values to inform a holistic view of impacts to the whole environment. The EPA formed the view that the holistic impacts would not alter the EPA's conclusions about consistency with the EPA factor objectives.

Conclusion and recommendations

The EPA has taken the following into account in its assessment of the proposal:

- environmental values which may be significantly affected by the proposal
- residual impacts and effects in relation to the key environmental factors, separately and holistically
- likely environmental outcomes (and taking into account the EPA's recommended conditions), and the consistency of these outcomes with the EPA objectives for the key environmental factors
- the EPA's confidence in the proponent's proposed mitigation measures
- whether other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment
- principles of the *Environmental Protection Act 1986* (EP Act).

The EPA has recommended that the proposal may be implemented, subject to conditions recommended in Appendix A.

1 Proposal

The Garden Street Road extension is a proposal to extend Garden Street between Harpenden Street and Holmes Street in Southern River, which will involve the construction of an 840 m section of a dual carriageway (two lanes each direction) within a 2.65 ha development envelope (the proposal).

The proposal is located approximately 17 kilometres south-east of Perth Central Business District, in the suburb of Southern River (Figure 1). The development envelope is within an existing 'Other Regional Roads' reserve under the Metropolitan Region Scheme (MRS). The proposal will facilitate the eventual connection of Garden Street to Tonkin Highway.

The proponent for the proposal is the City of Gosnells (the City).

The elements of the proposal that were subject to the EPA's assessment are outlined in Table 1.

Table 1: Proposal content document (City of Gosnells 2022)

Proposal element	Location	Maximum extent or range
Physical elements		
Clearing and disturbance for road construction and associated infrastructure i.e. drainage infrastructure and road furniture including but not limited to lighting and crash barriers.	Figure 2	<p>The proposal comprises a 2.65 ha Development Envelope.</p> <p>Clearing of no more than 2.04 ha of native vegetation is proposed, which includes:</p> <ul style="list-style-type: none">• 1.59 ha of very high quality foraging habitat for Carnaby's black cockatoo;• 1.58 ha of SCP23a Central <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands of the Swan Coastal Plain (SCP) which is encompassed within the Banksia Woodlands of the SCP federally listed threatened ecological community; and• 0.45 ha of remnant vegetation associated with a Conservation Category Wetland (CCW).
Proposal elements with greenhouse gas emissions		
Construction elements		
Scope 1	Diesel – transport/stationary and lost carbon sink at 951 tCO _{2-e} per annum	
Scope 2	Purchased electricity with zero emissions	
Scope 3	Fuel and energy related activities and materials, 291 tCO _{2-e} per annum	
Operational elements		
Scope 1	Diesel – transport/stationary, 6 tCO _{2-e} per annum	
Scope 2	Purchased electricity, 28 tCO _{2-e} per annum	
Scope 3	Fuel and energy related activities and material use, 2,613 tCO _{2-e} per annum	

Proposal element	Location	Maximum extent or range
Rehabilitation		
The proposal includes the planting of approximately 0.7 ha of road batters with locally native nutrient retentive plants.		
Commissioning		
N/A		
Decommissioning		
N/A		
Other elements which affect the extent of effects on the environment		
Proposal time	Maximum project life	In perpetuity
	Construction phase	18 months
	Operations phase	N/A
	Decommissioning phase	N/A

Units and abbreviations

ha – hectares tCO₂-e – tonnes of carbon dioxide equivalent

Proposal context

The proposal is located within an urban context where a portion of the development envelope is bound by residential development (Figure 1). A large portion of the development envelope is located within Bush Forever Site No. 125 (BFS 125) (Holmes Street Bushland, Southern River/Huntingdale), and a CCW: Sumpland (UFI: 15423) and consists of vegetation representative of the Southern River Vegetation Complex including Banksia woodland (Figure 4 and 5 of RSD).

The development envelope is located near the Southern River and foreshore, BFS No. 246, 413, 464, DBCA reserve (conservation of flora and fauna) and Jandakot Regional Park. Sutherlands Park/Reserve is located adjacent to the southern portion of the development envelope (Figure 3).

The EPA notes that the proposal is consistent with the MRS 'Other Regional Roads' reservation and that the surrounding land is zoned 'Urban' under the MRS and 'Development'/Residential Development' and 'Local Open Space' under the City of Gosnells Town Planning Scheme No. 6.

Proposal alternatives

The proponent considered alternatives for the proposal, including a 'do nothing' option and realignment of the road reserve to minimise impacts from construction on BFS 125, remnant vegetation, and the CCW.

The EPA acknowledges that in the early 2000s, the proponent liaised with the Department for Planning and Infrastructure regarding the potential realignment of Garden Street between Warton Road and Balfour Street to reduce potential impact to BFS 125 and associated environmental values. The EPA understands that based on economic and social cost benefit analysis, the realignment of this portion of Garden Street was not supported at that time.

The 'do nothing' option is not considered feasible, as without the Garden Street extension, it is predicted that Ranford Road, Nicholson Road and Corfield Street would need to be upgraded/extended to accommodate a projected increase in residents and subsequent increase in traffic in the local area. The current road alignment is considered 'locked in' due to the existing MRS 'Other Regional Roads' reservation and surrounding residential development including on either side of the road alignment.

The proposal is designed to alleviate a projected increase in traffic and will service future land development projects in the local area towards Tonkin Highway.

Consultation

The proposal was referred to the EPA on 16 November 2022. The EPA published the proponent's referral information for the proposal on its website for a seven-day public comment period from 21 to 27 November 2022. The proponent's Referral Supporting Document was published for a four week (six weeks in total to account for the Christmas period) public comment period from 20 December 2023 to 31 January 2024, with 20 public comments being received. The EPA considered the comments received during this public consultation period in its assessment and the City of Gosnells (2024) response to submission (RtS) which was published on the EPA website on 27 June 2024.

Other environmental approvals

The proponent referred a proposal to clear 4.58 ha of remnant vegetation in the MRS 'Other Regional Road' reserve of the Garden Street Road reserve (as depicted in Figure 2) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act [ref 2016/7735]). The proposal was determined to be a controlled action under the EPBC Act with approval (including conditions) being granted on 25 October 2018. This approval included the implementation of a Revegetation Management Plan, Landscape Management Plan and Environmental Management Plan. Since the EPBC Act approval, the proponent has 'refined' the proposal, by reducing the development envelope and disturbance footprint within the MRS 'Other Regional Road' reserve area. It is the 'refined' proposal which has been referred under section 38 (s. 38) of the EP Act that the EPA has assessed (Figure 2).

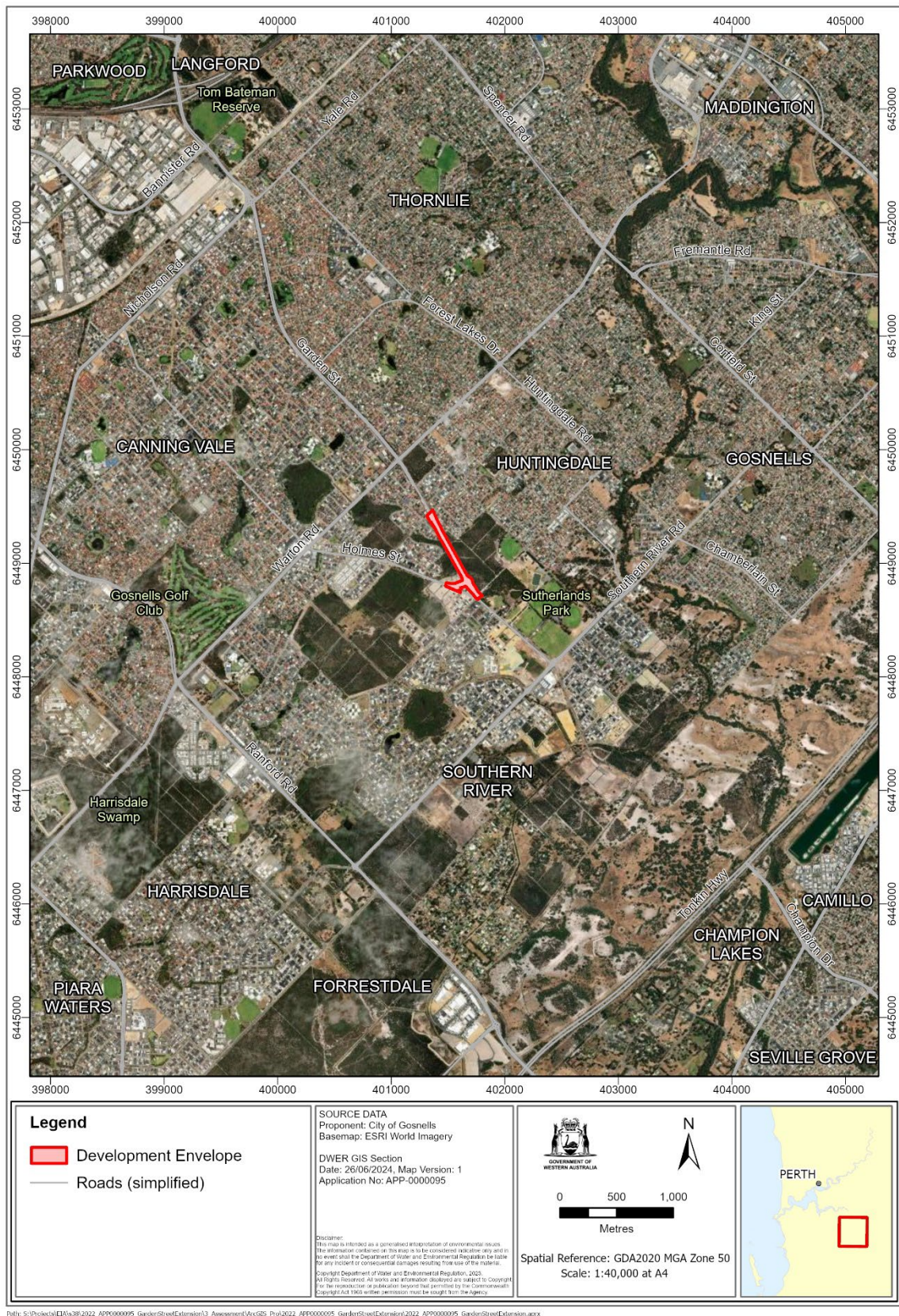


Figure 1: Proposal location

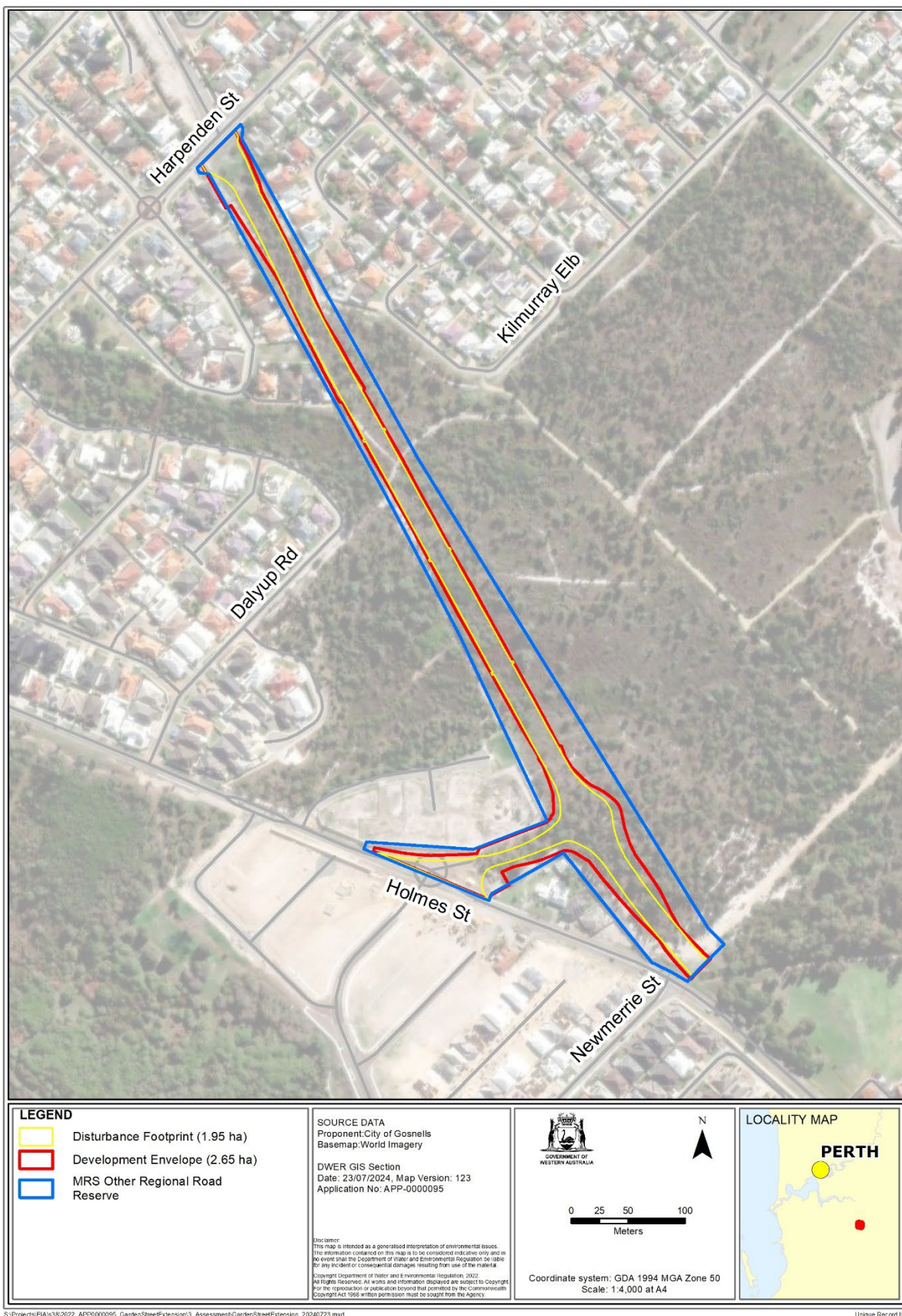


Figure 2: Development envelope and disturbance footprint

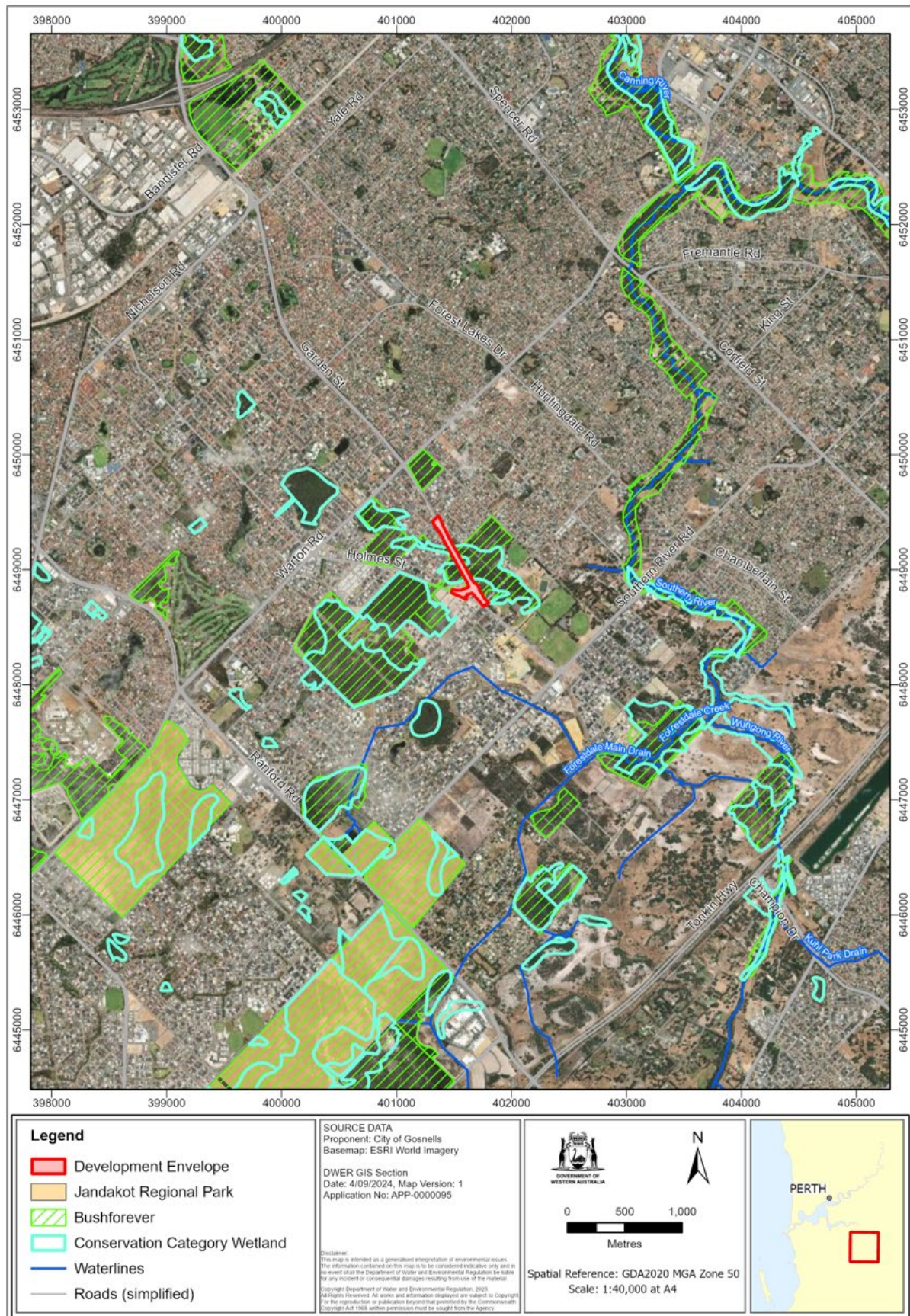


Figure 3: Conservation areas

2 Assessment of key environmental factors

This section reports the outcome of the EPA's assessment of the key environmental factors against its environmental factors and objectives, and its recommendations on conditions the proposal should be subject to if it is implemented. The EPA evaluated the impacts of the proposal on other environmental factors and concluded these were not key environmental factors for the assessment. This evaluation is included in Appendix E.

2.1 Flora and vegetation

The EPA environmental objective for flora and vegetation is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained* (EPA 2016a).

The EPA advises the following proponent investigations and surveys were used to inform the assessment of the potential impacts to flora and vegetation:

- Section 38 *Environmental Protection Act 1986*: Referral Supporting Document (RSD): Garden Street Extension, Southern River (360 Environmental 2023)
- Garden Street Extension: Ecological Survey (Biologic 2022)
- Short range endemic and significant invertebrate desktop assessment for the Garden Street Extension Project (Phoenix Environmental Sciences 2023)
- Garden Street Extension: Ecological Survey (Biologic 2023) (Appendix B of RSD)
- Response to Flora and vegetation submissions (Biologic 2024) (Appendix C of the RtS)
- Offset Strategy: Garden Street Extension, Southern River (360 Environmental 2023a) (Appendix P of RSD)
- Ecological Assessment Webster Park and Matison Street Reserves, Southern River and Lot 1490 Bullfinch St, Huntingdale (Emerge 2024) (Appendix D of the response to submissions)

The flora and vegetation surveys were largely consistent with the Technical Guidance – Flora and vegetation surveys for environmental impact assessment (EPA 2016b). The EPA considered that the relevant studies are appropriate to inform the assessment of the potential impacts to the above environmental factor.

The EPA has also considered the former Department of Environment and Energy approved conservation advice for the Banksia Woodlands of the Swan Coastal Plain threatened ecological community (TEC) (TSSC 2016) in its assessment of flora and vegetation values.

Table 2: Assessment of impacts to flora and vegetation values, recommended regulation and environmental outcomes

Key environmental values and context	
<p>Five vegetation types have been mapped within the development envelope which are representative of the Southern River Vegetation Complex (Figure 6 of RSD). Two of the vegetation types (BaBmAlf Dea (1.14 ha) and BaBmEt Pc (0.34 ha)) are representative of Central <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands of the Swan Coastal Plain (SCP)- Floristic Community Type (FCT) 23a, which is a Priority 3 (P3) ecological community listed by the Department of Biodiversity Conservation and Attractions (DBCA) and listed as Banksia woodlands of the SCP Threatened Ecological Community (TEC) under the EPBC Act. These vegetation types are also represented adjacent to the development envelope (Figures 4.7 and 4.8 in Biologic 2023). Based on floristic analysis and diagnostic criteria assessments, vegetation types (Mep, Ls and Mep RC) do not represent the Claypan of the SCP TEC recorded in the development envelope (Biologic 2023).</p> <p>Approximately 1.1 ha (43%) of vegetation has been recorded to be in 'Excellent' condition and 0.57 ha (21%) recorded to be in 'Very Good' condition within the development envelope. Refer to Figure 7 of RSD for vegetation condition mapping. A significant portion of the development envelope (wetland area and disturbed areas) are <i>Phytophthora cinnamomi</i> (dieback) infected (refer to Plate 1 of RSD).</p> <p>No threatened flora species pursuant to the EPBC Act or under the <i>Biodiversity Conservation Act 2016</i> (BC Act) have been recorded. Two Priority 3 (DBCA P3) flora species (<i>Jacksonia gracillima</i> and <i>Styphelia filifolia</i>) were recorded in the development envelope.</p> <p>A large portion of the development envelope is located within BFS 125 and part of a regional ecological linkage (Figure 5 of RSD).</p>	
Impacts from the proposal	Assessment finding, environmental outcomes and recommended conditions
<p>Potential direct impacts</p> <p>Potential impacts to flora and vegetation from:</p> <ul style="list-style-type: none"> clearing of up to: <ul style="list-style-type: none"> 2.04 ha of vegetation which includes 1.58 ha of Banksia woodland (FCT 23a) and 0.45 ha associated with CCW 10 individuals of P3 flora including 7 individuals of <i>Jacksonia gracillima</i> and 3 individuals of <i>Styphelia filifolia</i> 	<p>Assessment finding and environmental outcomes</p> <p><u>Conservation significant ecological communities</u></p> <p>The proposal will clear up to 1.58 ha of Central <i>Banksia attenuata</i> – <i>Banksia menziesii</i> woodlands of the SCP (FCT 23a) recorded to be in 'Very Good' to 'Excellent' condition. The EPA has considered that this loss is less than <0.0005% of the total mapped extent of FCT23a according to DBCA databases, and that 25% of the total mapped extent is estimated to be protected within reserves across its range (TSSC 2016).</p> <p>There are 3 Banksia woodland (FCT23a) patches (northern, central and southern) which all extend outside the development envelope into BFS 125 (Biologic 2023). The proposal may impact up to</p>

<ul style="list-style-type: none"> ○ 1.2 ha of vegetation within BFS 125 ● fragmentation and loss of ecological connectivity of remnant vegetation. <p>Potential indirect impacts</p> <ul style="list-style-type: none"> ● introduction of weeds and dieback to uninfected areas ● potential alteration of vegetation structure and floristic composition in adjacent and/or surrounding areas via changes to surface water drainage patterns. <p>Avoidance and minimisation measures (including regulation by other DMAs)</p> <ul style="list-style-type: none"> ● the development envelope is smaller than the MRS 'Other Regional Roads' reservation, the disturbance footprint (road design) has been refined to further reduce impact area within the road reserve. Refer to section 6.3.4 and Appendix J of additional information for further road engineering design specifications (360 Environmental 2023) ● construction Environmental Management Plan (CEMP) (360 Environmental 2023a) ● Re-vegetation Post-Development Management and Monitoring Plan (RPDMMP) (360 Environmental 2023b): <ul style="list-style-type: none"> ○ revegetation of road batters (0.7 ha), with flora species representative of vegetation types in BFS 125 ○ maintain and monitor a 50 m buffer outside the development envelope (weed control, rubbish removal and revegetation areas show a decline in condition and species composition from baseline survey) (Table 7 and Figure 5 in RPDMMP) 	<p>6.7% of the northern patch, 15% of the central patch and 30% of the southern patch. The central patch will be dissected (fragmented) (refer to Figure 8 RSD) into two separate patches.</p> <p>While the proposal would result in a small overall impact to the total mapped extent of this community, the EPA has assessed the impact to the Banksia woodlands community as a significant residual impact given the threat of ongoing clearing of representative occurrences from development on the SCP, particularly in the Perth Metropolitan Region. The EPA notes that FCT23a is known from 51 point locations over a 95 km range and the EPA has considered that clearing 1.58 ha of FCT 23a is not likely to change the P3 status of the FCT or significantly reduce the extent of the FCT occurrence.</p> <p>The EPA considers that all reasonable efforts to avoid where possible and otherwise minimise impacts to SCP23a have been applied, and notes that the proponent has made reasonable efforts to minimise its clearing footprint and reduce impacts to this community since the proposal referral under the EPBC Act (refer to section 1).</p> <p>The EPA advises that the significant residual impact to FCT23a should be subject to conditions (recommended condition B1-1(1)(a)) to set clearing limits and counterbalanced by offsets (recommended condition B5) to ensure the environmental outcome is likely to be consistent with the EPA objective for this factor.</p> <p><u>Conservation significant flora</u></p> <p>The P3 flora species are known from 29 or more records outside the development envelope including in BFS 125 and Jandakot Regional Park. The EPA notes that these flora species have a regional distribution within the SCP and are not confined to the CCW (UFI: 15423) or supporting habitats present in BFS 125. The proposed clearing of seven individuals of <i>Jacksonia gracillima</i> and three individuals of <i>Styphelia filifolia</i>, which do not represent a range extension, is not expected to significantly impact on the local or regional extents, or conservation status of these species.</p> <p>The EPA advises that the residual impact to priority flora be subject to implementation condition A1-1 (limitation extent). No significant residual impact to flora is present. The EPA considers that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.</p> <p><u>Fragmentation</u></p> <p>In assessing the impacts to BF, the EPA has had consideration for State Planning Policy (SPP) 2.8 including the general presumption against clearing and that all reasonable steps should be taken to</p>
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<ul style="list-style-type: none"> ○ compliance with revegetation completion criteria and contingency measures (Table 6 and 8 in RPDMMMP) <p>Consultation</p> <p>The key matters raised during the consultation period include:</p> <ul style="list-style-type: none"> • permanent fragmentation of flora and vegetation within an ecological linkage • adequacy of surveys in recording all present flora species (based on community flora surveys) • impacts to environmental values from a holistic (regional) viewpoint • suitability of proposed offsets and whether they counter-balance to residual impact. 	<p>avoid and minimise impacts to bushland. There is also acknowledgment that some proposals may result in unavoidable adverse impacts on bushland. The proposal will clear 1.5 ha of vegetation and fragment BFS 125. The EPA has contextually considered that Holmes Street also fragments the BFS. The EPA considers the loss of this vegetation would not compromise the ecological integrity, or the environmental values associated with BFS 125. The EPA considers the vegetation proposed to be cleared is of high conservation significance and that the significant residual impact can be regulated through reasonable conditions to require limits on the authorised extent of direct impacts (condition A1-1) and be counter-balanced by offsets (condition B5).</p> <p><u>Indirect impacts to flora and vegetation</u></p> <p><i>Dieback and weeds</i></p> <p>A Phytophthora (dieback) assessment identifies that a significant portion of the development envelope is infested. The eastern portion of the development envelope with higher topography associated with BABmAlf vegetation type is uninfested. The EPA notes that dieback is present outside the development envelope (in BFS 125). The EPA also notes the dieback mitigation (hygiene) measures and weed control measures (CEMP and RPDMMMP) and considers that the proposal is not likely to result in a substantial increase in the risk of weed or dieback spread to uninfested areas of the development envelope.</p> <p><i>Hydrological regimes</i></p> <p>There is no dewatering proposed as part of the proposal elements, however the development envelope intersects a CCW. The proponent notes that the proposal has been designed to ensure road culverts maintain existing water flow paths and regime of the CCW and that the proposed culverts will maintain pre-development conditions in the CCW. However, there are predicted changes in the modelled average and maximum water levels in the CCW (Urbaqua 2022). For further discussion refer to section 2.3 inland waters.</p> <p>Within the development envelope, Melaleuca thickets (vegetation types- MeP Ls and Mep Rc) are subject to seasonal inundation (Figure 7 in Urbaqua 2022). Post-development modelling indicates there will be a slight increase in winter inundation for sections of the CCW containing Melaleuca thickets (Figure 8 in Urbaqua 2022) which are currently subject to inundation. The habitat required for this flora species include seasonally or permanent swampy/wet flats/swamps. The EPA considers that the proposal is not likely to result in a substantial indirect impact to wetland vegetation (through changes to hydrological regimes as they are predicted (through modelling) to reflect the pre-development regime) and has noted the monitoring of water levels and vegetation health</p>
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	<p>requirements for vegetation within 50m of the development envelope as specified within the RPD MMP.</p> <p>The EPA advises the potential indirect impacts on wetland vegetation can be regulated through reasonable conditions (conditions B1-1(2) and B1-2) and are likely to be consistent with its factor objective for flora and vegetation to maintain hydrological regimes so that the environmental values are protected.</p> <p><u>Cumulative impact assessment</u></p> <p>The EPA has considered the existing and reasonably foreseeable cumulative impacts to conservation significant flora and vegetation values from developments occurring in the vicinity of the proposal. The EPA's cumulative impact assessment has considered the cumulative effects from the range of threats and pressures in the area of the proposal and whether the environment affected by the proposal has significant value due to other successive, incremental and interactive cumulative impacts in the assessment area.</p> <p>The proponent has provided a generic cumulative impact assessment for vegetation habitat being impacted by recent and foreseeable transport infrastructure proposals in proximity to the proposal and has estimated that up to 31 ha of Banksia woodland and approximately 17 ha of vegetation associated with CCWs are cumulatively affected from developments (ESD Table 25,360 Environmental 2023).</p> <p>The EPA acknowledges that the proposal will have the effect of reducing the known local and regional extent of FCT23 and considers that cumulative impacts to the regional extent of these values remains small relative to their known extents but is still an incremental loss in the cumulative context. The EPA has also considered flora and vegetation values (occurrence of FCT 23a) are present within nearby BFS and the Jandakot Regional Park.</p> <p><u>Offset</u></p> <p>Refer to section 4.0 for further discussion.</p> <p>Recommended conditions to ensure consistency of environmental outcome with EPA objectives</p> <p>Condition A1</p> <ul style="list-style-type: none"> • limitation on extent
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	<p>Condition B1</p> <ul style="list-style-type: none">• limit on disturbance of environmental values• no adverse impacts to native vegetation within 50m outside of the development envelope <p>Condition B4</p> <ul style="list-style-type: none">• revision and implementation of RPDMMMP <p>Condition B5</p> <ul style="list-style-type: none">• environmental offsets• prepare and submit an Offset Monitoring and Performance Report
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2.2 Terrestrial fauna

The EPA environmental objective for terrestrial fauna is *to protect terrestrial fauna so that biological diversity and ecological integrity are maintained* (EPA 2016b).

The EPA advises that the proponent submitted the following investigations and surveys, which informed the assessment of the potential impacts to terrestrial fauna:

- Garden Street Extension Ecological Survey (Biologic 2023) (Appendix B of RSD)
- Short Range Endemic and significant invertebrate desktop assessment for the Garden Street Extension Project (Phoenix Environmental Sciences 2023) (Appendix C of RSD)
- Section 38 Environmental Protection Act Referral Supporting Document: Garden Street Extension, Southern River (360 Environmental 2023)
- Response to flora and vegetation submissions (Biologic 2024) (Appendix C of the RtS)
- Ecological Assessment: Webster Park and Matison Street Reserves, Southern River and Lot 1490 Bullfinch Street, Huntingdale (Emerge Associates 2024) (Appendix D of the RtS)
- Offset Strategy: Garden Street Extension, Southern River (360 Environmental 2023a) (Appendix P of RSD).

The EPA notes that the proponent's terrestrial fauna survey was mostly consistent with the EPA's *Technical Guidance – Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020). The short range endemic invertebrate fauna desktop study (Phoenix 2022), and the basic invertebrate fauna survey (Natural Area 2016), were inconsistent with the EPA's *Technical Guidance – Sampling of short range endemic invertebrate fauna* (EPA 2016d). Notwithstanding, the EPA determined it could proceed with its assessment based on the additional information and advice provided by technical agencies (DBCA and Department of Water and Environmental Regulation (DWER)), and additional information provided in the RtS (City of Gosnells 2024). The EPA has also considered the recovery plans for black cockatoo species (DEC 2008; DPAW 2013).

The EPA has considered the likely residual impacts of the proposal on terrestrial fauna environmental values in assessing the proposal.

Table 3: Assessment of impacts to terrestrial fauna values, recommended regulation and environmental outcomes

Key environmental values and context	
<p>Two broad fauna habitat types (2.04 ha) are mapped within the development envelope, including Banksia woodland (1.59 ha [59.86%]) and Melaleuca thicket (0.45 ha [17.15%]) (Biologic 2023; 360 Environmental 2023). Although Banksia woodland provides suitable habitat for the Carnaby's cockatoo and Forest red-tailed black cockatoo, the RSD and ecological survey (Biologic 2023) notes that it is unlikely for the Baudin's cockatoo (<i>Zanda baudinii</i>) to occur within the development envelope.</p> <p>The development envelope contains 1.59 ha of very high-quality foraging habitat and 0.45 ha of low quality foraging habitat for the Carnaby's cockatoo (<i>Zanda latirostris</i>). The EPA notes that this habitat type is also considered to be low quality foraging habitat for the Forest red-tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>). There are no recorded black cockatoo breeding trees within the development envelope. There is one potential black cockatoo breeding tree (with two unsuitable hollows) located within the MRS 'Other Regional Roads' reservation, which is located outside the development envelope. There are no known black cockatoo roosting sites within or adjacent to the development envelope (360 Environmental 2023; Biologic 2023).</p> <p>There is suitable habitat in BFS 125 for the Perth slider (<i>Lerista lineata</i>) (DBCA P3) and black-striped snake (<i>Neelans calonotos</i>) (DBCA P3). The development envelope contains 0.95 ha of potential Short Range Endemic (SRE) habitat which comprises of Banksia woodland in 'Excellent' condition. The Melaleuca thicket may provide suitable habitat for two threatened species of bees: <i>Leioproctus douglasiellus</i> and <i>Neopasiphae simplicior</i> (both <i>En-BC Act</i> and <i>CR-EPBC Act</i>).</p> <p>The two fauna habitats noted above, particularly the Melaleuca thicket, provide highly suitable habitat for the quenda (<i>Isoodon obesulus</i>) (DBCA P4). The quenda has been recorded within and outside the development envelope (Biologic 2023).</p>	
Impacts from the proposal	Assessment finding, environmental outcome and recommended conditions
<p>Potential direct impacts</p> <p>Potential impacts to terrestrial fauna from:</p> <ul style="list-style-type: none"> clearing of up to: <ul style="list-style-type: none"> 1.59 ha of very high-quality foraging habitat for black cockatoo 0.45 ha of low-quality foraging habitat for black cockatoo 2.04 ha quenda habitat 	<p>Assessment finding and environmental outcomes:</p> <p><u>Black cockatoo</u></p> <p>The development envelope provides 2.04 ha of black cockatoo foraging habitat. Evidence of Carnaby's cockatoo foraging has been recorded within and outside the development envelope (Figure 5.4 in Biologic 2023). There are no black cockatoo breeding trees within the development envelope (360 Environmental 2023). Biologic (2023) reports that the development envelope is within a buffered (6 km) unconfirmed breeding area for Carnaby's cockatoo, 5 km from known Forest red-tailed black cockatoo</p>

<ul style="list-style-type: none"> ○ 0.95 ha of potential SRE habitat ○ 0.45 ha of Melaleuca thicket providing potentially suitable habitat for two threatened bee species • fragmentation and loss of ecological connectivity of fauna habitat. <p>Potential indirect impacts include:</p> <ul style="list-style-type: none"> • increased dust, noise, and light emissions from development of the site and future use of the road • increased risk of vehicular strikes from increased traffic movement • increased feral animal activity within the fragmented fauna habitats • decline in the overall quality of retained habitat from altered hydrology as a result of earthworks and levelling. <p>Avoidance and minimisation measures (including regulation by other DMAs)</p> <p>The proponent has proposed minimisation measures, including:</p> <ul style="list-style-type: none"> • installation of directional LED lighting to minimise light spill • installation of fauna fencing along the entire road alignment that interfaces with bushland areas • avoid further damage to soil structure, vegetation structure and cover providing potential SRE habitat • installation of three culvert underpasses to allow fauna to safely traverse underneath the road. 	<p>breeding habitat in Kenwick and 7 km north-east of a Forest red-tailed black cockatoo breeding site. The EPA notes that foraging habitat becomes more important for Carnaby's cockatoos when it is located within 12 km of known nesting locations, as it benefits and supports breeding efforts (DPAW 2013; EPA 2019).</p> <p>While there are no recorded roost sites in the development envelope, the EPA notes there are DBCA recorded roosting sites in proximity to the east (950 m (GOSGOSR004 for Forest red-tailed black cockatoo) and 2 km southwest (GOSCVR002 for white tailed cockatoos)) of the development envelope. The last recorded activity at these roost sites were in 2018 and 2016, respectively. Refer to Figure 5.2 of Biologic 2023.</p> <p>The EPA notes that the proposal is located within an urbanised environment and is in close vicinity to other black cockatoo foraging areas such as BFS 125, Yangtze Avenue Reserve (< 1 km west) and Forrestdale Lake Nature Reserve (Biologic 2023). The EPA has considered that clearing of 2.04 ha of black cockatoo foraging habitat represents approximately 0.034% of the known (estimated) foraging habitat within 5 km of the development envelope (360 Environmental 2023).</p> <p>While the proposal would result in a small overall impact to the total mapped extent of foraging habitat, the EPA has assessed the impact to black cockatoo as a significant residual impact given the threat of ongoing clearing of foraging habitat from development on the SCP, particularly in the Perth Metropolitan Region. The issues raised during the public consultation period has been further considered through the EPA's assessment of the proposed offsets.</p> <p><u>Quenda</u></p> <p>The proposal will clear up to 2.04 ha of quenda habitat. The EPA notes there is suitable habitat outside the development envelope within BFS 125 and surrounds (Figure 5 of Biologic 2023). The EPA also notes that habitat connectivity is already reduced within the predominantly urban environment. The EPA acknowledges that the proponent has designed one of the culverts to cater for the quenda and that feral animal control particularly near culverts will continue within the development envelope. The EPA considers potential impacts are manageable in accordance with the proponent's mitigation measures (CEMP and RPDMMMP) but should also be subject to implementation conditions (condition A1-1, extent of proposal). Therefore, the environmental outcome would be consistent with EPA's objective for terrestrial fauna.</p> <p><u>Other fauna</u></p>
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<p>Consultation</p> <p>Key matters relevant to terrestrial fauna raised during the consultation period included concerns about:</p> <ul style="list-style-type: none"> clearing of threatened fauna habitat and cumulative impact to black cockatoo foraging habitat fragmentation of fauna habitat, resulting in a loss of ecological connectivity fauna movement between the segregated patches of BFS 125 suitability of drainage culverts as fauna underpasses potential impact to habitats which may support threatened bee species adequacy of the proposed offset sites. 	<p>Whilst surveys completed by Natural Area (2016) did not record Perth slider (<i>Lerista lineata</i>) (DBCA P3) and black-striped snake (<i>Neelans calonotos</i>) (DBCA P3) within the development envelope and surrounds, these species may occur due to the presence of suitable habitat (Biologic 2023).</p> <p><u>SRE</u></p> <p>The EPA notes that fauna surveys did not detect any significant bee species when known forage species were in flower and also that the surveys may have not been conducted in the optimal survey period for native bees. The EPA has considered that the habitat is considered low potential SRE habitat due to the location of recorded <i>Goodenia pulchella</i> in the Melaleuca thickets being inundated during wetter months (360 Environmental 2023). The EPA has also considered that there is an estimated 66 ha of potential suitable habitat in BFS 125, and that the development envelope accounts for <1% of potential SRE habitat within BFS 125 (Figure 9 in Phoenix 2023).</p> <p><u>Fauna mortality and fragmentation of ecological linkages</u></p> <p>The EPA considers that there is risk of fauna mortality/injury to ground dwelling fauna from the construction and operation of the proposal. The EPA also considers that the proposal would fragment fauna habitat, including known ecological linkages (Figure 5 of RSD). To minimise these impacts the proponent has committed to management measures (section 6.4.4 of RSD and CEMP), which includes but not limited to pre-clearing trapping and relocation, fauna spotter present during clearing and installation of fauna fencing along the entire road alignment that interfaces with bushland areas. The proponent proposes to revegetate areas of the development envelope with species included in Appendix C of the RPDMMMP. The EPA recommends that there is no planting of suitable foraging habitat for black cockatoos within 10 m of the road (MRS Other Regional Roads reservation), noting it increases the risk of vehicle strike.</p> <p>The proposal will fragment areas of remnant vegetation in 'Good' or better condition that provide corridors for fauna movement. To minimise impacts to ecological linkages and vehicle strike risks to ground dwelling fauna during operation, the proponent has committed to installing three culverts to facilitate terrestrial fauna movement underneath the road and between areas of terrestrial habitat. The proposed location of one culvert within a permanently dry area and the other two will maintain hydrological connectivity and ecological functioning during wetter periods. The RPDMMMP proposed a five-year monitoring program of fauna movement at all culverts with findings reported within an Annual Environmental Report (Table 13 in RPDMMMP). Subject to recommended condition B4-1, the environmental outcome is likely to be consistent with the EPA objective for this factor.</p>
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	<p><u>Cumulative impacts</u></p> <p>The EPA has considered the existing and reasonably foreseeable cumulative impacts to terrestrial fauna from developments occurring in the vicinity of the proposal. The EPA's cumulative impact assessment has considered the cumulative effects from the range of threats and pressures in the area of the proposal and whether the environment affected by the proposal has significant value due to other successive, incremental and interactive cumulative impacts in the assessment area.</p> <p>The proponent has provided a generic cumulative impact assessment for black cockatoo habitat being impacted by recent and foreseeable proposals in proximity to the proposal. The proponent identified that the following cumulative losses include:</p> <ul style="list-style-type: none"> • up to 150.77 ha of Carnaby's cockatoo foraging habitat • up to 178.59 ha Forest red-tailed black cockatoo foraging habitat • up to 124 ha of Baudin's cockatoo foraging habitat (ESD Table 36; 360 Environmental 2023). <p>The EPA notes that approved proposals have required offsets to counterbalance any significant residual impacts to black cockatoos. However, considering the cumulative effects and past environmental impacts on black cockatoos in the constrained Perth Metropolitan Region, the EPA highlights the importance and increasing need for offsets that include habitat restoration and rehabilitation of degraded areas close to the area of impact (EPA 2024). This would provide positive regional environmental outcomes that distant acquisition offset sites would not otherwise deliver for locally impacted flocks of black cockatoos (EPA 2019).</p> <p>While cumulative impacts to black cockatoo habitat impacted by this proposal are not at a level that would warrant a decision to allow no clearing of this value for this proposal, the EPA considers that the incremental loss of foraging habitat across these species' ranges must be appropriately managed. The EPA has therefore recommended conditions to set clearing limits to foraging habitat and to require offsets that are adequate and include requirements for restoration of habitat to counterbalance impacts. These recommended conditions would ensure that the environmental outcome is likely to be consistent with the EPA objective for this factor.</p> <p><u>Offsets</u></p> <p>Refer to Section 4.0 for further discussion.</p> <p>Recommended conditions to ensure consistency of environmental outcome with EPA objectives.</p>
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	<p>Condition A1</p> <ul style="list-style-type: none">• limitation on extent. <p>Condition B2</p> <ul style="list-style-type: none">• limit on disturbance of environmental values.• disturb no more than 1.59 ha of very high-quality foraging habitat for Carnaby's cockatoo• disturb no more than 0.45 ha of low-quality foraging habitat for Carnaby's cockatoo. <p>Condition B4</p> <ul style="list-style-type: none">• revision and implementation of the RPDMMMP• no planting of known foraging species for black cockatoos within ten (10) metres of the MRS Other Regional Road Reserve. <p>Condition B5</p> <ul style="list-style-type: none">• environmental offsets• prepare and submit an Offset Monitoring and Performance Report.
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2.3 Inland waters

The EPA environmental objective for inland waters is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained* (EPA 2016).

The EPA advises that the proponent submitted the following investigations and surveys, which informed the assessment of the potential impacts to inland waters:

- Hydrology Study and Impact Assessment (Urbaqua 2022) (Appendix D in RSD)
- Groundwater Monitoring Dec 2017 – Nov 2018 (Cardno 2018) (Appendix E of RSD)
- Preliminary ASS and groundwater investigation report (Douglas Partners 2018) (Appendix L of RSD)
- Final Engineering Plans (Appendix J of RSD)
- Urbaqua (2024) Response to submissions (Appendix B of RtS).

The EPA considers that the proponent has completed the relevant studies to appropriately inform the assessment of the potential impacts from the proposal to above environmental factor. The EPA notes the proponent also utilised the DWER water information sites dataset and Department of Biodiversity, Conservation and Attractions (DBCA) geomorphic wetlands database. The EPA has also considered the DBCA geomorphic wetlands database and methodology for the evaluation of wetlands on the Swan Coastal Plain (DBCA 2017) in its assessment of inland water values.

Table 4: Assessment of impacts to inland water values, recommended regulation and environmental outcomes

Key environmental values and context
<p>The development envelope intersects 0.58ha of conservation category wetland (CCW) identified as a sumpland (UFI 15423; 22.61ha) within the Bennett Brook consanguineous suite (Figure 4 of RSD) (DBCA 2017). Melaleuca thickets (vegetation types- MeP Ls and Mep Rc) are mostly associated with the CCW in the development envelope and surrounds (refer to section 2.1 flora and vegetation).</p> <p>The development envelope intersects two distinct sections of the CCW which experience seasonal waterlogging (inundation up to 300mm). Most of the water received is from direct rainfall, surface water runoff from the surrounding urban drainage network and minor contribution from shallow groundwater (Figure 6 and 7 in Urbaqua 2022). The northern section 1 is the deepest section of the wetland, which collects most of the runoff from upstream catchments. Drainage from upstream local drainage systems and catchment areas are directed to the wetland through piped drainage systems. The surface water catchment area of the development envelope is directly recharged by the surrounding residential areas which will not change post-development of the proposal.</p> <p>The direction of groundwater flow at the site is generally from west to east, albeit with a groundwater gradient that is quite flat angled to the northeast. Groundwater in proximity to the development envelope is typically shallow at the centre (0.5m depth) increasing in depth to the south (5m depth).</p> <p>The soil types within and adjacent to the development envelope include peaty sand to sand. Acid sulphate soil (ASS) risk mapping indicates that majority of the development envelope is in an area mapped as 'moderate to low risk of acid sulphate soils occurring within 3 m of the natural soil surface'.</p>

Impacts from the proposal	Assessment finding, environmental outcomes and recommended conditions
<p>Potential Impacts</p> <p>Potential impacts to inland waters from:</p> <ul style="list-style-type: none"> clearing of 0.58 ha of the CCW wetland clearing of 0.45 ha of wetland vegetation associated with the CCW permanent alteration of the local hydrological regime, including surface water drainage and groundwater decreased available wetland storage volume and increased impervious drainage catchment. <p>Potential indirect impacts include:</p> <ul style="list-style-type: none"> increased erosion and sedimentation (i.e. from the removal of deep-rooted native vegetation) contamination of surface and/or groundwater from pre and post construction activities. <p>Avoidance and minimisation measures</p> <ul style="list-style-type: none"> Construction Environmental Management Plan (CEMP) (360 Environmental 2023a) Re-vegetation Post-Development Management and Monitoring Plan (RPDMMP) (360 Environmental 2023b). Refer to section 2.1- flora and vegetation three culvert underpasses to maintain surface water flows and hydrological connectivity 	<p>Assessment finding and environmental outcomes</p> <p><u>Wetland management category</u></p> <p>The EPA notes that the wetland is a sumpland identified as a highest management category CCW in the Geomorphic Wetlands of the Swan Coastal Plain dataset. DBCA has advised that the sumpland system is important in terms of representative values, as it is identified within the Bennett Brook consanguineous suite (natural wetland group) – only 19.4% of the sumpland area within the Bennett Brook suite is evaluated as conservation category. The majority of the sumpland is located within a regional ecological linkage and is contiguous with intact areas of dryland vegetation. The EPA notes that the proposal will directly impact 2.5% (0.58ha) of the DBCA mapped CCW (UFI 15423) (22.61ha) and cause fragmentation of the wetland area.</p> <p>The EPA notes that revegetation of road batters (0.7 ha) within the CCW will be completed in accordance with the RPDMMMP. However, the EPA has assessed the permanent loss (0.58ha), and cumulative impact occurring to CCWs in the Perth Metropolitan Region, and considers that the proposed clearing of this wetland is a significant residual impact.</p> <p>The EPA advises the potential impacts to the wetland and maintaining the CCW management status can be regulated through reasonable conditions including recommended conditions A1-1 (set clearing limits), condition B3-1 (maintaining hydrological regimes), condition B4 (monitoring and contingency measures) and counter-balanced through condition B5 (offsets) including the restoration of a Resource Enhancement Wetland to CCW status in accordance with DBCA (2017) wetland category classification. Subject to the above recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for inland waters.</p> <p><u>Hydrological interactions and storage capacity</u></p> <p>The EPA has considered that the CCW experiences seasonal waterlogging and inundation. Monitoring and water balance modelling indicates that most of the wetland surface inundation originates as direct rainfall and surface water runoff with a small contribution from shallow groundwater (Urbaqua 2022).</p>

<ul style="list-style-type: none"> • installation of gross pollutant traps (GPT) and on-site soaking devices to capture sediment and other pollutants during first flush events (first 15 mm of rainfall) prior to discharge to the wetland • at the proposed GPT locations, an 'ecoceptor' will be installed and designed to intercept 93% of hydrocarbons and 95% of gross pollutants from first flush events (Appendix F of RSD) • each drainage pit includes a 300 mm sediment trap which will trap sediment and sediment-bound nutrients and other contaminants • the 'ecoceptor' and drainage pits will be maintained by the City's operation team to ensure operational longevity and effectiveness at treating the runoff • the road will be constructed with kerbing to direct water to a piped collection system so that surface runoff will not directly overtop into the wetland in smaller events • selected nutrient retentive native vegetation species will be planted on road batters to provide water quality treatment, capture potential pollutants, and control erosion during rainfall events • no chemical or fuel will be stored within the development envelope or the surrounding bushland areas • no re-fueling, no generators or on-site chemical storage are required for the construction • no dewatering. 	<p>The EPA notes that monitoring results further suggest that there is a low level of groundwater inflow to the wetland, as groundwater levels throughout most of the wetland extent are always below the surface. The EPA supports that the water balance assumes an interaction between the wetland and the underlying groundwater aquifer to provide for groundwater contribution to the wetland when the groundwater level is above the surface, and surface water loss to the groundwater system when the groundwater level is low (Urbaqua 2022). The EPA has noted that this functionality will continue post-development as determined through the water balance modelling.</p> <p>The EPA has considered that the proposal will bisect (fragment) the wetland into two sections; Section 1 and Section 2, each comprising of two further sub sections (Sections 1a and 1b, and Section 2a and 2b respectively). While the predicted change in the average and maximum top water level is more significant (up to 3 cm and 17 cm respectively) (Urbaqua 2022), the EPA considers that, based on the low frequency of such events and minimal difference between the modelled existing and post development inundation water levels and spatial extent, the potential impacts to the ecological systems in the development envelope and within 50m of the development envelope present a low risk.</p> <p>While the proposal will fragment the wetland area, the EPA supports that engineering designs i.e. culvert configurations, were modelled to allow for optimisation and to ensure the existing hydrology of the wetland and water levels between these respective subsections (1a, 1b, 2a and 2b) is maintained post-development.</p> <p>Regarding potential impacts to water hydrology from compaction impacts, the EPA notes that the proposal is in an area where the groundwater gradient is relatively flat (and angled to the north-east). This indicates that groundwater in the area flows sluggishly towards Southern River and suggests that there is a low risk of compaction beneath the road having a significant influence on groundwater throughflow beyond the development envelope.</p> <p>The EPA further notes that the proposed road design specifies no less than 600 mm clearance from maximum groundwater level to the design surface, which is greater than the depth of compaction required for road construction. The EPA considers the proponent has appropriately avoided impacts associated with compaction.</p> <p>Subject to recommended conditions B3-1 and B3-2, the environmental outcome is likely to be consistent with the EPA objective for inland waters.</p>
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<p>Consultation</p> <p>The key matters raised during the consultation period include:</p> <ul style="list-style-type: none"> • fragmentation of the CCW and loss of wetland vegetation • impacts to wetland water quality and pollution. 	<p><u>Evapotranspiration</u></p> <p>The EPA notes that a potential impact of the proposal is a reduction in evapotranspiration due to clearing and development of the wetland. The RSD initially stated that following construction of the road, it is estimated that evapotranspiration from the wetland will be reduced by approximately 4,968 kilolitres (kL) (3%) and that revegetation of the road batters can be expected to reduce this to approximately 3,894 kL (2%). The City of Gosnells (2024) RtS, further stated that evapotranspiration from vegetated road batters have been estimated by applying the same vegetation factors as the existing vegetation, assuming that native species consistent with cleared vegetation will be planted (Urbaqua 2024 in Appendix B of RtS). The total evapotranspiration estimated for road batters is less than 1% of the total post-development evapotranspiration from the wetland and is unlikely to significantly contribute to the post-development water balance of the wetland. The EPA concurs that the revegetation of road batters is important to provide stabilisation of the bank batters to prevent erosion, and to assist with management of stormwater overflows in larger flood events (Urbaqua 2024 in Appendix B of RtS).</p> <p><u>Water quality mitigation</u></p> <p>The EPA notes that groundwater quality sampling in and adjacent to the development envelope indicates that the water is currently of relatively poor quality with exceedances of the Australia and New Zealand Water Quality Guidelines for Fresh and Marine Water Quality 2018 levels of nutrients, metals and hydrocarbons (Urbaqua 2022).</p> <p>The EPA also notes the primary pollutants of concern are hydrocarbons and metals from road runoff and that sediment trapping drainage pits ('Ecoceptor') intercepts 93% of hydrocarbons and 95% of gross pollutants from first flush events (360 Environmental 2023). DWER's Decision Process for stormwater management in WA specifies onsite management of the runoff generated by the first 15 mm of rainfall in acknowledgement that most of these pollutants are mobilised by first flush events (City of Gosnells 2024).</p> <p>The EPA supports the proponent's proposed mitigation of water quality impacts and notes that the proponent advises that these sediment trapping drainage pits are currently used successfully throughout the City's drainage system.</p> <p>The EPA recommends that the potential impact to surface and groundwater quality from hydrocarbon spills should be regulated through recommended conditions B3-1 (environmental</p>
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	<p>outcome), B3-3(2) and B4-1 (RPDMMP). Subject to these recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for this factor.</p> <p><u>Acid sulphate soils (ASS)</u></p> <p>The EPA notes concerns that the removal of deep-rooted vegetation may alter groundwater levels locally and mobilise ASS, and notes ASS were identified at BH04 (at 0.3m), BH06 (at 2.5m) and BH10 (at 5.8m) (Figure 6 in Appendix F of RSD). The EPA has considered that the anticipated maximum extent of the proposed excavations in the vicinity of these locations are not expected to intersect the silty sand profiles comprising ASS and that dewatering is not proposed. While the EPA notes that management of ASS is not likely to be required (Douglas Partners (2018), the EPA supports the proponent's proposed use of 'ag-lime' as a construction base to neutralise ASS in the chance that exposure occurs (360 Environmental 2023).</p> <p>The EPA considers, as noted in the RSD, surface inundation is predominantly driven by surface water inflows as groundwater is rarely above ground. Therefore, this change is considered unlikely to significantly alter local groundwater levels in the CCW, or substantially change top water levels or the inundation extent in the wetland (Urbaqua 2022). The EPA further considers that as any resulting change in water levels is likely to be small, it is also unlikely to result in mobilisation of ASS.</p> <p><u>Dewatering</u></p> <p>The EPA notes and supports that no dewatering will be required for the construction of the proposal. Construction will occur in summer when groundwater levels are at their lowest and 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. Subject to recommended condition B3-3(1), the environmental outcome is likely to be consistent with the EPA objective for this factor.</p> <p><u>Post development monitoring</u></p> <p>The EPA notes the concerns raised regarding post development water monitoring (City of Gosnells 2023; RtS). The EPA notes and supports that the proponent has committed to addressing this through additional monitoring beyond the initial proposed two-year program (in the RSD), as follows:</p>
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	<ul style="list-style-type: none"> • two years of groundwater monitoring with loggers supported by quarterly manual groundwater level readings and quarterly groundwater and surface water quality sampling, including hydrocarbons and metals for assessment against predevelopment baseline data • after two years, if groundwater levels are consistent with surrounding regional groundwater levels and water quality results are consistently below trigger values, the groundwater loggers will be removed, and the program will continue with quarterly groundwater levels and groundwater and surface water quality for a further three years (five years total groundwater and surface water monitoring to match the monitoring period for vegetation health) • if threshold criteria for groundwater levels are exceeded, then logger monitoring will continue for three more years • extension of the monitoring program beyond five years will be considered if threshold criteria are exceeded and contingency actions are needed. <p>The EPA has recommended the RPDMMMP be revised to include the revised post development monitoring program to reflect the RtS (City of Gosnells 2024) and has recommended condition B4-1(1) and C4-2.</p> <p><u>Cumulative impacts</u></p> <p>The EPA considered the cumulative effects from a range of pressures on CCWs including Tonkin Highway Interchange, Byford Rail Extension, Maida Vale and Wattle Grove South MRS Scheme Amendments. The EPA notes that the proposal will have a cumulative impact on CCW (sumpland) Bennett Brook consanguineous suite in the Perth Metropolitan Region and in the City of Gosnells (local context).</p> <p>The EPA has also considered other CCW (sumpland type) which includes Bennett Brook Consanguineous suite and Southern River Vegetation Complex (similar inland water values) present within BFS 125, 262, 342, 345 and 413 and the Jandakot Regional Park. In terms of land tenure of the BFS above the EPA notes that they comprise of freehold lots (WAPC and Individuals) and crown reserves (DBCA) which the latter provides a level of tenure security of the CCWs in the BFS.</p> <p>The EPA considers that the impacts of the proposal, in the context of the significance of the environmental values at risk, can be appropriately managed to provide for an environmental outcome that is consistent with the EPA's objective for inland waters.</p> <p><u>Offsets</u></p>
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	<p>Refer to section 4.0 for further discussion.</p> <p>Recommended conditions to ensure consistency of environmental outcome with EPA objective</p> <p>Condition A1</p> <ul style="list-style-type: none">• limitation on extent <p>Condition B3</p> <ul style="list-style-type: none">• limit on disturbance of environmental values• no dewatering• maintains the hydrological regime, water quality, ecological integrity, or ecological function of the CCW• no adverse impacts to water dependent ecological communities within 50 m outside of the development envelope <p>Condition B4</p> <ul style="list-style-type: none">• revise RPDMMMP• undertake post development surface and groundwater monitoring <p>Condition B5</p> <ul style="list-style-type: none">• environmental offsets• prepare and submit an Offset Monitoring and Performance Report.
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3 Holistic Assessment

While the EPA assessed the impacts of the proposal against the key environmental factors and environmental values individually in the key factor assessments above, given the link between flora and vegetation, terrestrial fauna, and inland waters, the EPA also considered connections and interactions between them to inform a holistic view of impacts to the whole environment.

Flora and vegetation-Terrestrial fauna -Inland waters

There is a high-level of connectivity between the environmental factors of flora and vegetation, terrestrial fauna, and inland waters. The conservation significant flora and vegetation provides foraging habitat for the significant fauna (quenda and black cockatoos) occurring within the proposal area. Impacts to flora and vegetation also has the potential to impact surface water quality. Minimising the direct and indirect impacts to flora and vegetation will also minimise impacts to conservation significant fauna habitat and inland waters.

The EPA notes that implementation of the proposal will result in the permanent fragmentation of the CCW and BFS 125. While the proposal will fragment the wetland area, the EPA acknowledges that engineering designs i.e. culvert configurations to allow for optimisation and to ensure the existing hydrology of the wetland and water levels between these respective subsections are maintained post-development. The EPA has considered that the maintenance of the hydrological functioning of the wetland will retain values and attributes associated with the conservation management category and is unlikely to have a high risk of indirect impact to flora and vegetation outside the development envelope. The EPA has recommended condition B1-1(2) no adverse impacts to vegetation within 50 m outside the development envelope and condition B3-1(1) maintaining the hydrological regime, ecological integrity and function. The EPA considers that the proponent's proposed mitigation and management measures and monitoring programs (for water quality and vegetation values), the recommended conditions for residual impacts, and provision of offsets to counterbalance the significant residual impacts to flora and vegetation will also mean the inter-related impacts to the health of other factors of the environment, including the values associated with terrestrial fauna and inland waters, will be consistent with the EPA's environmental factor objectives and would not alter conclusions about consistency with the EPA objectives for the above factors.

Conclusion

When the separate environmental factors and values affected by the proposal were considered together in a holistic assessment, the EPA formed the view that the impacts from the proposal would not alter the EPA's views about consistency with the EPA's factor objectives as assessed in Section 2.

4 Offsets

Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual impacts of a proposal.

Consistent with the WA Environmental Offsets Guidelines (Offset Guidelines) (Government of Western Australia 2014), the EPA may consider the application of environmental offsets to a proposal where it determines that the residual impacts of a proposal are significant, after avoidance, minimisation and rehabilitation have been pursued.

In the case of this proposal, the likely significant residual impacts are:

- Clearing of vegetation representative of:
 - 1.58 ha of Banksia woodland (FCT 23a)
 - 1.59ha of high-quality foraging habitat for black cockatoo
 - 0.45 ha of wetland vegetation associated with the CCW.

In this case the EPA considers:

- offsets are appropriate given the scale of the significant residual impacts are not minor on environmental biodiversity values facing increasing pressures (principle 2 of the WA Environmental Offsets Policy (Offsets Policy))
- the proponent has applied avoidance and mitigation measures mainly by refining the road design to less than the allocated MRS 'Other Regional Road' reserve, and revegetation of road batters (Figure 2) (principle 1 of Offsets Policy)
- the proponent's proposed offset package will provide offsets that are enduring and will deliver long term strategic outcomes (principle 6 of Offsets Policy)
- that based on the high degree of certainty of the impact of the proposal to the known environmental values in the disturbance footprint/development envelope, research project offsets are not required.

The proponent has developed an Offset Strategy (Appendix D of RSD) and Offset Plan Framework (Appendix E of RtS) in accordance with the Offsets Policy (Government of WA 2011) and consideration of the WA Environmental Offsets Metric Guideline (including WA offset calculator), which proposes four offset sites (Figure 2). These sites are within the City of Gosnells jurisdiction and include two proposed wetland offsets and two proposed Banksia woodlands and black cockatoo foraging habitat offsets. The offset plan (package) proposes to revegetate 5.13 ha and rehabilitate 7.19 ha across all four offset sites. This includes wetland offset areas (approximately 4.5:1 ratio) and Banksia woodland/black cockatoo offset area (approximately 3:1 ratio) (City of Gosnells 2024). Details for each offset site are summarised below.

Table 5: Proposed offsets

Offset Site	Environmental Values (adapted from Emerge 2024)	Offset Description (adapted from RSD and Appendix E of RtS)
1. Webster Park (1.17ha)	<p><u>Flora and vegetation</u></p> <ul style="list-style-type: none"> 1 x <i>Jacksonia gracillima</i> individual 1.06 ha Banksia woodland (FCT23a) which is representative of the EPBC Act Banksia woodlands of the SCP TEC <p><u>Terrestrial Fauna (black cockatoo)</u></p> <ul style="list-style-type: none"> 1.05 ha of high-quality black cockatoo foraging habitat (Banksia woodland) (Carnaby's and Baudin's cockatoo) no black cockatoo breeding trees no roosting sites 	<p><u>Direct offset: on-ground management</u></p> <ul style="list-style-type: none"> revegetation of up to 0.63 ha (0.52ha consists of 'Good' quality vegetation) over 5 years. increase the condition quality and infill representing Banksia woodland (flora and composition) (Figure 1 of Appendix E of RtS) rubbish and weed control program to achieve weed cover no greater than 10% across the entire site (City of Gosnells 2021) rehabilitate vegetation from 'Completely Degraded' and 'Very Good' condition to 'Good, or better' and 'Excellent' condition revegetate a minimum of 3 plants/m² achieve a minimum of 50% species diversity increase the quality of black cockatoo foraging habitat across the site.
2. Bullfinch Street (1.24 ha)	<p><u>Flora and vegetation</u></p> <ul style="list-style-type: none"> 12 x <i>Jacksonia gracillima</i> individuals 0.08 ha Banksia woodland (FCT23a) 0.23 ha wetland associated vegetation <p><u>Terrestrial Fauna (black cockatoo)</u></p> <ul style="list-style-type: none"> eight potential breeding trees (no hollows) no evidence of roosting trees but has roosting potential 0.37 ha of foraging habitat for the Carnaby's cockatoo 0.31 ha of foraging habitat for the Baudin's cockatoo 0.26 ha of foraging habitat for the Forest red-tailed black cockatoo. <p><u>Inland waters (wetland)</u></p> <ul style="list-style-type: none"> Currently categorized as a Resource Enhancement Wetland (REW), UFI 15783 and Multiple Use Wetland (MUW) UFI 16154. 	<p><u>Direct offset: on-ground management</u></p> <ul style="list-style-type: none"> revegetation of 1.16 ha increase condition of 'Degraded' and 'Completely Degraded' areas to 'Good' or better over 7 years mixture of infill planting representing Banksia woodland, Marri Woodland and Paperbark wetland (Figure 2 of Appendix E of RtS) rubbish and weed control program. rehabilitate vegetation from 'Completely Degraded' and 'Very Good' condition to 'Good, or better' and 'Excellent' condition revegetate a minimum of 3 plants/m² achieve a minimum of 50% species diversity increase the quality of black cockatoo foraging habitat across the site establish habitat connectivity to the adjoining Banksia woodland and Resource Enhancement Wetland (REW) in Lot 1490 and restore to CCW management category status (DBCA 2017).
3. Orange Grove Trotting Track (3.96 ha)	<p><u>Flora and vegetation</u></p> <ul style="list-style-type: none"> 239 x <i>Conospermum undulatum</i> individuals (T) 14x <i>Isopogon autumnalis</i> (P3 individuals) 0.47ha Banksia woodland (FCT20a). <p><u>Terrestrial Fauna (black cockatoo)</u></p>	<p><u>Direct offset: on-ground management</u></p> <ul style="list-style-type: none"> revegetation up to 2.44 ha increase condition of 'Degraded' and 'Completely Degraded' areas to 'Good' or better. Over 7 years. mixture of infill planting representing Banksia woodland, Marri Woodland and Jarrah-sheoak (Figure 3 of Appendix E of RtS) rubbish and weed control program.

Offset Site	Environmental Values (adapted from Emerge 2024)	Offset Description (adapted from RSD and Appendix E of RtS)
	<ul style="list-style-type: none"> a total of 2.76 ha of 'High to Very High' quality and 0.91 ha of 'Low Quality' black cockatoo foraging habitat occurs in this site. 	<ul style="list-style-type: none"> rehabilitate vegetation from 'Completely Degraded' and 'Very Good' condition to 'Good, or better' and 'Excellent' condition revegetate a minimum of 3 plants/m² achieve a minimum of 50% species diversity increase the quality of black cockatoo foraging habitat across the site.
4. Road Reserve adjoining Southern River Business Park (0.82 ha).	<p><u>Flora and vegetation</u></p> <ul style="list-style-type: none"> 11x <i>Jacksonia gracillima</i> individuals 0.19ha Banksia woodland (FCT23a). Likely to be part of a larger EPBC Act Banksia woodlands of the SCP TEC patch. <p><u>Terrestrial Fauna (black cockatoo)</u></p> <ul style="list-style-type: none"> 0.18 ha of foraging habitat for the Carnaby's and Baudin's cockatoos no foraging habitat for the Forest red-tailed black cockatoo was recorded no roosting sites were recorded. <p><u>Inland waters (wetlands)</u></p> <ul style="list-style-type: none"> currently categorised as a Multiple Use Wetland (MUW), UFI 16,154. Two CCWs run directly adjacent to the site, adjoining, and overlapping the western boundary; UFI 7519 and 7517. 	<p><u>Direct offset: on-ground management</u></p> <ul style="list-style-type: none"> revegetation of 0.73 ha increase condition of 'Degraded' and 'Completely Degraded' areas to 'Good' or better. Over 10 years. mixture of infill planting representing Banksia woodland, and Melaleuca woodland (Figure 4 of Appendix E of RtS) enhancement and management of the site through weed control, rubbish removal and revegetation. These works will connect the gap between the Regional Park and the future wetland buffer to be enhanced as part of the Southern River Business Park.

The EPA has considered that:

- offset sites No. 1, 2 and 4 are regionally mapped within the 'Southern River' vegetation complex, with offset site No. 3 mapped within the 'Forrestfield' vegetation complex. These vegetation complexes are extensively cleared (of its pre-European vegetation extent) and is less than the 30% target threshold for biodiversity conservation (Government of Western Australia 2019) and close to the 10% vegetation retention target for the constrained Perth Metropolitan Region
- offset sites are in proximity (ranging from 1.4 km to 9.3 km) to the development envelope (Figure 2)
- offset sites No. 1, 2 and 4 also contain FCT 23a
- offset site No. 3 contains *Banksia attenuata* woodlands over species rich dense shrublands (FCT 20a), which is Endangered under both the BC Act and EPBC Act, and black cockatoo breeding trees of which contain four potential suitable hollows (Biologic 2021)

- while there is no recorded threatened flora in the development envelope, offset site No. 3 supports a population of threatened flora species (*Conospermum undulatum*). This flora species has a limited area of occupancy and area of occurrence (DEC 2009)
- the offset sites are to be vested as public open space reserve with the City (proponent) and assigned a management order for 'Conservation' purpose
- the offset sites are currently freehold land and will be vested and managed by the proponent in perpetuity
- while some of the offset sites have a high perimeter to area ratio and in isolation, without management measures the long-term longevity of maintaining the environmental values at these sites may be considered to be limited. The EPA has considered the sites' contextual location in regards to whether they directly adjoin to BF sites, DBCA regional Parks or management areas, and are part of local and regional ecological linkages
- the proponent will liaise with DPLH (Bush Forever) regarding the potential inclusion of offset areas. The EPA has considered that BFS do not need to follow cadastral boundaries and the conversion of offset site No. 3 to Bush Forever does not require subdivision approval
- the proponent will be liaising with DPLH regarding the offset sites rezoning to 'Parks and Recreation' reservation under the MRS (City of Gosnells 2024).

The EPA has considered the above and is supportive of the restoration and enhancement of existing environmental values at the offset sites. While the offset sites are contextually small scale (from a regional perspective) the environmental offsets consider elements such as restoration, management, like for like on similar values and connectedness to surrounding physical and ecological function values which is consistent with the *EPA (2024) Public Advice: Considering environmental offsets at a regional scale*.

While the outcomes of the offset plan will contribute to the resilience, connectedness and quality of the environmental values at a local scale, the EPA advises that to achieve the objective, targets and completion criteria the scope of works (vegetation and rehabilitation) may exceed the allocated/estimated timeframes in the Offset Plan Framework (Appendix E of RtS) and has recommended condition B5-1 to ensure the environmental outcomes are achieved. The EPA therefore considers that, subject to recommended conditions B5 (Environmental offsets) and Offset Monitoring and Performance Reporting (condition C4-4) the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation, terrestrial fauna and inland waters.

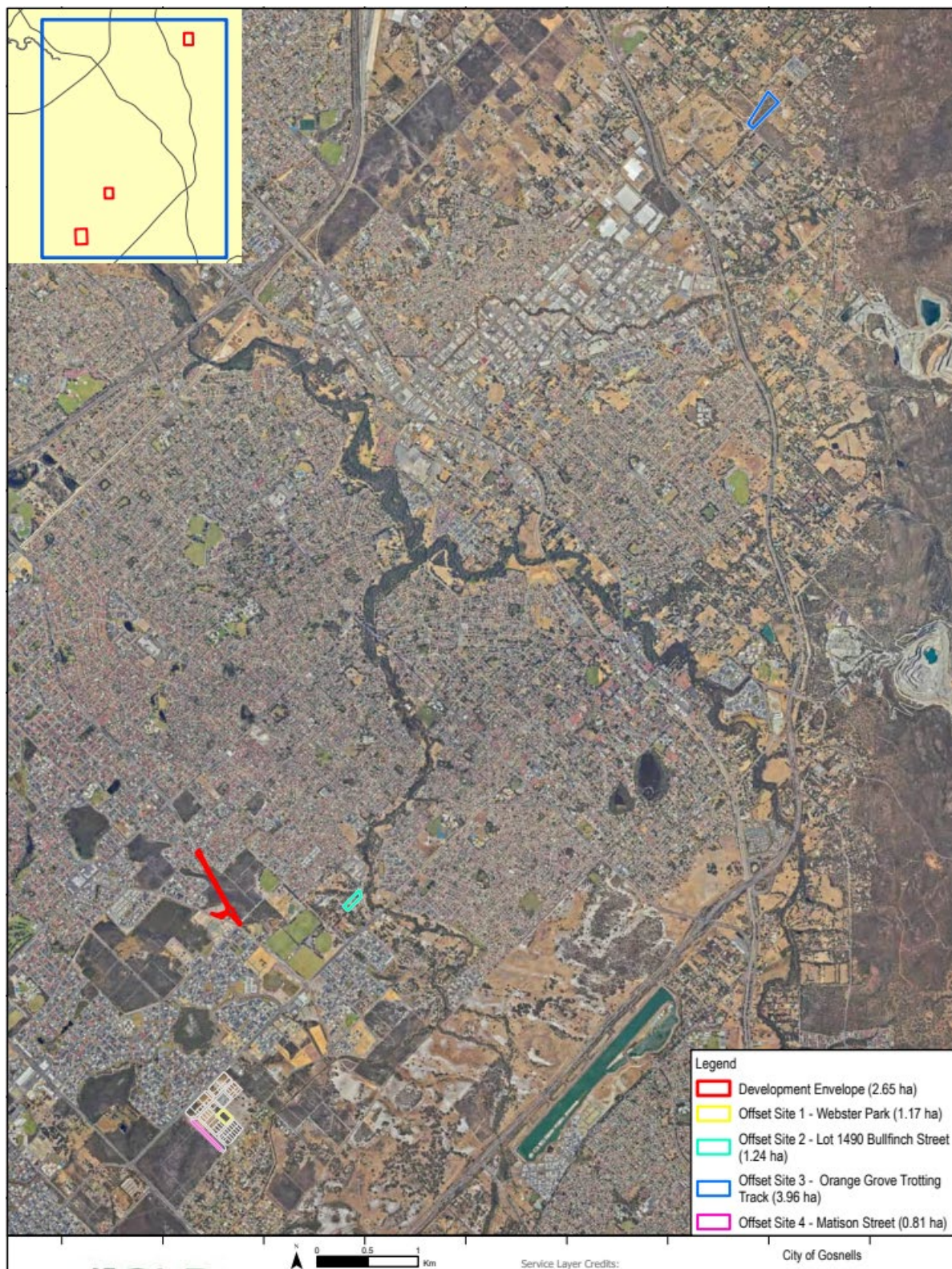


Figure 4: Offset Locations (360 Environmental, 2023c)

5 Recommendations

The EPA has taken the following into account in its assessment of the proposal:

- environmental values likely to be significantly affected by the proposal
- assessment of key environmental factors, separately and holistically (including consideration of cumulative impacts of the proposal where relevant)
- EPA's confidence in the proponent's proposed mitigation measures
- likely environmental outcomes which can be achieved with the imposition of conditions
- consistency of environmental outcomes with the EPA objectives for the key environmental factors
- whether other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment and
- principles of the EP Act.

The EPA recommends that the proposal may be implemented, subject to the conditions recommended in Appendix A.

6 Other advice

The EPA may, if it sees fit, include other information, advice, or recommendations relevant to the environment in its assessment reports, even if that information has not been considered by the EPA in its assessment of a proposal. The EPA provides the following information for consideration by the Minister.

Similar to the EPA's previous advice for several assessments on the Swan Coastal Plain (SCP), there remains opportunities and challenges for environmental protection on the SCP, particularly in relation to avoiding and protecting, or alternatively offsetting, environmental values in an efficient, certain and consistent manner with consideration for cumulative effects. In regard to this proposal, the EPA understands that due to the encroachment of urban development in proximity of the current road reserve, alternatives for other alignments were not deemed viable from a planning perspective. This highlights the importance and need for the consideration of environmental planning at a district level to avoid and/or minimise impact to key sensitive environments containing significant environmental values. This assessment, like other assessments in the Perth metropolitan area, highlights the challenges of continued development on the SCP, and in particular ensuring the EPA's environmental factor objectives can continue to be met when cumulative effects on key environmental values are already significant.

Increasingly, infrastructure developments in the Perth Metropolitan Region are located in sensitive environments where the cumulative loss of often conservation significant native vegetation is a key issue. The EPA reiterates previous advice that in the absence of a landscape and regional approach to environmental protection, proposals will continue to be considered through case-by-case assessment and processes with individual offset requirements.

In considering the cumulative effects and past environmental impacts on black cockatoos in the constrained Perth metropolitan region, the EPA highlights the importance and increasing need for offsets that include habitat restoration and rehabilitation of degraded areas close to the area of impact (EPA Report 1739; EPA 2024a). This would provide positive local and regional environmental outcomes that distant acquisition offset sites would not otherwise deliver for locally impacted flocks of black cockatoos (EPA 2019).

The EPA stresses the need for a regional environmental protection framework that considers cumulative effects and includes provision for strategic restoration and enhancement. The EPA notes that the State Government is prioritising regional planning for Perth and Peel through the Western Australian Native Vegetation Policy, which will address cumulative environmental impacts in Perth and Peel. Detailed conservation and restoration plans will be developed to reverse declining environmental values, and to help facilitate State and Commonwealth environmental assessments.

Appendix A: Recommended conditions

Recommended Environmental Conditions

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

GARDEN STREET EXTENSION, SOUTHERN RIVER

Proposal: The proposal is to extend Garden Street between Harpenden Street and Holmes Street, which involves the construction of an 840 m section of a dual carriageway, in the suburb of Southern River. The proposal is located approximately 17 km southeast of Perth Central Business District (CBD).

Proponent: City of Gosnells
Australian Business Number: 18 374 412 891

Proponent address: PO Box 662
GOSNELLS WA 6990

Assessment number: 2357

Report of the Environmental Protection Authority: 1771

Introduction: Pursuant to section 45 of the *Environmental Protection Act 1986* (EP Act), it has been agreed that the proposal entitled Garden Street Extension, Southern River described in the 'Proposal Content Document' attachment of the referral of 16 November 2022 may be implemented and that the implementation of the proposal is subject to the following implementation conditions and procedures:

Conditions and procedures

Part A: Proposal extent

Part B: Environmental outcomes, prescriptions and objectives

Part C: Environmental management plans and monitoring

Part D: Compliance and other conditions

PART A: PROPOSAL EXTENT**1 Limitations and Extent of Proposal**

- 1-1 The proponent must ensure that the proposal is implemented in such a manner that the following limitations or maximum extents are not exceeded:

Proposal element	Location	Maximum extent
Physical elements		
Development envelope	Figure 1	2.65 ha
Direct disturbance of native vegetation	Within the development envelope	2.04 ha

PART B – ENVIRONMENTAL OUTCOMES, PRESCRIPTIONS AND OBJECTIVES

B1 Flora and Vegetation

B0-0 The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

- (1) **disturb** no more than the following environmental values:
 - (a) 1.58 **ha** vegetation representative of Central *Banksia attenuata* – *Banksia menziesii* woodlands of the Swan Coastal Plain Floristic Community Type (FCT) 23a; and
 - (b) 1.2 ha of **Bush Forever Site 125**.
- (2) no **adverse impacts** to native vegetation within fifty (50) metres outside the development envelope.

B0-1 The proponent must:

- (1) implement hygiene protocols consistent with the *Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia, Part 2 National Best Practice Guidelines* as amended or replaced from time to time; and
- (2) undertake weed control and management during **construction activities** to prevent the introduction or spread of **environmental weeds**.

B2 Terrestrial fauna

B2-1 The proponent must ensure the implementation of the proposal achieves the following environmental outcome:

- (1) **disturb** no more than the following environmental values:
 - (a) 1.59 **ha** of very high quality foraging habitat for Carnaby's cockatoo (*Zanda latirostris*); and
 - (b) 0.45 **ha** of low quality foraging habitat for Carnaby's cockatoo (*Zanda latirostris*).

B2-2 The proponent must:

- (1) not plant known foraging species for **black cockatoos** within ten (10) metres of the Metropolitan Region Scheme (MRS) Other Regional Roads Reserve (Figure 1).

B3 Inland waters

B3-1 The proponent must ensure the implementation of the proposal achieves the following environmental outcomes:

- (1) construct the proposal to maintain the hydrological regime, water quality, ecological integrity, and ecological function of **Conservation Category Wetland** (UFI 15423); and
- (2) disturb no more than 0.45 ha of vegetation associated with the **Conservation Category Wetland** (UFI 15423).

B3-2 During construction, the proponent must:

- (1) not undertake dewatering; and
- (2) ensure no refuelling, chemical or hydrocarbon storage, or stockpiling occurs within the development envelope and within fifty (50) metres of **Conservation Category Wetland** (UFI 15423).

B4 Revegetation and Post Development Management and Monitoring Plan (Environmental Management Plan)

B4-1 The proponent must:

- (1) revise the **Revegetation and Post Development Management and Monitoring Plan** (Environmental Management Plan) to satisfy the requirements of condition C4-1 and condition C4-2 and demonstrate how the environmental outcomes in condition B1-1 and condition B3-1 will be achieved, and how this achievement will be substantiated, and submit the plan to the **CEO**; and
- (2) within twelve (12) months of the completion of **construction activities**, revegetate 0.7 ha of disturbed areas in the road batters (within the development envelope) to achieve the completion criteria specified in the approved **Revegetation and Post Development Management and Monitoring Plan** (Environmental Management Plan).

B5 Environmental Offsets

B5-1 The proponent must implement offsets to counterbalance the significant residual impacts of the proposal on the following environmental values:

- (1) Central *Banksia attenuata* – *Banksia menziesii* woodlands of the Swan Coastal Plain FCT 23a;
- (2) high quality foraging habitat for Carnaby's cockatoo (*Zanda latirostris*);
- (3) low quality foraging habitat for Carnaby's cockatoo (*Zanda latirostris*);

- (4) Bush Forever site 125; and
- (5) **Conservation Category Wetlands.**

B5-2 The proponent must ensure the implementation of the offsets achieves the following environmental outcomes:

- (1) counterbalance the significant residual impacts to the environmental values identified in condition B5-1.

B5-3 In accordance with the **Offset Plan Framework** at each of the **Proposed Offset Conservation Areas** meet the **on-ground management** completion criteria for:

- (a) **vegetation condition;**
- (b) **revegetation** area planting density;
- (c) **revegetation** area species diversity;
- (d) Carnaby's cockatoo (*Zanda latirostris*) foraging habitat; and
- (e) weed control.

B5-4 The proponent must:

- (1) commence the **revegetation/rehabilitation** program (**Offset Plan Framework**) at each of the **Proposed Offset Conservation Areas** prior to **ground disturbing activities** in the development envelope;
- (2) continue to implement the **Confirmed Offset Strategy** and **Offset Plan Framework** until the **CEO** has confirmed in writing that condition B5-3 has been achieved; and
- (3) report on the outcomes of condition B5-2 and condition B5-3.

PART C – ENVIRONMENTAL MANAGEMENT PLANS AND MONITORING

C1 Environmental Management Plans: Conditions Related to Commencement of Implementation of the Proposal

C1-1 The proponent must not undertake:

- (1) **ground disturbing activities (construction activities)** that would disturb flora and vegetation and wetland values within or adjacent to the development envelope until the **CEO** has confirmed in writing that the environmental management plan required by condition B4-1(1) meets the requirements of that condition and condition C4.

C2 Environmental Management Plans: Conditions Relating to Approval, Implementation, Review and Publication

Revegetation and Post Development Management and Monitoring Plan (Environmental Management Plan)

C2-1 Upon being required to implement an environmental management plan under Part B, or after receiving notice in writing from the **CEO** under condition C1-1 that the environmental management plan(s) required in Part B satisfies the relevant requirements, the proponent must:

- (1) implement the most recent version of the **confirmed** environmental management plan; and
- (2) continue to implement the **confirmed** environmental management plan referred to in condition C2-1(1), other than for any period which the **CEO** confirms by notice in writing that it has been demonstrated that the relevant requirements for the environmental management plan have been met, or are able to be met under another statutory decision-making process, in which case the implementation of the environmental management plan is no longer required for that period.

C2-2 The proponent:

- (1) may review and revise a **confirmed** environmental management plan provided it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan;
- (2) must review and revise a **confirmed** environmental management plan and ensure it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan, as and when directed by the **CEO**; and
- (3) must revise and submit to the **CEO** the **confirmed** Environmental Management Plan if there is a material risk that the outcomes or

objectives it is required to achieve will not be complied with, including but not limited to as a result of a change to the proposal.

- C2-3 Despite condition C2-1, but subject to conditions C2-4 and C2-5, the proponent may implement minor revisions to an environmental management plan if the revisions will not result in new or increased **adverse impacts** to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.
- C2-4 If the proponent is to implement minor revisions to an environmental management plan under condition C2-3, the proponent must provide the **CEO** with the following at least twenty (20) business days before it implements the revisions:
- (1) the revised environmental management plan clearly showing the minor revisions;
 - (2) an explanation of and justification for the minor revisions; and
 - (3) an explanation of why the minor revisions will not result in new or increased **adverse impacts** to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.
- C2-5 The proponent must cease to implement any revisions which the **CEO** notifies the proponent (at any time) in writing may not be implemented.
- C2-6 **Confirmed** environmental management plans, and any revised environmental management plans under condition C2-4(1), must be published on the proponent's website and provided to the **CEO** in electronic form suitable for on-line publication by the Department of Water and Environmental Regulation within twenty (20) business days of being implemented, or being required to be implemented (whichever is earlier).

Offset Monitoring and Performance Report

- C2-7 The proponent must prepare an Offset Monitoring and Performance Report which details the monitoring, evaluation mechanisms for the targets and actions identified in the **Confirmed Offset Strategy** and **Offset Plan Framework** under condition B5-3 within twelve (12) months from the commencement of **on-ground management** of each **Proposed Offset Conservation Areas** required by B5-4(3) being confirmed by the **CEO**.

C3 Conditions Related to Monitoring

- C3-1 The proponent must undertake monitoring capable of:
- (1) substantiating whether the proposal limitations and extents in Part A are exceeded; and

- (2) **detecting** and substantiating whether the environmental outcomes identified in Part B are achieved (excluding any environmental outcomes in Part B where an environmental management plan is expressly required to monitor achievement of that outcome).

C3-2 The proponent must submit as part of the Compliance Assessment Report required by condition **D2**, a compliance monitoring report that:

- (1) outlines the monitoring that was undertaken during the implementation of the proposal;
- (2) identifies why the monitoring was capable of substantiating whether the proposal limitation and extents in Part A are exceeded;
- (3) for any environmental outcomes to which condition C3-1(2) applies, identifies why the monitoring was scientifically robust and capable of **detecting** whether the environmental outcomes in Part B are met;
- (4) outlines the results of the monitoring;
- (5) reports whether the proposal limitations and extents in Part A were exceeded and (for any environmental outcomes to which condition C3-1 (2) applies) whether the environmental outcomes in Part B were achieved, based on analysis of the results of the monitoring;
- (6) reports any actions taken by the proponent to remediate any potential non-compliance; and
- (7) provides an annual summary of **on-ground management** in condition C2-7.

C4 Environmental Management Plans: Conditions Relating to Monitoring and Adaptive Management for Outcomes Based Conditions

Revegetation and Post Development Management and Monitoring Plan (Environmental Management Plan)

C4-1 The environmental management plan required under condition B4-1(1) must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include:

- (1) **threshold criteria** that provide a limit beyond which the environmental outcomes are not achieved;
- (2) **trigger criteria** that will provide an early warning that the environmental outcomes are not likely to be met;
- (3) monitoring parameters, sites, control/reference sites, methodology, timing and frequencies which will be used to measure **threshold criteria** and **trigger criteria**. Include methodology for determining alternate

monitoring sites as a contingency if proposed sites are not suitable in the future;

- (4) baseline data;
- (5) data collection and analysis methodologies;
- (6) adaptive management methodology;
- (7) **contingency measures** which will be implemented if **threshold criteria** or **trigger criteria** are not met; and
- (8) reporting requirements.

C4-2 The environmental management plan required under condition B4-1 is also required to include a monitoring program which undertakes the following:

- (1) determines the effectiveness of drainage infrastructure in achieving the environmental objective specified in condition B3-1;
- (2) groundwater monitoring for two (2) years from completion of **construction activities**, supported by quarterly manual groundwater level readings and quarterly groundwater and surface water quality sampling, including hydrocarbons and metals for assessment against predevelopment baseline data;
- (3) after completion of condition C4-2(2), if groundwater levels are consistent with surrounding regional groundwater levels and water quality results are consistently below trigger values, the groundwater loggers will be removed, and the program will continue with quarterly groundwater levels and groundwater and surface water quality for a further three (3) years;
- (4) if threshold criteria for groundwater levels are exceeded, then logger monitoring will continue for three (3) more years; and
- (5) if threshold criteria are exceeded and contingency actions are needed, the monitoring program required by C4-2 will be extended as required to the satisfaction of the **CEO**.

C4-3 Without limiting condition C3-1, failure to achieve an environmental outcome, or the exceedance of a **threshold criteria**, regardless of whether threshold **contingency measures** have been or are being implemented, represents a non-compliance with these conditions.

Offset Monitoring and Performance Report

C4-4 The Offset Monitoring and Performance Report required under condition C2-7 must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions B5-2 and B5-3 are met, and must include:

- (1) report the outcomes of B5-4(3);
- (2) report when the **Proposed Offset Conservation Areas** have been rezoned Parks and Recreation Reservation under the Metropolitan Region Scheme or Local Reserve under the City of Gosnells Town Planning Scheme No. 6 or assigned a **management order 'reserve for conservation'**; and
- (3) **contingency measures** which will be implemented if **threshold criteria** or **trigger criteria** are not met.

C4-5 The Offset Monitoring and Performance Reports must be published annually on the proponent website and provided to the **CEO**.

PART D – COMPLIANCE, TIME LIMITS, AUDITS AND OTHER CONDITIONS

D1 Non-compliance Reporting

D1-1 If the proponent becomes aware of a potential non-compliance, the proponent must:

- (1) report this to the **CEO** within seven (7) days;
- (2) implement **contingency measures**;
- (3) investigate the cause;
- (4) investigate environmental impacts;
- (5) advise rectification measures to be implemented;
- (6) advise any other measures to be implemented to ensure no further impact;
- (7) advise timeframe in which contingency, rectification and other measures have and/or will be implemented; and
- (8) provide a report to the **CEO** within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(1) to D1-1(7) above.

D1-2 Failure to comply with the requirements of a condition, or with the content of an environmental management plan required under a condition, constitutes a non-compliance with these conditions, regardless of whether the **contingency measures**, rectification or other measures in condition D1-1 above have been or are being implemented.

D2 Compliance Reporting

D2-1 The proponent must provide an annual Compliance Assessment Report to the **CEO** for the purpose of determining whether the implementation conditions are being complied with.

D2-2 Unless a different date or frequency is approved by the **CEO**, the first annual Compliance Assessment Report must be submitted within fifteen (15) months of the date of this Statement, and subsequent reports must be submitted annually from that date.

D2-3 Each annual Compliance Assessment Report must be endorsed by the proponent's Chief Executive Officer, or a person approved by proponent's Chief Executive Officer to be delegated to sign on the Chief Executive Officer's behalf.

D2-4 Each annual Compliance Assessment Report must:

- (1) state whether each condition of this Statement has been complied with, including:
 - (a) exceedance of any proposal limits and extents;
 - (b) achievement of environmental outcomes;
 - (c) achievement of environmental objectives;
 - (d) requirements to implement the content of environmental management plans;
 - (e) monitoring requirements;
 - (f) implement **contingency measures**;
 - (g) requirements to implement adaptive management; and
 - (h) reporting requirements;
- (2) include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met;
- (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance;
- (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance;
- (5) be provided in a form suitable for publication on the proponent's website and online by the Department of Water and Environmental Regulation; and
- (6) be prepared and published consistent with the latest version of the Compliance Assessment Plan required by condition D2-5 which the **CEO** has confirmed by notice in writing satisfies the relevant requirements of Part C and Part D.

D2-5 The proponent must prepare a Compliance Assessment Plan which is submitted to the **CEO** at least six (6) months prior to the first Compliance Assessment Report required by condition D2-2, or prior to implementation of the proposal, whichever is sooner.

D2-6 The Compliance Assessment Plan must include:

- (1) what, when and how information will be collected and recorded to assess compliance;
- (2) the methods which will be used to assess compliance;

- (3) the methods which will be used to validate the adequacy of the compliance assessment to determine whether the implementation conditions are being complied with;
- (4) the retention of compliance assessments;
- (5) the table of contents of Compliance Assessment Reports, including audit tables; and
- (6) how and when Compliance Assessment Reports will be made publicly available, including usually being published on the proponent's website within sixty (60) days of being provided to the **CEO**.

D3 Contact Details

- D3-1 The proponent must notify the **CEO** of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

D4 Time Limit for Proposal Implementation

- D4-1 The proposal must be substantially commenced within five (5) years from the date of this Statement.
- D4-2 The proponent must provide to the **CEO** documentary evidence demonstrating that they have complied with condition D4-1 no later than fourteen (14) days after the expiration of period specified in condition D4-1.
- D4-3 If the proposal has not been substantially commenced within the period specified in condition D4-1, implementation of the proposal must not be commenced or continued after the expiration of that period.

D5 Public Availability of Data

- D5-1 Subject to condition D5-2, within a reasonable time period approved by the **CEO** upon the issue of this Statement and for the remainder of the life of the proposal, the proponent must make publicly available, in a manner approved by the **CEO**, all validated environmental data collected before and after the date of this Statement relevant to the proposal (including sampling design, sampling methodologies, monitoring and other empirical data and derived information products (e.g. maps)), environmental management plans and reports relevant to the assessment of this proposal and implementation of this Statement.
- D5-2 If:
- (1) any data referred to in condition D5-1 contains trade secrets; or

- (2) any data referred to in condition D5-1 contains particulars of confidential information (other than trade secrets) that has commercial value to a person that would be, or could reasonably be expected to be, destroyed or diminished if the confidential information were published,

the proponent may submit a request for approval from the **CEO** to not make this data publicly available and the **CEO** may agree to such a request if the **CEO** is satisfied that the data meets the above criteria.

- D5-3 In making such a request the proponent must provide the **CEO** with an explanation and reasons why the data should not be made publicly available.

D6 Independent Audit

- D6-1 The proponent must arrange for an independent audit of compliance with the conditions of this statement, including achievement of the environmental outcomes and/or the environmental objectives and/ or environmental performance with the conditions of this statement, as and when directed by the **CEO**.
- D6-2 The independent audit must be carried out by a person with appropriate qualifications who is nominated or approved by the **CEO** to undertake the audit under condition D6-1.
- D6-3 The proponent must submit the independent audit report with the Compliance Assessment Report required by condition D2, or at any time as and when directed in writing by the **CEO**. The audit report is to be supported by credible evidence to substantiate its findings.
- D6-4 The independent audit report required by condition D6-1 is to be made publicly available in the same timeframe, manner and form as a Compliance Assessment Report, or as otherwise directed by the **CEO**.

Table 1: Abbreviations and definitions

Acronym or abbreviation	Definition or term
Adverse impact / adversely impacted	Negative change that is neither trivial nor negligible that could result in a reduction in health, diversity or abundance of the receptor/s being impacted, or a reduction in environmental value. Adverse impacts can arise from direct or indirect impacts, or other impacts from the proposal.
Black cockatoo/s	Carnaby's cockatoo (<i>Zanda latirostris</i>) and forest red-tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>).
Bush Forever site 125	As referred to in Figure 5 Conservation Areas in 360 Environmental (2023) Section 38 Environmental Protection Act Referral Supporting Document. Ref 5413AD_Rev 6.
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or the CEO's delegate.
Confirmed	In relation to a plan required to be made and submitted to the CEO , means, at the relevant time, the plan that the CEO confirmed, by notice in writing, meets the requirements of the relevant condition. In relation to a plan required to be implemented without the need to be first submitted to the CEO , means that plan until it is revised, and then means, at the relevant time, the plan that the CEO confirmed, by notice in writing, meets the requirements of the relevant condition.
Conservation Category Wetland/s	Wetlands classified as conservation management category wetlands in the Geomorphic Wetlands, Swan Coastal Plain dataset maintained by the Department of Biodiversity, Conservation and Attractions or equivalent agency.
Construction activities	Activities that are associated with the substantial implementation of a proposal including but not limited to, earthmoving, vegetation clearing, grading or construction of right of way. Construction activities do not include Geotechnical investigations (including potholing for services and the installation of piezometers) and other preconstruction activities where no clearing of vegetation is required.
Contingency measures	Planned actions for implementation if it is identified that an environmental outcome, environmental objective, threshold criteria, or management target are likely to be, or are being, exceeded. Contingency measures include changes to operations or reductions in disturbance or adverse impacts to reduce impacts and must be decisive actions that will quickly bring the impact to below any relevant threshold, management target and to ensure that the environmental outcome and/or objective can be met.

Detecting/ Detectable	The smallest statistically discernible effect size that can be achieved with a monitoring strategy designed to achieve a statistical power value of at least 0.8 or an alternative value as determined by the CEO.
Disturb/ disturbance	Means directly has or materially contributes to the disturbance effect on health, diversity or abundance of the receptor/s being impacted or on an environmental value. In relation to flora, vegetation or fauna habitat, includes to result in the death, destruction, removal, severing or doing substantial damage to significant flora and ecological communities In relation to fauna, includes to have the effect of altering the natural behaviour of fauna to its detriment.
Environmental value	A beneficial use, or ecosystem health condition.
Environmental Weeds	Any plant declared under section 22(2) of the <i>Biosecurity and Agriculture Management Act 2007</i> , any plant listed on the Weeds of National Significance List and any weeds listed on the Department of Biodiversity, Conservation and Attractions' Swan Region Impact and Invasiveness Ratings list, as amended, or replaced from time to time.
Ground disturbing activities	Any activity or activities undertaken in the implementation of the proposal, including any clearing, civil works or construction.
ha	Hectare
Management order 'reserve for conservation'	Issued under Section 46 of the <i>Lands Administration Act 1997</i>
Management target	A type of indicator to evaluate whether an environmental objective is being achieved.
Offset Strategy	360 Environmental (2023) Garden Street Extension, Southern River: Offset Strategy. Rev 3. Prepared for the City of Gosnells.
Offset Plan Framework	Proposed Garden Street Extension Offset Management Plan Framework or it's revisions (Appendix E of Response to Submission).
On-ground management	This includes revegetation and/or rehabilitation (in the context of repair of ecosystem processes including actions such as, but not limited to, management of weeds, disease, or feral animals) with the objective to achieve a tangible improvement to the environmental values in the offset area.
Proposed Offset Conservation Areas	The offset sites identified in Figure 2, Figure 3, and Figure 4.

Rehabilitate/ rehabilitation	Repair of ecosystem processes and management of weeds, disease or feral animals.
Revegetate/ revegetation	Re-establishment of native vegetation/habitat in degraded areas.
Revegetation and Post Development Management and Monitoring Plan	360 Environmental (2023) Garden Street Extension, Southern River Revegetation and Post Development Management and Monitoring Plan. Rev 2. Prepared for the City of Gosnells.
Threshold criteria	The indicators that have been selected to represent limits of impact beyond which the environmental outcome is not being met.
Trigger criteria	Indicators that have been selected for monitoring to provide a warning that, if exceeded, the environmental outcome may not be achieved. They are intended to forewarn of the approach of the threshold criteria and trigger response actions.
UFI	Unique Feature Identifier
Vegetation Condition	The condition of native vegetation rated in accordance with the Technical guidance – Flora and vegetation surveys for environmental impact assessment (EPA 2016) including any revision to this technical guidance.

Figures (attached)

- Figure 1 Garden Street Road Extension development envelope (This figure is a representation of the co-ordinates referenced in Schedule 1)
- Figure 2 Offset site no. 1 and 4 (This figure is a representation of the co-ordinates referenced in Schedule 1)
- Figure 3 Offset site no. 2 (This figure is a representation of the co-ordinates referenced in Schedule 1)
- Figure 4 Offset site no. 3 (This figure is a representation of the co-ordinates referenced in Schedule 1)

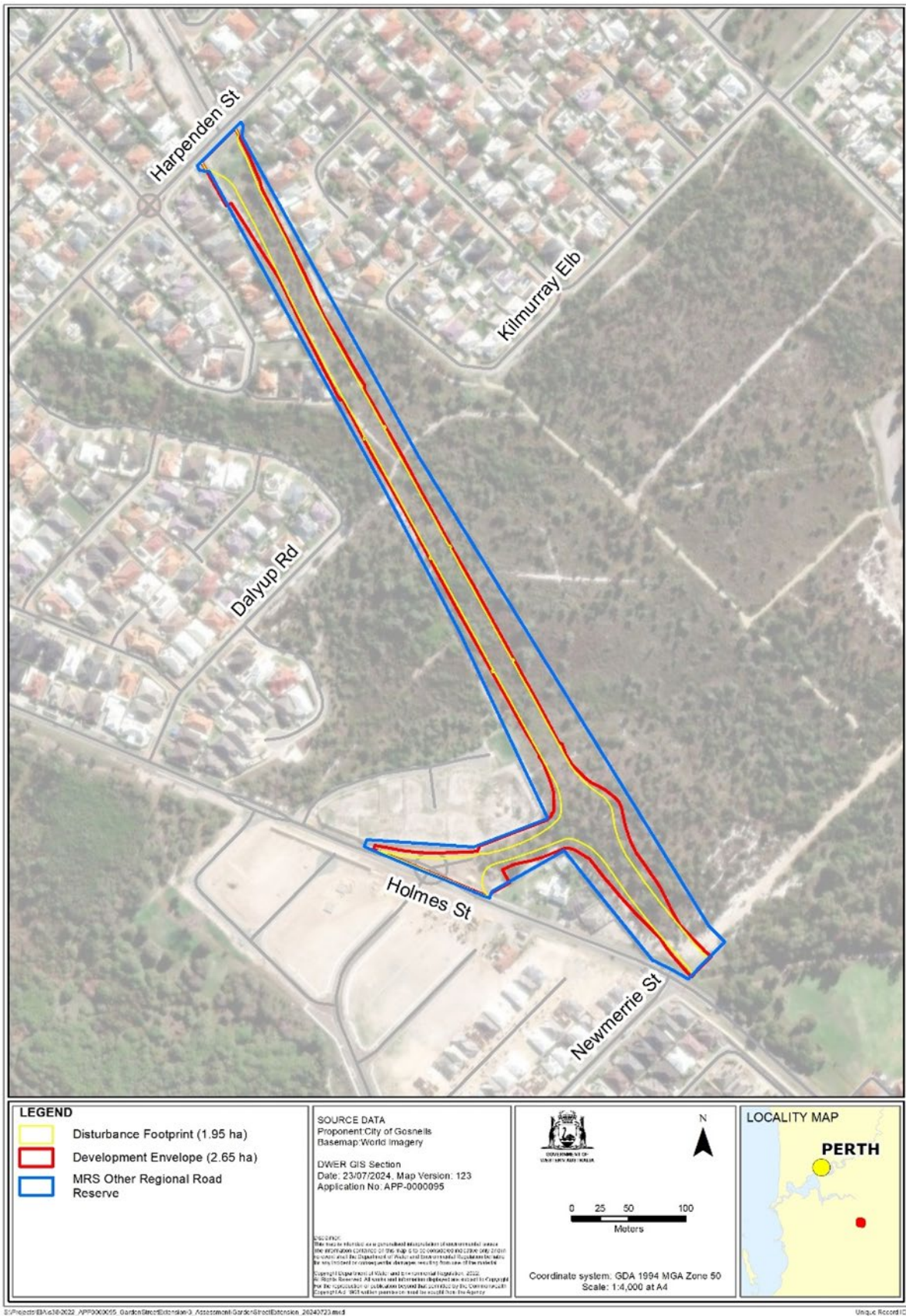


Figure 1 Garden Street Road Extension development envelope



Figure 2 Offset site no. 1 and 4



Figure 3 Offset site no. 2



Figure 4 Offset site no. 3

Schedule 1

All co-ordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 2020 (GDA20).

Spatial data depicting the figures are held by the Department of Water and Environmental regulation. Record no. APP-0000095

Appendix B: Regulation by other DMA processes

Table B1: Identified relevant decision-making authorities for the regulation of outcomes for the proposal.

Statutory decision-making process	Environmental outcome
<p><i>Environment Protection and Biodiversity Conservation Act 1999</i></p> <p>Department of Climate Change, Energy, the Environment and Water (DCCEEW)</p>	<p>1. The EPA has recommended conditions in relation to impacts on listed threatened species and communities protected by the EPBC Act. There is an existing approval with conditions EPBC 2016/7735 for the proposal. The conditions relate to extent of clearing, implementation of management plans, installation of black cockatoo nesting boxes and record keeping and reporting.</p>
<p><i>Environmental Protection (Noise) Regulations 1997</i></p>	<p>1. Noise sensitive premises are protected from unreasonable noise levels</p>

Appendix C: Decision-making authorities

Table C1: Identified relevant decision-making authorities for the proposal.

Decision-Making Authority	Legislation (and approval)
1. Minister for Environment	<i>Biodiversity Conservation Act 2016</i> <ul style="list-style-type: none"> - section 40 authority to take or disturb threatened species and communities - section 45 authority to modify occurrence of threatened ecological community
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914</i> <ul style="list-style-type: none"> - section 17 permit to interfere with beds and banks
3. Chief Executive Officer, Department of Biodiversity, Conservation and Attractions	<i>Biodiversity Conservation Act 2016</i> <ul style="list-style-type: none"> - Authority to take flora and fauna (other than threatened flora and fauna)
4. Chief Executive Officer, City of Gosnells	<i>Planning and Development Act 2005</i> <i>Environmental Protection (Noise) Regulations 1997</i> <ul style="list-style-type: none"> - planning approvals - approval of noise management plans for construction outside of prescribed hours
5. Chair, Western Australian Planning Commission	<i>Planning and Development Act 2005</i> <ul style="list-style-type: none"> - development approval for developments in areas reserved under the Metropolitan Region Scheme

Appendix D: Environmental Protection Act principles

Table C1: Consideration of principles of the *Environmental Protection Act 1986*

EP Act principle	Consideration
<p>1. The precautionary principle</p> <p><i>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</i></p> <p><i>In application of this precautionary principle, decisions should be guided by –</i></p> <p>(a) <i>careful evaluation to avoid, where practicable, serious, or irreversible damage to the environment; and</i></p> <p>(b) <i>an assessment of the risk-weighted consequences of various options.</i></p>	<p>The EPA has considered the precautionary principle in its assessment and has had regard to this principle in its assessment of flora and vegetation, terrestrial fauna, and inland waters.</p> <p>The EPA considers that the proponent has undertaken appropriate studies and investigations to understand the potential risks and has provided sufficient management and mitigation measures to manage these risks to flora and vegetation, terrestrial fauna, inland waters, and the overall biophysical environment. The proponent proposed the following management and minimisation measures to avoid potential serious or irreversible damage to the environment by:</p> <ul style="list-style-type: none"> • limiting the development envelope to 2.65 ha and clearing footprint to 2.04 ha, which is smaller than the existing MRS 'Other Regional Roads' reservation • implementing the CEMP to minimise impacts during the construction phase • preclearance surveys • implementing the Re-vegetation Post-Development Management and Monitoring Plan (RPDMMP), with the following management measures: <ul style="list-style-type: none"> ○ revegetation of road batters (0.7 ha), with flora species representative of vegetation types in BFS 125 ○ maintain and monitor a 50 m buffer outside the development envelope (weed control, removal of rubbish and revegetation of areas showing a decline in condition and species composition) • installation of three culvert underpasses to maintain surface water drainage and flow, and to allow fauna to safely traverse underneath the road • on-site retention and filtration of rainfall from two gross pollutant traps • installation of fauna fencing along the entire road alignment that interfaces with bushland areas

EP Act principle	Consideration
	<ul style="list-style-type: none"> and avoid further damage to soil structure, vegetation structure and cover providing potential SRE habitat across the development envelope. <p>The EPA is satisfied that these measures, if implemented, would mean that the proposal is likely to be consistent with the EPA objectives and that there is no threat of serious or irreversible harm.</p>
<p>2. The principle of intergenerational equity</p> <p><i>The present generation should ensure that the health, diversity, and productivity of the environment is maintained and enhanced for the benefit of future generations.</i></p>	<p>The EPA has considered the principle of intergenerational equity in its assessment and has regard to this principle in its assessment of flora and vegetation, terrestrial fauna, and inland waters. The EPA notes that the proponent has identified some measures to avoid (based on limited proposal alternatives) and manage impacts to the key environmental factors. The EPA has considered these measures during its assessment and has recommended conditions to ensure that appropriate measures are implemented.</p> <p>The EPA has concluded that the environmental values will be protected, and the health, diversity, and productivity of the environment will be maintained for the benefit of future generations.</p>
<p>3. The principle of the conservation of biological diversity and ecological integrity</p> <p><i>Conservation of biological diversity and ecological integrity should be a fundamental consideration.</i></p>	<p>The EPA has considered the principle of conservation of biological diversity and ecological integrity in its assessment and has had regard to this principle in its assessment of flora and vegetation, terrestrial fauna, inland waters, and consideration of the proponent's proposed offset strategy.</p> <p><u>Flora and vegetation and Terrestrial fauna</u></p> <p>The EPA notes that there are listed threatened flora and ecological communities within the development envelope. Additionally, the proponent has proposed suitable minimisation and management measures for flora and vegetation and terrestrial fauna to minimise the loss of biological diversity and ecological integrity. The EPA has considered to what extent the potential impacts from the proposal to flora and vegetation and terrestrial fauna can be ameliorated to ensure consistency with the principle of conservation of biological diversity and ecological integrity, including by provision of offsets. The EPA has concluded that given the nature of the impacts the proposed offsets are likely to counter-balance the impacts of the loss of biological diversity and ecological integrity.</p>

EP Act principle	Consideration
	<p><u>Inland waters</u></p> <p>Similarly, the EPA notes that although the proposal will have an impact on the mapped CCW and wetland vegetation, no additional clearing beyond 2.04 ha is proposed. The proponent has also proposed sufficient minimisation and management measures to retain the hydrological functioning and ecological integrity of the CCW wetland and associated wetland vegetation.</p> <p>The EPA has concluded that given the nature of the impacts of the proposal, and the proposed offset strategy that is likely to counterbalance the residual impacts, serious or irreversible loss of biological diversity and ecological integrity is not expected.</p>
<p>4. Principles relating to improved valuation, pricing and incentive mechanisms</p> <p><i>(1) Environmental factors should be included in the valuation of assets and services.</i></p> <p><i>(2) The polluter pays principle — those who generate pollution and waste should bear the cost of containment, avoidance or abatement.</i></p> <p><i>(3) The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes.</i></p> <p><i>(4) Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.</i></p>	<p>In considering this principle, the EPA notes that the proponent will bear the costs relating to implementing this proposal to achieve environmental outcomes, and management and monitoring of environmental impacts during construction and operation of the proposal.</p> <p>The EPA has had regard to this principle in considering flora and vegetation, terrestrial fauna, inland waters, and the proponent's proposed offset strategy.</p> <p>The EPA further notes in the context of this principle that dewatering is not being undertaken, and implementation is unlikely to result in mobilisation of ASS.</p>

EP Act principle	Consideration
<p>5. The principle of waste minimisation</p> <p><i>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</i></p>	<p>The EPA has considered the principle of waste minimisation in its assessment. In considering this principle, the EPA notes the proponent's commitment to, where practicable, minimise wastage of materials in the construction of the road, and conduct regular inspections of the construction area to ensure the appropriate use of waste disposal facilities.</p> <p>Therefore, the EPA concludes that the proposal will be consistent with the principle of waste minimisation.</p>

Appendix E: Other environmental factors

Table D1: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Air			
Greenhouse gas emissions	Generation of greenhouse gas (GHG) scope 1 and 2 emissions.	No agency or public comments were received for this environmental factor.	<p>GHG emissions was not identified as a preliminary key environmental factor when the EPA decided to assess the proposal.</p> <p>Having regard to:</p> <ul style="list-style-type: none"> the proponent's estimation of GHG emissions <ul style="list-style-type: none"> scope 1 emissions (during the construction phase) of: 951 tCO_{2-e} scope 1 emissions (during the operation phase) of: 6 tCO_{2-e} scope 2 emissions (during the construction phase) of: 0 tCO_{2-e} scope 2 emissions (during the operation phase) of: 28 tCO_{2-e} scope 3 emissions (during the construction phase) of: 291 tCO_{2-e} scope 3 emissions (during the operation phase) of: 2,613 tCO_{2-e} the <i>Environmental factor guideline – Greenhouse gas emissions</i> (EPA 2023), which states that GHG emissions from a proposal will be assessed where it exceeds 100,000 tCO_{2-e} per annum for scope 1 and scope 2 emissions the significance of considerations in the <i>Statement of environmental principles, factors, objectives and aims of the EPA</i> (EPA 2023). <p>The EPA considers it is unlikely that the proposal would have a significant impact on GHG emissions and that the impacts to this factor are manageable.</p> <p>Accordingly, the EPA did not consider GHG emissions to be a key environmental factor at the conclusion of its assessment.</p>
People			

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Social surroundings (Aboriginal Heritage, noise and general amenity)	The proposal has the potential to impact social surroundings via increased traffic and noise emissions.	<p><u>Public comments</u></p> <ul style="list-style-type: none"> Concerns regarding increased traffic movement and impacts to visual amenity. Reduced access to BFS 125. <p><u>Agency comments</u></p> <ul style="list-style-type: none"> No agency comments were received for this environmental factor. 	<p>Social surroundings was identified as a preliminary environmental factor when the EPA decided to assess the proposal. Further information regarding noise and traffic was submitted as part of the proponent's RSD (Appendix G - noise report (WSP 2022), Appendix H - transport position statement (City of Gosnells), Appendix I - noise traffic assessment; peer review (Herring Storer 2023) and Appendix N - CEMP (360 Environmental 2023).</p> <p>The assessment of social surroundings within the development envelope concluded that:</p> <ul style="list-style-type: none"> no registered Aboriginal Heritage sites and/or places are recorded within the development envelope. The nearest registered site is Southern River (ID: 3511), approximately 1.5 km east of the development envelope. Should the proponent encounter any Aboriginal Heritage artefacts during construction, the proponent would be subject to requirements under the <i>Aboriginal Heritage Act 1972</i> traffic volume modelling and potential issues from vehicle movement (noise) have been addressed through proposed mitigation measures (noise walls adjacent to existing residential properties) and can be managed further through planning and local government approval processes construction noise is to be managed in accordance with the <i>Environmental Protection (Noise) Regulations 1997</i> and CEMP management targets and monitoring (360 Environmental 2023), and can be regulated further via DWER and local government processes dust emissions during construction are to be managed and monitored in accordance with the CEMP the RtS (City of Gosnells 2024) indicates that the existing access track through BFS 125 will remain for passive recreation. <p>Accordingly, the EPA did not consider this factor to be a key environmental factor at the conclusion of its assessment.</p>

Appendix F: List of submitters

7-day comment on referral

Organisations and public

- Private submitter 1
- Private submitter 2

Public review of proponent information

Organisations and public

- WA Conservation Council
- Wildflower Society of WA
- Urban Bushland Council WA Inc
- ANON-QTYN-1C84-C
- ANON-QTYN-1C8U-D
- ANON-QTYN-1C8H-Z
- ANON-QTYN-1C8C-U
- ANON-QTYN-1C8E-W
- ANON-QTYN-1C8T-C
- ANON-QTYN-1C8S-B
- ANON-QTYN-1C8Z-J
- ANON-QTYN-1C8J-2
- ANON-QTYN-1C8R-A
- ANON-QTYN-1C81-9
- ANON-QTYN-1C87-F
- ANON-QTYN-1C8M-5
- ANON-QTYN-1C8Q-9
- ANON-QTYN-1C8P-8
- ANON-QTYN-1C8D-V

Government agencies

- Department of Biodiversity, Conservation and Attractions
- Department of Water and Environmental Regulation

Appendix G: Assessment timeline

Date	Progress stages	Time (weeks)
15 February 2023	EPA decided to assess – Additional Assessment Information (Public Review)	
20 December 2023	EPA accepted Referral Supporting Document	
20 December 2023	Referral Supporting Document public review	6
31 January 2024	Public review period for Referral Supporting Document closed	6
27 June 2024	EPA publish proponent's Response to Submissions	
	EPA provided report to the Minister for Environment	2
	EPA report published	3 days
	Appeals period closed	3

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

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

Appendix H: Relevant policy, guidance, procedures and references

360 Environmental 2023 Section 38 Environmental Protection Act: Referral Supporting Document. Rev 6. Prepared for the City of Gosnells.

360 Environmental 2023a, Construction Environmental Management Plan (CEMP). Rev 2. Prepared for the City of Gosnells.

360 Environmental 2023b, Revegetation and Post-Development Environmental Management Plan (RPDEMP). Rev 2. Prepared for the City of Gosnells.

360 Environmental 2023c, Offset Strategy. Rev 3. Prepared for the City of Gosnells

Biologic 2021, Lots 10-14 Kelvin Road Orange Grove Detailed Flora and Vegetation Survey, Dieback Assessment and Basic Vertebrate Fauna Survey. Rev 3. Prepared for the City of Gosnells.

Biologic 2022, Garden Street Extension: Ecological Survey. Rev 5. Prepared for the City of Gosnells.

Biologic 2023, Garden Street Extension: Ecological Survey. Rev 7. Prepared for the City of Gosnells.

City of Gosnells 2020, Natural Areas - Retention, Rehabilitation and Revegetation Guidelines.

City of Gosnells 2020a, Policy No. CP 6.2.2 Retention, Rehabilitation and Revegetation of Natural Area

City of Gosnells 2024, Response to Submissions: Garden Street Extension, Southern River (Assessment No. 2357) Additional Information Document. Dated 27 May 2024.

Department of Biodiversity Conservation and Attractions (DBCA) 2017, A methodology for the evaluation of wetlands on the Swan Coastal Plain. Prepared by the Wetlands Section of DBCA and the Urban Water Branch of the DWER, Perth, WA.

DEC 2008, Forest Black Cockatoo (*Baudin's Cockatoo Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan, Department of Environment and Conservation, Perth, WA.

Department of Environment and Conservation 2009, Wavy-leaved smokebush (*Conospermum undulatum*) Recovery Plan. Commonwealth Department of the Environment, Water, Heritage and the Arts, Canberra.

Department of Environment and Energy (DoEE) 2016, *Approved conservation advice (incorporating listing advice) for the Banksia woodlands of the Swan Coastal Plain ecological community*, Department of the Environment and Energy, Canberra.

DPAW 2013, Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan, Western Australian Wildlife Management Program No. 52. Department of Parks and Wildlife, Perth, WA.

EPA 2016a, *Environmental factor guideline – Flora and vegetation*, Environmental Protection Authority, Perth, WA.

EPA 2016b, *Environmental factor guideline – Terrestrial fauna*, Environmental Protection Authority, Perth, WA.

EPA 2016c, *Technical Guidance- Flora and vegetation fauna surveys for environmental impact assessment*, Environmental Protection Authority, Perth, WA.

EPA 2019, EPA Advice: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region. In accordance with section 16(j) of the Environmental Protection Act 1986, Environmental Protection Authority, Perth, WA.

EPA 2020, *Technical Guidance- Terrestrial vertebrate fauna surveys for environmental impact assessment*, Environmental Protection Authority, Perth, WA.

EPA 2021, *Environmental impact assessment (Part IV Divisions 1 and 2) administrative procedures*, Environmental Protection Authority, Perth, WA

EPA 2021a, *Environmental impact assessment (Part IV Divisions 1 and 2) procedures manual*, Environmental Protection Authority, Perth, WA.

EPA 2021b, *Statement of environmental principles, factors, objectives and aims of EIA*, Environmental Protection Authority, Perth, WA.

EPA 2023, *Environmental factor guideline – Social surroundings*, Environmental Protection Authority, Perth, WA.

EPA 2023a, *Environmental factor guideline – Greenhouse gas emissions*, Environmental Protection Authority, Perth, WA.

EPA 2024, Public Advice: Considering environmental offsets at a regional scale. Environmental Protection Authority, Perth, WA.

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

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

Government of WA, 2019, 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions.

Phoenix 2023, Short-range endemic and significant invertebrate desktop assessment for the Garden Street Extension Project. Version 2. Prepared for the City of Gosnells.

State of Western Australia 2021, *Western Australia Government Gazette, No. 180, Environmental impact assessment (Part IV Divisions 1 and 2) administrative procedures 2021*, 22 October 2021.

Threatened Species Scientific Community (TSSC) 2016, Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (s 266B) Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community

Urbaqua 2022, Hydrology Study and Impact Assessment: Garden Street Extension, Gosnells. Rev 4. Prepared for the City of Gosnells.