GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection Authority

Metropolitan Region Scheme Amendment 1388/57
Wattle Grove South

Western Australian Planning Commission

Report 1788

July 2025

This assessment report has been prepared by the Environmental Protection Authority (EPA) under s. 48D of the *Environmental Protection Act 1986* (EP Act). As per Delegation No. 70, made on 5 June 2025 in accordance with section 19 of the EP Act, the Instrument authorises Karen Caple, all of its powers and duties under Part IV (Division 3), and Part VII of the EP Act in respect of the assessment of, and any appeals relating to the assessment of the Metropolitan Region Scheme (MRS) Amendment 1388/57—Wattle Grove South.

This assessment report:

- describes the outcomes of the EPA's assessment of the MRS Amendment 1388/57 proposed by the Western Australian Planning Commission (WAPC) in Wattle Grove South
- 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 scheme amendment may be implemented and, if it recommends that implementation be allowed, the conditions and procedures, if any, to which implementation should be subject, and
  - other information, advice and recommendations as the EPA considers appropriate.

Karen Caple
Board Member
Environmental Protection Authority

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The Western Australian Planning Commission (WAPC) (Responsible Authority [RA]) proposes to rezone approximately 123.5 hectares (ha) of land in Wattle Grove South, from the 'Rural' zone to the 'Urban' zone under the Metropolitan Region Scheme (MRS) (Figure 1). The land is currently developed for semi-rural residential and commercial purposes.

The MRS amendment area is located within the WAPC North-East planning sub-region and is identified almost entirely as an 'Urban Expansion' area in the corresponding planning framework.

The EPA is supportive of and commends the regionally significant vegetation proposed to be retained and managed within retention areas provided in the concept plan (Figure 2) for the amendment.

Context and environmental values

The MRS amendment area comprises numerous landholdings (ranging in size from approximately 1 ha to 5 ha) and is a mixture of land uses, including large residential and rural living lots, composite business along Welshpool Road, landscape supply business and horticulture. A former turf farm is located centrally along the western boundary of the amendment area (Lots 303, 53, 214 and 213) south of Brentwood Road.

The Maddington Kenwick Strategic Employment Area (MKSEA) is located adjacent to the MRS amendment area, on the western side of Tonkin Highway. The Greater Brixton Street Wetlands (GBSW) are also located in close proximity to the amendment area on the western side of Tonkin Highway. No Bush Forever sites occur within the MRS amendment area.

Inland waters, flora and vegetation and terrestrial fauna are key environmental factors that would be impacted by implementation of the amendment.

The amendment area contains fragmented remnant vegetation consisting of the following environmental values:

- Resource Enhancement Wetlands (REW) (with adjacent Conservation Category Wetlands)
- poorly represented vegetation (Forrestfield and Southern River) complexes
- Banksia Woodlands of the Swan Coastal Plain (SCP) Priority Ecological Community (PEC) (state). Floristic Community Types (FCT) likely to be representative of Banksia attenuata woodlands over species rich dense shrublands (FCT 20a) Critically Endangered (*Biodiversity Conservation Act 2016* [BC Act]) and Shrublands and Woodlands of the Eastern Swan Coastal Plain (FCT 20c) (Critically Endangered (BC Act) and Federal Threatened Ecological

Community (TEC) – Endangered (*Environment Protection and Biodiversity and Conservation Act 1999* [EPBC Act])

- *Conospermum undulatum* (Wavy-leaved Smoke bush) – listed as Vulnerable under the EPBC Act and the BC Act
- *Isopogon autumnalis* (Autumn Isopogon) (P3), previously named *Isopogon drummondii* – listed under the Department of Biodiversity Conservation and Attractions (DBCA) Priority flora lists.

Consultation

The WAPC published the Environmental Review Document (ERD) concurrently with the MRS Amendment on its website for public review for 60 days from 8 October 2024 to 9 December 2024. The WAPC received 108 public submissions and provided the submissions it received during the advertising period to the EPA on 11 December 2024, and the WAPC Response to Submissions (RtS) on 21 February 2025. The EPA has considered the submissions and RtS document in its assessment.

Mitigation hierarchy

As per the EPA (2023) *Statement of environmental principles, factors, objectives and aims of Environmental Impact Assessment (EIA)*, the mitigation hierarchy is a sequence of proposed actions to reduce adverse environmental impacts. The sequence commences with avoidance, then moves to minimisation, rehabilitation, and offsets are considered as the last step in the sequence. The WAPC has considered the mitigation hierarchy and has proposed the following mitigation measures depicted within the concept plan (Figure 2) and through future planning processes:

- retention areas containing significant environmental values (threatened and priority flora, threatened ecological community and threatened fauna habitat), and
- minimise potential impacts through implementation of strategies, management plans and revegetation and rehabilitation plans.

The EPA notes that the concept plan provided in the ERD is not binding on future planning processes but will be given ‘due regard’. The EPA supports the retention of values as depicted in the concept plan (Figure 2) as a minimum and that further retention areas with environmental value can be refined during subsequent planning processes i.e. structure planning and subdivision/development application (DA).

Assessment of key environmental factors

The EPA has identified the key environmental factors (listed below) in the course of the assessment. For each factor, the EPA has assessed the residual impacts of the amendment on the environmental values and considered whether the environmental outcomes are likely to be consistent with the EPA environmental factor objectives.

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

Environmental factor: Inland waters	
Residual impact on key value	Assessment finding/environmental outcome (Summary)
Potential impacts to inland waters from: • clearing for proposed urban development. • increase in impervious surfaces within amendment area • impacts to REWs within amendment area. Alteration of the hydrological regime within the amendment area and the GBSW: • surface water volume, flow and quality • groundwater recharge, throughflow and quality • the existing water balance • potential water quality impacts through nutrient input from urban development, erosion/sedimentation during construction, disturbance of acid sulphate soils, changes to soil sodicity and salinity, and hydrocarbons from increased traffic • impact to groundwater dependent ecosystems.	The EPA has assessed the potential impacts to inland waters values, including groundwater and surface water hydrological regimes, and has considered the ability of the proposed management measures being able to mitigate impacts. The EPA considers that subject to the following recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for inland waters: **MRS Amendment (schedule**) <u>Environmental outcomes</u> • Condition 1. Objective of scheme • Condition 2. Responsible Authority must act consistently with Ministerial Statement • Condition 3. Environmental outcomes <u>Water Management</u> • Condition 8. UWMP <u>Reporting</u> • Condition 9 and 10. Environmental performance report
Consideration of further protection (avoidance) and mitigation of environmental values through future planning processes • Strategies and plans • Coordinated drainage and water quality management	

Environmental factor: Flora and vegetation	
Residual impact on key value	Assessment finding/environmental outcome (Summary)

Potential impacts to flora and vegetation from:
• clearing of:
  ○ remnant vegetation (representative of Forrestfield Complex or Guildford Complex)
  ○ inferred Floristic Community Types (FCT) 20a *Banksia attenuata* woodlands over species rich dense shrublands WA Threatened Ecological Communities (TEC)
  ○ inferred FCT 20c Shrublands and Woodlands of the eastern side of the Swan Coastal Plain WA TEC
  ○ individuals of *Conospermum undulatum*
  ○ individuals of *Isopogon autumnalis*
• further fragmentation of remnant vegetation patches
• introduction of weeds and dieback to uninfected areas
	The EPA has assessed the potential impacts to flora and vegetation values, including TECs and significant flora, and has considered the ability of the proposed avoidance, management and rehabilitation measures being able to mitigate impacts. The EPA has considered the concept plan (Figure 2) which avoids direct impact to known TEC and significant flora, and considers that subject to the following recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation:
	MRS Amendment (schedule)
	<u>Environmental outcomes</u>
	• Condition 1. Objective of scheme
	• Condition 2. Responsible Authority must act consistently with Ministerial Statement
	• Condition 3. Environmental outcomes
	<u>Conservation Area Management Plans</u>
	• Condition 4. CAMP prepared for the retention areas
	<u>Tree canopy</u>
	• Condition 7. TCRLMP prepared for areas outside the retention areas
	<u>Reporting</u>
	• Condition 9 and 10. Environmental performance report

• potential alteration of vegetation structure and floristic composition in adjacent and/or surrounding areas via changes to surface water drainage patterns. • fragmentation and loss of ecological connectivity of remnant vegetation.	
Consideration of further protection (avoidance) and mitigation of environmental values through future planning processes • Strategies and plans • Unsurveyed areas • Offsets	

Environmental factor: Terrestrial fauna	
Residual impact on key value	Assessment finding/environmental outcome (Summary)

Potential impacts to terrestrial fauna from:
• clearing of:
  ○ potential nesting trees
  ○ black cockatoo foraging habitat (BaEpPf, BmXpEc and EmMpLp)
  ○ planted black cockatoo foraging habitat (mostly low quality)
  ○ quenda habitat
  ○ potential short range endemic habitat
• fragmentation and loss of ecological connectivity of black cockatoo foraging habitat
• further fragmentation of fauna habitat and edge effects
• increased feral animal activity within the fragmented fauna habitats.
	The EPA has assessed the potential impacts to terrestrial fauna values, including clearing and fragmentation of habitat for conservation significant fauna, and has considered the ability of the proposed avoidance, rehabilitation and management measures being able to mitigate impacts.
	
	The EPA considers that subject to the following recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for terrestrial fauna:
	
	MRS Amendment (schedule)
	<u>Environmental outcomes</u>
	• Condition 1. Objective of scheme
	• Condition 2. Responsible Authority must act consistently with Ministerial Statement
	• Condition 3. Environmental outcomes
	<u>Conservation Area Management Plans</u>
	• Condition 4. CAMP prepared for the retention areas
	<u>Black cockatoo</u>
	• Condition 5. Survey
	• Condition 6. Assessment of potential nesting tree (outside retention areas) and replacement in the amendment area
	<u>Tree canopy</u>
	• Condition 7. TCRLMP prepared for areas outside the retention areas
	<u>Reporting</u>
	• Condition 9 and 10. Environmental performance report

Consideration of further protection (avoidance) and mitigation of environmental values through future planning processes • Strategies and plans • Unsurveyed areas	

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. Given the intrinsic link between the key factors of inland waters, flora and vegetation, and terrestrial fauna, these links have been considered by the EPA in its assessment. The EPA is supportive of the approach to identifying retention areas to protect areas with multiple environmental values and has also recommended conditions which protect values in a holistic way. 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 amendment:

- environmental values which may be significantly affected by the amendment
- assessment of key environmental factors, separately and holistically (this has included considering cumulative impacts of the amendments where relevant)
- 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
- EPA's confidence in the WAPC's proposed mitigation measures and their implementation through subsequent planning processes
- whether other statutory decision-making processes can mitigate the potential impacts of the amendment on the environment
- principles of the *Environmental Protection Act 1986* (EP Act).

The EPA notes that if the amendment is implemented, there are subsequent requirements to inform and design structure plans and subdivisions/DA.

The EPA submits the following recommendations that the Minister for Environment:

- considers the report on the key environmental factors of inland waters, flora and vegetation, and terrestrial fauna, as set out in Section 2
- notes that the EPA has concluded that the amendments are likely to be consistent with the EPA objectives for inland waters, flora and vegetation and terrestrial fauna
- notes the EPA's recommendations and other advice (Sections 4 and 5 respectively)
- notes that implementation of the amendment would be unlikely to compromise EPA's environmental objectives provided there is satisfactory implementation of the recommended environmental conditions (Appendix A).

Other advice

The GBSW is recognised as one of the most important wetlands remaining on the SCP. The EPA reiterates the findings of its s.16j advice (2022) including:

- the complexity and uncertainties of the hydrological processes sustaining the GBSW and
- potential cumulative effects of development within the GBSW catchment.

For the GBSW catchment, the EPA recommends that further technical work undertaken in collaboration with agencies and stakeholders would assist to address this lack of understanding and guide future decision-making. The EPA has provided other advice and recommendations to the Minister, Responsible Authorities, DMAs, government agencies and proponents/developers (refer to section 5).

The EPA has considered that that there is significant community support for the creation of the Yule Brook Regional Park to create a connection from Lesmurdie Falls to the Canning River through the GBSW. The EPA advises that this would be an example of a contiguous reserve system that may provide a strategic opportunity for restoration and enhancement, however this would require a coordinated management approach to achieving formulation and implementation.

1 The proposed scheme amendment

The Western Australian Planning Commission (WAPC) (Responsible Authority [RA]) proposes to rezone approximately 123.5 hectares (ha) of land in Wattle Grove South, from the 'Rural' zone to the 'Urban' zone under the Metropolitan Region Scheme (MRS) (Figure 1). The land is currently developed for semi-rural residential and commercial purposes. The proposed 'Urban' zone will facilitate future residential development and open space, and subsequent structure planning and subdivision or Development Application (DA) approval(s). A concept plan has been provided in the Environmental Review Document (ERD) to support the MRS amendment which shows proposed retention areas (which support significant environmental values) (Figure 2).

The amendment area is within the City of Kalamunda and is generally bound by Tonkin Highway, Welshpool Road and Crystal Brook Road (Figure 1).

In accordance with section 38 of the *Planning and Development Act 2005* (PD Act), the WAPC referred MRS Amendment 1388/57 to the Environmental Protection Authority (EPA) on 11 November 2021. On 19 April 2022, under section 48A of the *Environmental Protection Act 1986* (EP Act) the EPA decided to assess (Environmental Review) (Assessment No. 2335). The EPA published the Environmental Review Instructions on its website on 16 August 2022. The WAPC published the ERD including a concept plan (Figure 2) concurrently with the MRS Amendment on its website for public review for 60 days from 8 October 2024 to 9 December 2024. The WAPC received 108 public submissions during the public review period.

Context and environmental values

The MRS Amendment area comprises numerous landholdings (ranging in size from approximately 1 ha to 5 ha) and is a mixture of land uses, including large residential and rural living lots, composite business along Welshpool Road, landscape supply and horticulture. A former turf farm is located centrally along the western boundary of the amendment area (Lots 303, 53, 214 and 213) south of Brentwood Road. The amendment area is in proximity to land identified as Urban Expansion (UE) and Urban Investigation (UI) areas in the WAPC North-East Sub-Regional Planning Framework. There is an infrastructure (Water Corporation and Dampier to Bunbury Natural Gas Pipeline [DBNGP]) pipeline and easement which run long the western boundary of the amendment area.

The Maddington Kenwick Strategic Employment Area (MKSEA) and Greater Brixton Street Wetlands (GBSW) are located adjacent to the amendment area, on the western side of Tonkin Highway. No Bush Forever sites occur within the amendment area (Figure 3).

Inland waters, flora and vegetation and terrestrial fauna are key environmental factors that would be impacted by implementation of the amendment.

The amendment area contains fragmented remnant vegetation consisting of the following environmental values:

- Resource Enhancement Wetlands (REW) (with adjacent Conservation Category Wetlands [CCW])
- under represented vegetation (Forrestfield, Guildford and Southern River complexes)
- Banksia Woodlands of the Swan Coastal Plain (SCP) Priority Ecological Community (PEC) (state). Floristic Community Types (FCT) likely to be representative of Banksia attenuata woodlands over species rich dense shrublands (FCT 20a) Critically Endangered (*Biodiversity Conservation Act 2016* [BC Act]) and Shrublands and Woodlands of the Eastern Swan Coastal Plain (FCT 20c) (Critically Endangered (BC Act) and Federal Threatened Ecological Community (TEC) – Endangered (*Environment Protection and Biodiversity and Conservation Act 1999* [EPBC Act])
- *Conospermum undulatum* (Wavy-leaved Smoke bush) – listed as Vulnerable under the EPBC Act and BC Act
- *Isopogon autumnalis* (Autumn Isopogon) (P3), previously named *Isopogon drummondii* – listed under the Department of Biodiversity Conservation and Attractions (DBCA) Priority flora list.

Future planning processes

The amendment area is currently zoned 'Special Rural' under the City of Kalamunda Local Planning Scheme (LPS) No. 3. The EPA notes that while the MRS amendment seeks to rezone the amendment area, there is an intention that the WAPC will concurrently rezone the area to 'Urban Development' zone under the City of Kalamunda LPS No. 3, to facilitate the future structure planning, subdivision, development and use of land for residential and associated purposes (Coterra Environment *et al*. 2024). This means that a future local planning scheme amendment will not be referred to the EPA under the EP Act.

The EPA notes the ERD (Section 13; Table 13.1) provides an Environmental Management Framework which highlights the planning mechanisms (i.e. LPS, structure planning, subdivision and development) and associated Decision-Making Authority (DMA) actions and predicted environmental outcomes for the amendment area (Coterra Environment *et al*. 2024).

It is the expectation of the EPA that subsequent LPS rezoning, structure planning and subdivision and DA stages for the amendment area will consider, mitigate and manage the potential environmental impacts resultant from the intended land uses identified in the MRS Amendment.

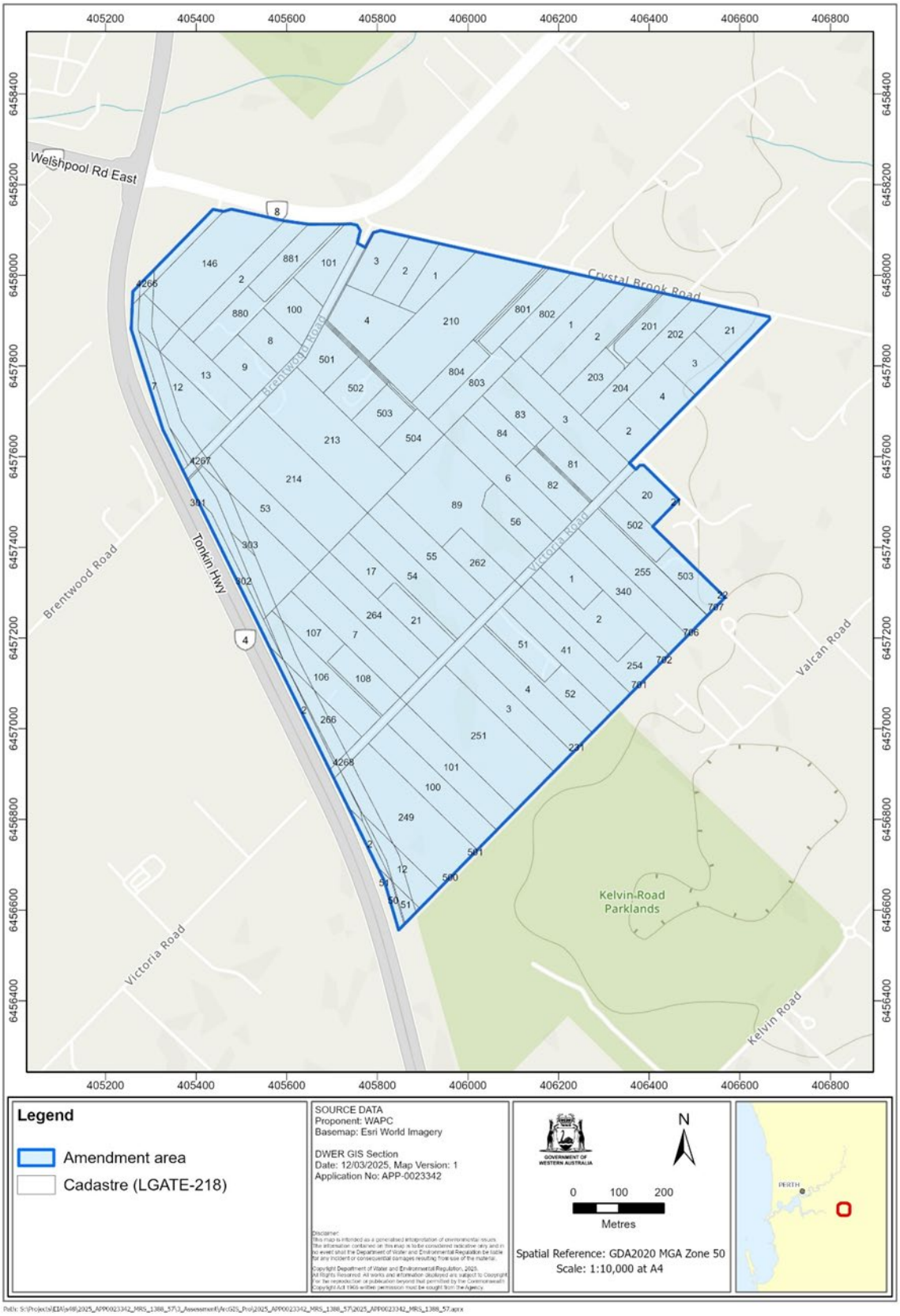

Figure 1: Amendment location

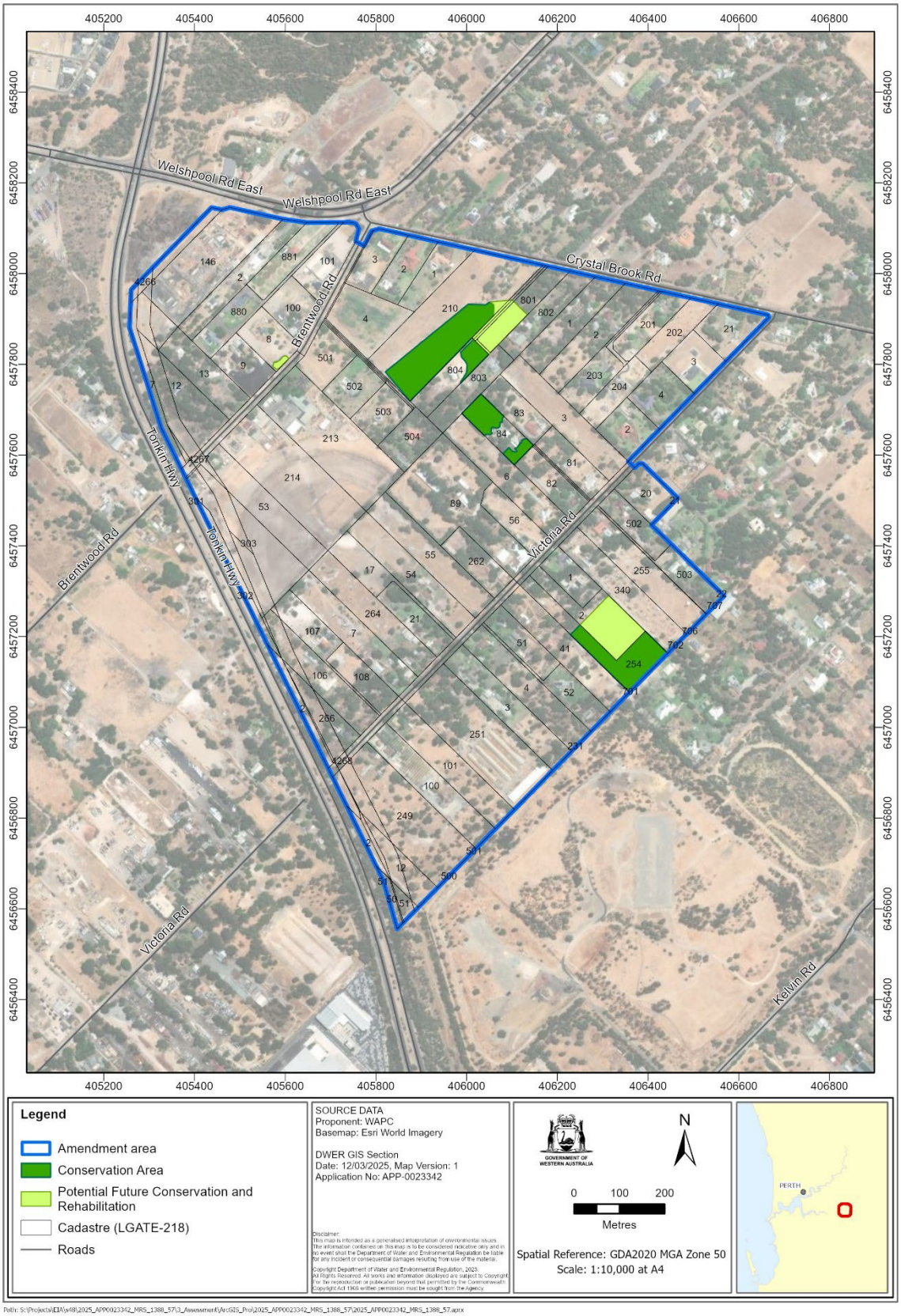

Figure 2: Concept plan (as depicted in the ERD) (retention areas)

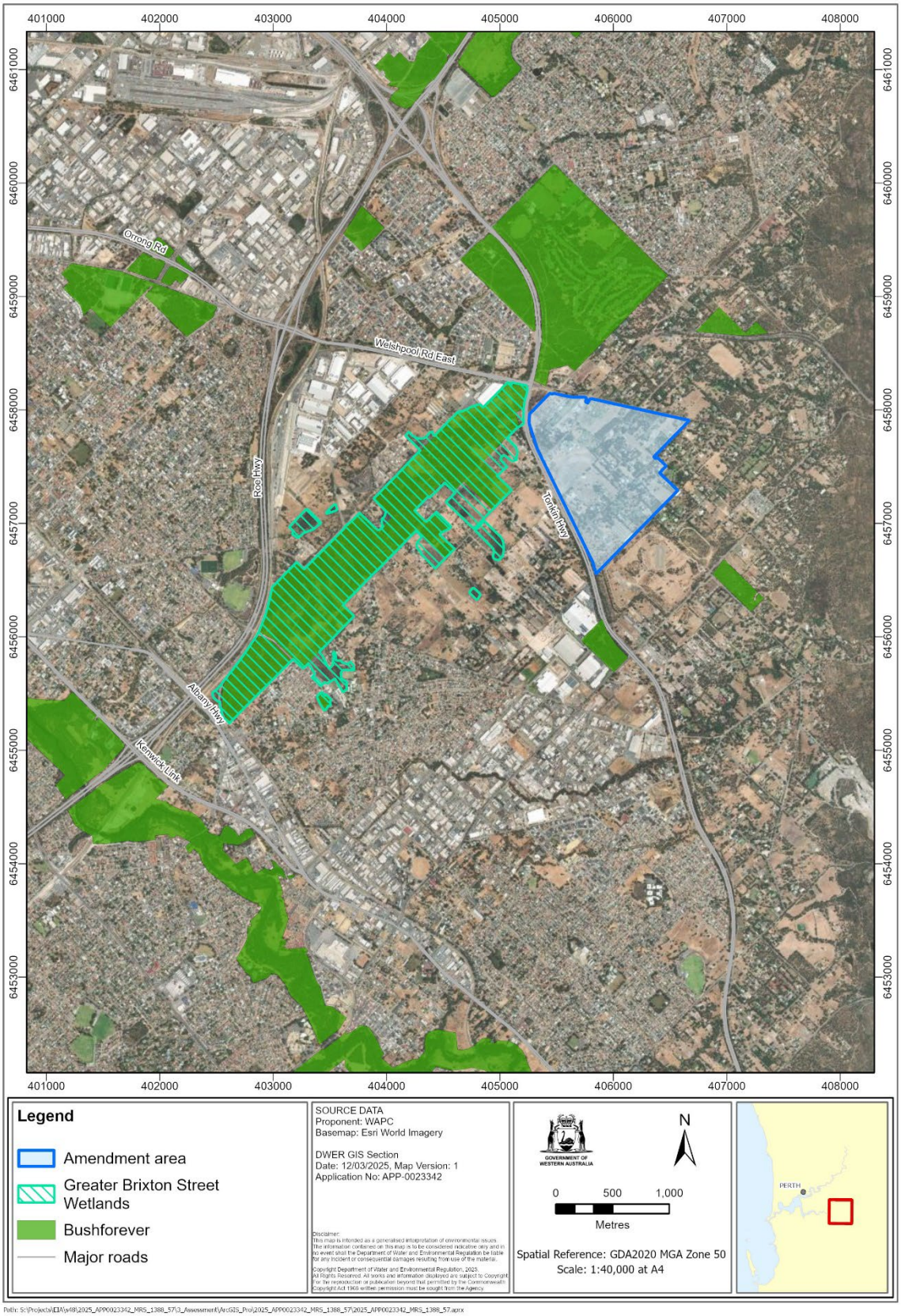

Figure 3: Amendment location and regional conservation values

2 Assessment of key environmental factors

This section reports the:

- outcome of the EPA's assessment of the key environmental factors against its environmental objectives, and its recommendations on conditions the amendment should be subject to, if it is implemented. The concept plan (Figure 2) (which depicts retention areas containing significant environmental values) has been a fundamental consideration for the EPA. The plan reflects the application of the mitigation hierarchy to avoid and minimise potential effects to environmental values.
- EPA's consideration of future planning processes which are likely to further mitigate and protect environmental values.

In assessing this amendment, the EPA has also considered the principles of the EP Act (see Appendix C) and has also had regard to its conclusions in other recent assessments, including Tonkin Highway Grade Separated Interchanges (Hale Road and Welshpool Road (Assessment 2293), MRS Amendment 1344/57 Maida Vale Urban Precinct (Assessment 2175) and City of Gosnells Town Planning Scheme 6 Amendments 166 and 169 (Assessment 2176 and 2177).

The EPA evaluated the impacts of the amendment on other environmental factors and concluded these were not key environmental factors for the assessment. This evaluation is included in Appendix D.

2.1 Inland waters

The EPA environmental objective for inland waters is *to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected* (EPA 2018).

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

- Environmental Review Metropolitan Region Scheme Amendment 1388/57 – Wattle Grove South) (Coterra Environment *et al*. 2024)
- Water Balance Assessment, Wattle Grove South MRS Amendment (Emerge Associates (Emerge) 2024).
- District Water Management Strategy – Wattle Grove South (Hyd2o Hydrology (Hyd2o) (2024))
- Wattle Grove South MRS Amendment 1388/57: Wetland Assessment (Pentium Water 2024).

The EPA considers that there were relevant studies to appropriately inform the assessment of the potential impacts from the implementation of the amendment to inland waters. The EPA has considered the information presented in the ERD (including appendices), DWER advice and the peer review (UWA 2025), and has reached the conclusion that sufficient baseline monitoring data has been presented to inform the assessment. The EPA has proceeded with its assessment based on the information within the ERD, technical advice provided by DWER, DBCA and the

peer review (UWA 2025), and the WAPC (2025) RtS document.

Table 1: Assessment of impacts to inland water values, recommended regulation and environmental outcomes

Key environmental values and context	
The amendment area is in close proximity to GBSW and within the Yule Brook sub-catchment. The hydrology of the GBSW and its catchment (including Yule Brook) is considered complex. For further information on GBSW refer to the *EPA (2022) Environmental values and pressures for the Greater Brixton Street Wetlands on the Swan Coastal Plain: Advice in accordance with section 16(j) of the EP Act*. On site groundwater monitoring has indicated that groundwater flows were found to be radial with a local mound evident along the central western boundary of the amendment area. The likely factors contributing to the observed groundwater mound include geology and groundwater irrigation of the (former) turf farm (Hyd2o 2024). A soil transition from sandy Yoganup soils to the Guildford complex occurs within the amendment area. In the small area of the site that is underlain by the Guildford complex, the complexity of the hydrogeology is predominantly due to the characteristics of this complex where hardpans and clay lenses introduce perching and areas of low transmissivity (Coterra Environment et al. 2024). REWs within the amendment area (UFI 8037 and portion of UFI 15257) are considered to have been infilled or are 'completely degraded' and are proposed to be removed from the Geomorphic Wetlands of the Swan Coastal Plain (GWSCP) dataset. The CCW and REW located in Lot 510 adjacent to amendment area are also considered to be highly modified and representative of multiple use wetland or REW (Pentium Water 2024). The amendment area contains an existing drainage system, including roadside swales and drainage lines, that represents a modification of the original hydrology of the area and provides a drainage function for the current rural residential land use. Stormwater runoff from the amendment area enters the northern remnant of the Crystal Brook and the realigned Crystal Brook within the GBSW. Within the amendment area overland flow is in a north-westerly direction, and this surface water flow (if it is not infiltrated in the Yoganup Formation sandy soil profile) is intercepted by open roadside drains located along Boundary Road, Brentwood Road and Victoria Road and piped drains within private landholdings. The roadside drains are located above the groundwater table. These drains direct the surface water in a westerly to south-westerly direction towards three culvert outlets, positioned under Tonkin Highway (Hyd2o 2024).	
Impacts from the amendment	**Assessment finding, environmental outcomes and recommended conditions**
Potential direct impacts Potential impacts to inland waters from: • clearing for proposed urban development • increase in impervious surfaces within amendment area • impacts to REWs within amendment area.	**1.1 Pre-development – baseline hydrological data** The technical studies have been informed by a hydrological (groundwater and surface water) monitoring program that commenced in 2020 and is ongoing (Hyd2o 2024). The hydrological monitoring program was developed in consultation with DWER and DBCA and builds on previous monitoring programs undertaken across the amendment area and GBSW area. The current program includes monitoring of surface water and groundwater quality, groundwater levels and surface water flow monitoring within, upstream and downstream of the amendment area. Given the significance of the receiving environment (GBSW), the complexity of the system and the relative uncertainties

Alteration of the hydrological regime within the amendment area and the GBSW including: • surface water volume, flow and quality • groundwater recharge, throughflow and quality • the existing water balance • potential water quality impacts through nutrient input from urban development, erosion/sedimentation during construction, disturbance of acid sulphate soils (ASS), changes to soil sodicity and salinity, and hydrocarbons from increased traffic. **Potential indirect impacts** • alteration to local hydrological regimes may impact groundwater dependent ecosystems within the amendment area and GBSW. **Avoidance measures** • no avoidance measures proposed. **Minimisation measures** The WAPC has proposed measures to minimise impacts to inland waters through subsequent planning processes (i.e. structure plan and subdivision/DA) as outlined in Tables 5-35, 5-38, and 13-1 of the ERD and summarised below: • the Tonkin Highway reserve in combination with the Water Corporation pipeline and DBNGP easements establishes a minimum 100 m physical boundary between the GBSW wetlands and the MRS amendment area at the closest point • implementation of a District Water Management Strategy (DWMS), with Local Water Management Strategy (LWMS), Urban Water	regarding the hydrological functioning of this environment, the EPA supports ongoing pre-development monitoring consistent with the current program outlined in Hyd2o (2024). The pre-development monitoring program should inform water management documents associated future stages of planning and development to be consistent with the EPA's recommended condition 3(4). The EPA has also recommended condition 8(2)(b) to ensure that future subdivision considers pre-development monitoring. **1.2 Water balance** The EPA notes the findings of the Water Balance Assessment (WBA) (Emerge 2024) that future development within the amendment area will change the water balance by reducing evapotranspiration and increasing recharge and surface runoff. The water balance of the amendment area will be changed further should future development occur in the UE and UI areas (Emerge 2024). Assessment of future climate change impacts indicates a likely impact on the water balance due to reduced rainfall volumes (Emerge 2024). The EPA has considered the peer review (UWA 2025) which concluded that the overall methodologies used in the WBA (Emerge 2024) are standard and data provided is comprehensive. However, the peer review (UWA 2025) also noted that any urban water balance involves a degree of uncertainty and provides recommendations to be implemented to inform the water balance in order to reduce uncertainty. The EPA considers that the risk of uncertainty is related to the risk of potential impacts to the GBSW and considers these risks can be managed through recommended condition 3(4) requiring avoidance of adverse impacts to the GBSW, as well as conditions 1, 2, 8, 9 and 10. The peer review (UWA 2025) suggests the construction of a numerical groundwater flow model or a more advanced model for coupled ground and surface water flows would provide an improved understanding of the current and future hydrological processes that occur within the vicinity of the amendment area and better inform future development. The EPA considers the development of the numerical model is outside the scope of the assessment (EPA Environmental Review instructions dated 15 August 2022) of this particular amendment. However, opportunities to undertake this modelling are discussed under section 5 'Other Advice'. **1.3 Hydrological Regimes** *1.3.1 Groundwater* The EPA has considered that the groundwater level data (DWMS; Hyd2o 2024) provides a refined analysis of local groundwater contours in comparison to regional bores. The ERD (Coterra Environment *et al*. 2024) proposes the continuation of the hydrological monitoring program to collect ongoing data. This is supported by the EPA and condition 8(2)(b) is recommended.

Management Plan (UWMP) to be prepared and implemented prior to ground-disturbing activities. These water management documents are proposed to include detail on the following mitigation measures to be implemented as part of future development: ○ post-development stormwater flows from the amendment area maintained consistent with existing conditions ○ locate stormwater management areas in areas of the existing groundwater mound to maintain the annual predevelopment groundwater recharge and flow direction in that area ○ use of water quality controls such as rain gardens and biofiltration areas (including for inflow to the CCWs and REW in Lot 501) ○ implementation of flexible infrastructure arrangements to enable system adjustments to downstream environmental needs as/if required including under climate change conditions. • implementation of the Construction Environmental Management Plan (CEMP), which includes management measures during and post-construction • implementation of an Acid Sulphate Soils (ASS) Management Plan if necessary following ASS investigations • establishment of baseline water quality and quantity information to set water quality/quantity targets,	The EPA has considered the conclusion that the groundwater mounding present within the amendment area is as a result of both the local geology and the irrigation of the former turf farm, and the further conclusion that the influence of the groundwater mound on groundwater levels extends over the northern portion of the GBSW (Figure 5-12 of ERD) (Coterra Environment *et al*. 2024 and Hyd2o 2024). The EPA has considered the EPA (2022) s16j advice that there are gaps in knowledge of the hydrology and hydrogeology of the GBSW, including the interaction between wetland areas, the superficial aquifer and the Leederville aquifer. The EPA is of the view that even limited hydrological connections between the amendment area and the GBSW may have significance in terms of potential impacts. The EPA understands that the ERD proposes to retain the groundwater mound within the amendment area on the basis that this represents the functioning of the system for over twenty years and that the ERD asserts that this will result in mitigation of impacts to the GBSW (Coterra Environment *et al*. 2024). The EPA has considered DWER advice regarding potential feasibility issues associated with the long-term operation and maintenance of the systems proposed to maintain the mound through the use of stormwater management and notes the peer review (UWA 2025) also raises the issue of potential alterations to seasonality of groundwater movements. The EPA also notes the unknowns around the alternative scenarios of the groundwater mound being managed as less pronounced. The EPA notes that in relation to the proposed maintenance of the groundwater mound, the DWMS (Hyd2o 2024) commits the future proponent for development within the amendment area to continue to work with relevant agencies toward any agreed alternative objective for the benefit of the GBSW area should this be required. The ERD (Coterra Environment *et al*. 2024) proposes that this can readily be achieved through the proposed adaptive management approach. In considering DWER advice and the recommendations of the peer review (UWA 2025) related to the groundwater mound, it is the EPA's view that there is a risk of potential impacts to the GBSW. The EPA notes the proposed management measures in the ERD and expects these to be implemented, in particular adaptive management. The EPA considers the risks to the GBSW can be minimised through the implementation of recommended conditions 3(4), 8, 9 and 10 which include an environmental outcome of avoiding adverse impacts to the GBSW and preparation of an urban water management plan and environmental performance reporting. Subject to these recommended conditions, the environmental outcomes are likely to be consistent with the EPA objective for this factor. The EPA notes:

thresholds and triggers (noting current pre-development monitoring program from 2020-present is proposed to be ongoing) • post-development monitoring plan, with annual reporting and contingency measures proposed • use of adaptive management strategies based on monitoring outcomes to inform future planning and decision making. **Rehabilitation measures** • none proposed **Consultation** The key matters raised during the consultation period include: • impact to GBSW hydrology • the depth to groundwater and the various aquifers across the amendment have not been sufficiently detailed • flawed hydrological modelling and water balance calculations (assumptions) do not discuss worst - case scenario • underestimation of the 'true' impact (increase in surface water flows to GBSW) • groundwater mound disruption: no analysis on whether ending abstraction will alter the local groundwater mound • inadequate wetland buffer zone methodology • no cumulative impact assessment hence not consistent with the EPA (2022) s.16(j) advice • inadequate monitoring enforcement to long-term wetland protection. The key issues raised during the WAPC public consultation on the amendment and the WAPC (2025) RtS document which provided a response to these concerns, have been considered by the EPA.	• that the peer review (UWA 2025) provides several recommendations for modelling of the GBSW to better understand the hydrological/hydrogeological function of the GBSW and its catchment. Some of these recommendations are outside the scope of the assessment of the amendment, however are considered by the EPA to be important in a regional and cumulative context; and • that the groundwater level results presented in the DWMS (Hy2do 2024) show a declining trend since the ceasing of operations and irrigation at the turf farm in 2023. The influence of this on groundwater levels and flow to the GBSW is not certain. The management of this issue is considered to be outside the scope of the assessment of the amendment, and therefore, the EPA has discussed the above matters in section 5 'Other Advice'. The EPA has considered the ability of the proposed management measures being able to mitigate impacts to groundwater hydrology and recommends conditions to ensure that the proposed management measures are implemented through subsequent planning stages of future development. The EPA considers the potential impacts to hydrological regimes (groundwater) are manageable and can be regulated through recommended conditions 1, 3(4), 8, 9 and 10 to ensure that the implementation of the scheme achieves the environmental outcomes outlined in these conditions. Subject to these recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for inland waters. *1.3.2 Surface Water* The EPA has considered that: • the ERD asserts that the volumetric changes in surface water directly and indirectly entering the GBSW could be considered as minor in comparing pre and post development volumes and in the context of the overall water balance of the GBSW (Coterra Environment *et al*. 2024) • even if a small proportion of the whole GBSW water balance is derived from the amendment area this does not imply that changes to fluxes from the amendment area have a negligible impact on the GBSW (UWA 2025) • a small variation in hydrological regime on groundwater-dependent ecosystems of the GBSW could cause a significant impact on environmental values associated with these areas. The EPA acknowledges the proposed management measures for potential surface water impacts (Coterra Environment *et al*. 2024). The EPA advises that the potential impacts from changes to surface water hydrology can be managed through recommended conditions 1, 3(4), 8, 9 and 10. Subject to these recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for inland waters.

	1.4 Water Quality The EPA (2022) highlights the sensitivity of the receiving (GBSW) system to changes to groundwater and surface water quality. The EPA considers: • that adequate information about the baseline water quality and chemistry has been provided in the ERD (Coterra Environment *et al*. 2024) and DWMS (Hyd2o 2024) and • that evidence to demonstrate how the proposed drainage structures will manage surface water has provided some certainty that the risks to water quality will be mitigated so there is no irreversible impact to the receiving environment. The EPA recommends conditions 1, 3(4), 8, 9 and 10 to ensure that post-development water quality does not adversely impact the GBSW. The EPA considers that with the implementation of the recommended conditions, impacts to water quality from the amendment can be managed to be consistent with the EPA's objective for inland waters. **1.5 Drainage Management** The EPA notes that detailed drainage design for future development within the amendment area has not yet been completed given the current regional planning phase (MRS). However, the EPA acknowledges the WAPC commitment to future detailed drainage design as part of standard future planning processes (preparation of an LWMS and UWMP), and that the design is intended to incorporate both existing and proposed drainage infrastructure to capture, treat, convey and infiltrate runoff (Coterra Environment *et al.* (2024) and DWMS (Hyd2o 2024)). The EPA recommends conditions 3(4), 8, 9 and 10 to ensure the implementation and outcomes of drainage management will be consistent with the EPA's objective for inland waters. The EPA advises that there are associated risks to environmental values with disparate and staged development, with land parcels being developed without the entirety of the proposed management system in place. However, the EPA has confidence in the ability of the proposed management measures being able to mitigate significant impacts and meet predicted outcomes through implementation of recommended conditions 1, 3(4) and 8 requiring each stage of subdivision to meet the EPA's environmental outcomes. **1.6 Post development monitoring** The EPA is of the view that a comprehensive post development hydrological (surface water and groundwater) program will assist in determining whether the proposed mitigation and management measures are achieving the required objectives and will inform the need for contingency actions or adaptive management measures to be implemented.

	The EPA notes the discussion in the DWMS (Hyd2o 2024) that several post development monitoring programs for individual development areas are likely to be required depending on staging, and that a longer ongoing monitoring program will ultimately result with a focus on the current development stage outcomes in the context of assessing whole of development performance outcomes. The EPA is of the view that a coordinated post-development monitoring approach across the amendment area and other development areas surrounding the GBSW would lead to an improved ability to manage impacts to the GBSW. This is considered outside the scope of the assessment of this amendment, however is considered in section 5 'Other Advice'. The EPA notes Table 5-36 of the ERD (Coterra Environment *et al*. 2024) as the minimum framework for the post development monitoring program. The EPA has recommended condition 8 for the preparation of a UWMP that is consistent with the environmental outcome in condition 3(4). The EPA notes that a UWMP document is typically expected to include development of a hydrological monitoring program to be implemented post subdivision. The EPA has provided specific advice regarding post development hydrological monitoring (see C*onsideration of further protection (avoidance) and mitigation of environmental values through future planning processes*). The EPA expects this advice to be implemented and expects that any post development monitoring program is refined in consultation with relevant agencies (including DWER and the City of Kalamunda) through future stages of planning, is implemented and is used to inform consistency of future development with the environmental outcome in condition 3(4) and the EPA's objective for inland waters. The EPA also recommends condition 1 for the objective of the scheme that subdivision and development is to be consistent with the environmental outcomes of the conditions including condition 3(4), and the EPA expects that this will assist in a more consistent approach to post development monitoring across the amendment area. **1.7 Cumulative impact assessment** The EPA has considered the existing and reasonably foreseeable cumulative impacts to conservation significant inland waters values from developments occurring in the vicinity of the amendment. This includes development within the MKSEA, the construction of the Tonkin Highway (Hale and Welshpool Roads), and the future UE and UI areas. The EPA's cumulative impact assessment has considered the cumulative effects from the range of threats and pressures in the area of the amendment and whether the environment affected by the amendment has significant value due to other successive, incremental and interactive cumulative impacts in the assessment area. While cumulative impacts to inland waters values by this amendment are not at a level that would warrant a

	recommendation not to implement the amendment, the EPA considers that the incremental impacts to the GBSW by urban and industrial (business development) land uses must be appropriately managed, consistent with the EPA's (2022) s16j advice. The EPA has therefore recommended condition 3(4) to ensure the outcome of avoidance and minimisation of adverse impacts to the GBSW. The recommended conditions would ensure that the environmental outcomes are likely to be consistent with the EPA objective for this factor. In addition, the EPA has provided further recommendations under section 5 'Other Advice' that would assist to protect and manage the GBSW from cumulative impacts. Based on the proposed mitigation measures and recommended conditions, the amendment is unlikely to have a significant cumulative impact on inland waters values. **1.8 Offset** The EPA advises that based on the application of the mitigation hierarchy, the implementation of the amendment is unlikely to have a significant residual impact to inland waters, in particular the inland waters values of the GBSW. However, the EPA has recommended conditions to ensure the environmental outcome is consistent with the EPA objective for inland waters.

Recommended conditions to ensure consistency of environmental outcome with EPA objectives

MRS Amendment (schedule)

Environmental outcomes

- Condition 1. Objective of scheme
- Condition 2. Responsible Authority must act consistently with Ministerial Statement
- Condition 3. Environmental outcomes

Water Management

- Condition 8. UWMP

Reporting

- Condition 9 and 10. Environmental performance report

Consideration of further protection (avoidance) and mitigation of environmental values through future planning processes

Strategies and Plans

The EPA acknowledges that mitigation and protection of inland waters values are proposed through future planning processes. Proposed mitigation and management measures are outlined in Table 5-38 and Table 13-1 of the ERD (Coterra Environment *et al*. 2024).

The EPA notes that LWMS documents are required through the planning process to be prepared as part of structure planning and UWMP documents as part of subdivision. The EPA notes that stormwater management and infrastructure can also be subject to regulation by WAPC under the PD Act (subdivision or DA).

The EPA supports:

- the WAPC commitment to the protection and management mechanisms outlined in the ERD,
- the finalisation of the DWMS and the preparation of LWMS (submitted and endorsed at structure planning stage) and UWMP (submitted and endorsed at subdivision stage) documents, consistent with the EPA's assessment findings and environmental outcomes, and on advice of DWER and the City of Kalamunda as relevant,
- the framework for the CEMP and ASSMP (section 5.5.1.3 and Table 5-35 of ERD) (Coterra Environment *et al*. 2024).

The EPA expects that further to recommended Condition 8, any water management plans or strategies (including LWMS and UWMP documents) prepared for the amendment area will consider and include:

- ongoing hydrological monitoring that is at minimum consistent with the DWMS (Hyd2o, 2024) and may be subject to refinement during future of stages of planning on advice of DWER
- threshold criteria[1] that provide a limit beyond which the environmental outcome in condition 3(4) would not be achieved
- includes trigger criteria[2] that will provide an early warning that the environmental outcome in condition 3(4) is not likely to be met
- contingency measures[3] which will be implemented if threshold criteria and trigger criteria are not met
- a post development hydrological (groundwater and surface water) monitoring program that determines whether the environmental outcome in condition 3(4) is not being met
- a post development monitoring program that determines the effectiveness of drainage infrastructure
- detailed design of treatment functions demonstrated to sufficiently manage risks to water quality
- adaptive management methodology
- a framework for how adaptive management measures and contingency measures will be implemented if threshold criteria and trigger criteria are not met, to avoid and minimise adverse impacts to the GBSW as a result of the urban development
- a framework for how ongoing reporting (including but not limited to being in relation to conditions 9 and 10) will consider:
    - advising DWER when threshold criteria or trigger criteria exceedances are identified
    - implementation of contingency measures and their effectiveness
    - investigations to determine the cause of any threshold criteria being exceeded
    - the provision of information to DWER to determine the potential environmental harm or alteration of the environment (for the GBSW) that has occurred due to the threshold criteria being exceeded
    - measures to prevent the threshold criteria being exceeded in the future
    - measures to prevent, control or abate impacts which may have occurred; and
    - justification for the retention of, or, based on improved understanding, the adjustment of, the threshold criteria, demonstrating that the outcome of avoidance (or where not practicable, minimisation) of adverse impacts to the GBSW as a result of urban development of the amendment area will be met.

[1] Indicators that have been selected to represent limits of impact beyond which the environmental outcome is not being met. The threshold criteria should include consideration of seasonality.

[2] 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. The trigger criteria should include consideration of seasonality.

[3] Planned actions for implementation if it is identified that an environmental outcome, environmental objective, threshold criteria, or management target is likely to be, or is being, exceeded. Contingency measures include changes to or reductions in adverse impacts to reduce impacts and must be decisive actions that will quickly bring the impact to below any relevant threshold or management target and to ensure that the environmental outcome or objective can be met.

The EPA considers that implementation of the above, in particular appropriate monitoring, adaptive methodology management, and reporting, will provide further protection and management of impacts to the GBSW.

Coordinated Drainage and Water Quality Management
The EPA notes that the amendment area will be developed incrementally due to disparate land ownership and the proposed drainage management infrastructure will be developed in a 'piecemeal' approach as each subdivision is approved. The EPA has considered long-term coordinated management of drainage and water quality management assets would not typically occur as part of the planning process until a sufficient amount of land is within City of Kalamunda ownership. However, the EPA considers that coordinated management of drainage and water quality management assets from design through to the outset of construction and full implementation would provide beneficial outcomes, and this is further discussed in section 5 – 'Other Advice'.

2.2 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 WAPC investigations and surveys were used to inform the assessment of the potential impacts to flora and vegetation:

- Environmental Review Metropolitan Region Scheme Amendment 1388/57 – Wattle Grove South) (Coterra Environment *et al*. 2024)
- Wattle Grove South MRS Amendment Area Ecological Survey Effort – Technical Memo (JBS&G 2024) (Appendix D of ERD)
- Wattle Grove Floristic Community Type Analysis (Plantecology 2024) (Appendix E of ERD)

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 notes that 8 lots were not surveyed due to no site access (Figure 6-1 of ERD). However, the EPA considers it has sufficient information to proceed with its assessment as approximately 92% of the amendment area has been surveyed for flora and vegetation and terrestrial fauna values; this includes the assessment of 13 lots from the lot boundary. The EPA also notes that since the 2020 and 2024 flora and vegetation surveys, portions of remanent vegetation within Lot 8 and 9 Brentwood Road have been cleared, however, not in relation to this amendment.

The EPA has also considered the Department of Environment and Conservation/Department of Parks and Wildlife (DPAW)/TSSC conservation advice and recovery plans 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	
The amendment area is predominantly (72.8%) cleared, with patches of native vegetation (4.56 ha). Three native vegetation communities (BaEpPf [4.23 ha], BmXpEc [0.28 ha] (Banksia Woodland) and EmMpLp [0.05 ha] (Eucalyptus marginata Woodland)) have been recorded and are reported to be of 'Completely Degraded' to 'Very good' condition within the amendment area[4] (Figure 6-4 ERD; Coterra Environmental *et al*. 2024). The Floristic Community Type (FCT) statistical analysis of quadrats within and outside the amendment area indicate the probable (inferred) FCT occurrences including, FCT 20a *Banksia attenuata* woodlands over species rich dense shrublands (WA TEC – Critically Endangered (BC Act)) and FCT 20c Shrublands and woodlands of the eastern side of the Swan Coastal Plain (WA TEC – Critically Endangered (BC Act) and Federal TEC – Endangered (EPBC Act)) (Plantecology, 2024). Four Banksia Woodland PEC patches have been recorded within the amendment area. Patch 1- 1.8 ha (inferred FCT 20a), Patch 2- 0.35 ha (FCT 20a), Patch 3- 0.3 ha (inferred FCT 20c) and Patch 4- 2.07 ha (inferred FCT 20a) (Figure 6-5 ERD; Coterra Environmental *et al*. 2024). Approximately 29.5 ha (23.5%) of highly modified vegetation (planted and maintained gardens and scattered trees) recorded to be in 'Completely Degraded' condition has been recorded across the amendment area. Two conservation significant flora taxa were/have been recorded, which include 84 individuals of *Conospermum. undulatum* (T) and 20 individuals of *Isopogon autumnalis* (P3) (Coterra Environmental *et al*. 2024).	
Impacts from the amendment	**Assessment finding, environmental outcomes and recommended conditions**

Potential direct impacts
 	
Potential impacts to flora and vegetation from:
• clearing of up to:
  ○ 4.56 ha of remnant vegetation (representative of Forrestfield Complex or Guildford Complex)
  ○ 3.87 ha of inferred FCT 20a *Banksia attenuata* woodlands over species rich dense shrublands WA TEC
  ○ 0.3 ha of inferred FCT 20c Shrublands and Woodlands of the eastern side of the
	2.1 Regionally significant vegetation, conservation significant ecological communities and flora
	
	The amendment area contains regionally significant flora and vegetation. The EPA notes that at a minimum the following environmental values are to be retained:
	• 4.40 ha remnant vegetation which consists of poorly represented vegetation (Forrestfield and Southern River) complexes ('Good' to 'Excellent' condition)
	• 3.87 ha inferred FCT 20a *B. attenuata* woodlands over species rich dense shrublands WA TEC
	• 0.3 ha inferred FCT 20c Shrublands and Woodlands of the eastern side of the Swan Coastal Plain WA TEC
	• 79 individuals of *C. undulatum*
	• 15 individuals of *I. autumnalis*.
	
	The EPA notes that the avoidance and mitigation measures rely on the future establishment of retention areas which include areas of regionally significant vegetation which includes TEC (FCT20a and FCT 20c) and Threatened and Priority flora (Figure 2). A high level of protection and a coordinated

[4] Areas not subject to a site survey have been extrapolated based on adjacent ecological values, review of aerial imagery and where possible visual assessment from adjoining lots and road reserves (Coterra Environmental *et al*. 2024).

Swan Coastal Plain WA TEC ○ 84 individuals of *Conospermum undulatum* ○ 20 individuals of *Isopogon autumnalis* • further fragmentation of remnant vegetation patches. **Potential indirect impacts** • 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. **Avoidance measures** • the concept plan (Figure 2) depicts retention areas which support TEC and threatened and priority flora. **Minimisation measures** The WAPC has proposed measures to minimise impacts to flora and vegetation at subsequent planning processes (i.e. structure plan and subdivision/DA): • Conservation Area Management Strategy (CAMS) • Tree Canopy Retention and Landscape Management Strategy (TCRLMS) and Plan (TCRLMP) • Construction Environmental Management Plan (CEMP) **Rehabilitation measures** • rehabilitation program to: ○ manage TEC vegetation in 'Good' or better condition ○ restore TEC vegetation in degraded condition so that the vegetation condition rating of 'Good' or better is achieved.	management approach is required to ensure long term viability and management for these retention areas to ensure the amendment will be likely to conserve biological diversity and ecological integrity and that the environmental outcomes are achieved. The EPA is supportive of the WAPC commitment to the protection and management mechanisms for retention areas through the framework for the CAMS (at structure plan) and CAMP (at subdivision). The EPA notes the environmental outcome of these documents is to ensure the long-term protection and management of the retention areas including flora and restoration of TEC to prevent environmental values from being degraded. The EPA has recommended conditions 1 (objective of scheme), 3 (environmental outcomes) and 4 (CAMP). **2.2 Potential impacts to environmental values outside retention areas** Based on existing survey information and concept plan design (Figure 2): • approximately 0.16 ha of remnant vegetation (BmXpEx and BaEpPf) in 'Degraded' to 'Completely Degraded' and not classified as Banksia Woodland PEC is likely to be cleared. • 10 individuals of conservation significant flora, of which 5 individuals of *C. undulatum*[5] and 5 individuals of *I. autumnalis* (Figure 6-6 of ERD) in road reserve and Water Corporation infrastructure corridor may be impacted. Further to the above, the EPA has considered: • the loss of the vegetation (BmXpEx and BaEpPf) above is not a significant impact • there are several local *C. undulatum* populations within conservation areas/or retention areas in the local region (Bush Forever sites Hartfield Park and GBSW and retention (conservation areas) within the City of Gosnells Town Planning Scheme 6 Amendment Areas 166 and 169), and considered that the 5 individuals to be impacted is not likely to affect the local or regional species extent of occurrence (EOO) and an area of occupancy (AOO) • the *I. autumnalis* has an extensive EOO and AOO and is located within local Bush Forever sites, therefore proposed clearing is not expected to significantly impact on the local extent, regional extent, or conservation status of the species • that the proposed impact to these significant flora species is not a residual impact that requires a condition to ensure the environmental outcome is consistent with the EPA objective for this factor. The EPA has considered the hierarchy of protect, restore, and offset as set out in the DEC (2009) recovery plan for

[5] This includes 2 individuals which are assumed cleared in Lots 8 and 9 Brentwood Road.

Consultation

The key matters raised during the consultation period include:

- permanent fragmentation of flora and vegetation within an ecological linkage
- loss of biodiversity and urban tree canopy
- inadequate protection of TEC (viability of isolated patches)
- suitability of proposed offsets and whether they counter-balance residual impact.

The key issues raised during the WAPC public consultation on the amendment and the WAPC (2025) RtS document which provided a response to these concerns, have been considered by the EPA.

C. undulatum. The EPA considers that the concept plan (Figure 2) has made a reasonable effort to avoid and minimise impacts to known populations of *C. undulatum* and *I. autumnalis*.

2.3 Indirect impacts: fragmentation, edge effects and weeds

The EPA considers that major threats to the TEC patches and flora (particularly in an urban context and patch sizes) include land clearing, fragmentation, edge effects, weed invasion and dieback disease caused by *Phytophthora cinnamomi* (DEC 2009; TSSC 2016). In an unmanaged urban context, these threats will continue to place pressure on the TEC condition, patch size and longevity. The FCT 20a and FCT 20c occurrences on the SCP are known to be subject to weed invasion and the future viability is not assured. Also, 38% of FCT 20a occurrences on the SCP are recorded to be affected by dieback disease (DPAW 2016). FCT 20c has a very limited EOO and AOO (TSSC 2017).

The EPA has considered that FCT 20a, FCT 20c and *C. undulatum* have very restricted distribution and are regionally rare in the Perth Metropolitan Region with remaining areas within the amendment area comprising highly fragmented occurrences. The EPA is supportive of the proposed rehabilitation criteria for the CAMP (as per Table 13-1 of ERD):

- manage TEC vegetation in 'Good' or better condition
- restore TEC vegetation in degraded condition so that the vegetation condition rating of 'Good' or better is achieved (including areas where future survey confirms the presence of TEC vegetation).

The EPA also notes that the above rehabilitation criteria is mainly in regard to vegetation condition and that a criteria relating to the threatened flora (*C. undulatum*) has not been identified. The EPA advises that the maintenance of supporting habitats and monitoring (population stability) of *C. undulatum* and implementation of associated contingency measures is recommended as per the DEC (2009) Recovery Plan. Therefore, EPA has recommended condition 4 (CAMP).

The EPA advises that, subject to the recommended conditions, there is unlikely to be significant residual impacts to the known environmental values and the environmental outcome is likely to be consistent with the EPA objective for this factor. The EPA also advises that significant modifications[6] to the concept plan (Figure 2) may result in the scheme having a significant impact on the environmental values in the amendment area.

2.4 Cumulative impact assessment

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 amendment area. The EPA's cumulative impact assessment has considered the cumulative effects from the range of threats and pressures in the area of the amendment and whether the environment affected by the change in land

[6] Reduction in retention areas containing significant environmental values.

	use (the amendment) has significant value due to other successive, incremental and interactive cumulative impacts in the assessment area. Based on the implementation of the concept plan (Figure 2) the amendment is unlikely to have a cumulative impact on the TEC and significant flora occurrences. **2.5 Offset** The EPA advises that based on the avoidance (the concept plan retention areas) and proposed mitigation, the implementation of the amendment is unlikely to have a significant residual impact to flora and vegetation and is likely to be consistent with the EPA objective for flora and vegetation.

Recommended conditions to ensure consistency of environmental outcome with EPA objectives

MRS Amendment (schedule)

Environmental outcomes

- Condition 1. Objective of scheme
- Condition 2. Responsible Authority must act consistently with Ministerial Statement
- Condition 3. Environmental outcomes

Conservation Area Management Plans

- Condition 4. CAMP prepared for the retention areas

Tree canopy

- Condition 7. TCRLMP prepared for areas outside the retention areas

Reporting

- Condition 9 and 10. Environmental performance report

Consideration of further protection (avoidance) and mitigation of environmental values through future planning processes

Strategies and Plans

The EPA acknowledges that further mitigation and protection of these environmental values are proposed at future planning processes (Table 13-1 and Table 6-17 ERD) which includes:

- submitted and approved at structure planning:
  - CAMS. Environmental outcome: to ensure the long-term protection and management of the retention area including flora and restoration of TEC to prevent environmental values from being degraded
  - TCRLMS. It is understood that the TCRLMS will set minimum canopy target of 20% and link into the City of Kalamunda (2023) Urban Forest Strategy (refer to section 7.7.3.2 of ERD)
- submitted and approved with all applications for the subdivision of land
  - CAMP (refer to CAMS)
  - TCRLMP
  - CEMP

The EPA notes that through environmental planning design and the implementation of these strategies and plans that there is opportunity to retain additional areas containing environmental values in POS and road reserve areas (outside the retention areas) (Figure 2).

The EPA notes the current dieback status is unknown in the amendment area and acknowledges that the CEMP and CAMP will address hygiene management (weeds and dieback).

The EPA has noted that the guidance for the development of a CAMP (Tables 6-18 and 6-19 of ERD) have discussed the recovery actions consistent with the recovery plans. However, the EPA notes that buffers to *C. undulatum* individuals/population have not been considered or incorporated within the retention areas. Therefore, the EPA has recommended condition 4(2)(c) to maintain the viability of the environmental values (including buffer requirements).

Unsurveyed areas
The EPA notes that flora and vegetation surveys have not been completed for several lots which contain environmental values (Figure 6-1 of ERD). The EPA recommends that future structure plan design be informed by adequate biological and ecological surveys. This will assist in the environmental planning design and development process to inform land use decisions on prioritising different areas of vegetation or assessing the significance of any proposed impacts. The EPA acknowledges:

- that while the number of individual *C. undulatum* and *I. autumnalis* recorded within two lots (Lot 210 Crystal Brook Road and Lot 2 Victoria Road) were based on lot boundary observations and that further individuals may likely be recorded, subject to an onsite survey, remnant vegetation within these lots is already included in retention areas (Figure 2)
- that there is suitable habitat for the *Drakaea elastica* (Glossy-leaved Hammer Orchid) and hence has potential to occur in the amendment area. The EPA understands that Lot 254 Victoria Road is the only lot containing Banksia Woodlands that has been surveyed for *D. elastica*. The presence of this threatened orchid species on other landholdings containing Banksia Woodlands remains unconfirmed (Coterra Environmental et al. 2024).

With regard to retention areas (Figure 2), the EPA acknowledges that the final boundary will be determined following detailed flora and vegetation surveys of unsurveyed areas and development design at subsequent planning stages. Based on the surveys completed to date, the EPA expects that the boundaries are unlikely to be significantly different to that depicted in Figure 2. However, the EPA recommends that ecological surveys of areas not surveyed (on site) be completed to inform future structure plan design. If viable significant flora populations and/or viable patches of TEC are recorded, then it is advised that it be retained with appropriate buffer areas to ensure they remain viable.

The WAPC has indicated that any applications to subdivide or develop land that was not previously the subject of onsite surveys must include an onsite survey of flora, vegetation and fauna (in accordance with EPA guidance) to be submitted at the time of the subdivision or DA, or as part of a structure plan preceding the application (Coterra Environment et al. 2024). The EPA supports the above WAPC commitments and the facilitation of subsequent surveys through future planning processes.

Offsets
The EPA advises that significant modifications to the concept plan (Figure 2) may result in a significant effect on the environmental values in the amendment area and may require referral of future proposals (subdivision) under s38 of the EP Act to the EPA. The EPA advises that should this occur an Environmental Offset Strategy (at structure plan) and Environmental Offset Plan (at subdivision/DA) may likely be required at these future stages of the planning process.

2.3 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 WAPC submitted the following investigations and surveys, which informed the assessment of the potential impacts to terrestrial fauna:

- Environmental Review Metropolitan Region Scheme Amendment 1388/57 – Wattle Grove South) (Coterra Environment *et a*l. 2024)
- Wattle Grove South MRS Amendment Area Ecological Survey Effort – Technical Memo (JBS&G 2024) (Appendix D of ERD)
- Black cockatoo habitat assessment for the Wattle Grove (South) MRS Rezoning Project (Phoenix Environmental Sciences) (Appendix of ERD)
- Wattle Grove South SRE Invertebrate Fauna Desktop Assessment (Bennelongia Environmental Consultants) (Appendix G of ERD)

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).

Refer to section 2.2 flora and vegetation for discussion of survey limitations and assumptions for the amendment area. Lots within the amendment area that have been surveyed (onsite or from lot boundary) are provided in Figure 7-1 of ERD.

The EPA has also considered the recovery plans for black cockatoo species (DEC 2008; DPAW 2013) and EPA advice (EPA 2019).

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

Key environmental values and context	
Four broad fauna habitat types have been recorded within the amendment area, which have been highly modified through various historical and current land-uses. These include Banksia Woodlands (3.59%), Eucalypt Woodlands (0.04%), Scattered Trees (21.45%) and Planted and Maintained Gardens (2.06%). A description of these habitats is provided in Table 7-4 of the ERD and depicted in Figure 7-2 of the ERD (Coterra Environment *et al*. 2024). The amendment contains suitable foraging habitat for the three species of black cockatoo, Carnaby's cockatoo (*Zanda latirostris*) (Endangered under the EPBC Act and the BC Act), Baudin's cockatoo (*Zanda baudinii)* (Endangered under the EPBC Act and the BC Act) and the Forest Red-tailed black cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable under the EPBC Act and the BC Act). Carnaby's cockatoo and Forest Red-tailed black cockatoo foraging evidence has been recorded within the amendment area, however no Baudin's cockatoo foraging evidence has been observed. Most of the amendment area consists of low foraging habitat value for all three Black cockatoos (Table 7-11 of ERD), with Banksia woodland and Eucalyptus woodland providing a range of foraging quality (from mainly medium to high value habitat) (as per Figures 7-4, 7-5 and 7-6 of ERD) (Coterra Environment *et al*. 2024). A total of 153 potential nesting trees (including Jarrah, Marri, Tuart and Flooded gum) are scattered in degraded areas and cleared land/paddocks within the amendment area (Figure 7-7 of ERD). None of the tree surveys (to date) identified trees with suitable hollows for black cockatoo nesting and no evidence of black cockatoo roosting within the amendment area. There are 20 confirmed and 10 unconfirmed roosting sites within 12km of the amendment area (Phoenix Environmental 2024). The Quenda (DBCA-P4) been recorded at seven locations associated with the Banksia Woodland fauna habitat, and 'Planted and Maintained Gardens' may also provide some habitat value for the species. Based on existing surveys, it has been estimated that approximately 4% of small remnant patches of *Banksia attenuata* woodlands and *Eucalyptus marginata* woodland, in 'Good' and better condition, are likely to provide the most suitable habitat for SRE fauna. The rest of the amendment area is considered to provide limited value habitat for SRE invertebrates (Bennelongia 2024).	
Impacts from the amendment	**Assessment finding, environmental outcome and recommended conditions**

Potential direct impacts
 	
Potential impacts to terrestrial fauna from:
 	
• clearing of up to:
  ○ 153 potential nesting trees
  ○ 4.51 ha of remnant vegetation providing black cockatoo foraging habitat (BaEpPf, BmXpEc and EmMpLp)
	3.1 Black cockatoo habitat
	
	The EPA noted that based on regional vegetation extent (within 12km of the amendment area) it has been estimated that the amendment area comprises 0.03% of the potential foraging habitat within this regional extent (Coterra Environment *et al*. 2024).
	
	The EPA has considered the concept plan (Figure 2) which propose to retain (4.75 ha) the following environmental values:
	• 4.35 ha Banksia Woodland: medium to high quality foraging habitat for Carnaby's cockatoo and Baudin's cockatoo, low and high-quality foraging habitat for Forest

- 2.8 ha planted black cockatoo foraging habitat (mostly low quality)
- 26.91 ha of mostly low quality black cockatoo foraging habitat (native and introduced paddock trees)
- 4.56 ha quenda habitat
- 4.56 ha of potential SRE habitat

- fragmentation and loss of ecological connectivity of black cockatoo foraging habitat.

Potential indirect impacts include:

- further fragmentation of fauna habitat and edge effects
- increased feral animal activity within the fragmented fauna habitats.

Avoidance measures

- the concept plan (Figure 2) depicts retention areas (which may contain several potential nesting trees).

Minimisation measures (including regulation by other DMAs)

The WAPC has proposed measures to minimise impacts to flora and vegetation at subsequent planning processes (i.e. structure plan and subdivision/DA):

- CAMS
- TCRLMS and TCRLMP
- CEMP.

Consultation

Key matters relevant to terrestrial fauna raised during the consultation period included concerns about:

- clearing of threatened fauna habitat and

Red-tailed black cockatoo and 3 potential nesting (Jarrah) trees
- 0.05 ha Eucalyptus Woodland: high quality foraging habitat for all three black cockatoo species and 4 potential nesting (Jarrah) trees for black cockatoos
- 0.32 ha Scattered trees: medium to low quality foraging habitat for Carnaby's cockatoo, low quality foraging habitat for Baudin's cockatoo and Forest Red-tailed black cockatoo (Coterra Environment *et al*. 2024).

3.2 Other significant fauna and SRE

Quenda

The EPA has considered that 96% of mapped Banksia woodland which is associated with suitable habitat for the Quenda is proposed to be retained. However, the EPA notes that other existing non-native vegetated areas provide some habitat value and linkage to remanent vegetation areas depicted as retention areas (Figure 2). The EPA has considered that areas within the retention areas will be rehabilitated and that some habitats outside the retention areas may be retained in POS areas (as per the TCRLMS and TCRLMP). The EPA has recommended condition 4 (CAMP).

SRE

The EPA notes that remnant areas of Banksia woodland and Eucalyptus woodland identified as being in 'Good' or better condition are proposed to be retained and managed in retention areas (Figure 2). The EPA has considered:

- that these areas will continue to function to provide suitable SRE habitat
- will not contribute to further fragmentation of these habitats
- will be rehabilitated in accordance with the CAMP.

3.3 Potential impacts to environmental values outside retention areas

The EPA acknowledges that approximately 96% of Banksia woodland areas are to be retained, however there are other areas outside the retention areas which have foraging importance. For example, in the south-western corner of the amendment area there is a cluster of Marri trees (particularly tree ID 491) which has active foraging evidence.

Based on existing survey information and the concept plan design (Figure 2), the following outlines the potential maximum clearing impact (29.54 ha):

- 0.16 ha of Banksia woodland: low quality foraging habitat Baudin's and Forest Red-tailed black cockatoo, low and medium quality foraging habitat for Carnaby's cockatoo and no potential nesting trees
- 26.58 ha of native and introduced (paddock) trees: mostly low-quality foraging habitat for all three black cockatoo species, 0.72 ha and 0.80 ha of medium quality foraging

cumulative impact to black cockatoo foraging habitat • fragmentation of fauna habitat, resulting in a loss of ecological connectivity • loss of biodiversity and tree canopy • lack of fauna surveys, critically endangered bees, bat and stygofauna. The key issues raised during the WAPC public consultation on the amendment and the WAPC (2025) RtS document which provided a response to these concerns, have been considered by the EPA.	habitat for Carnaby's and Baudin's cockatoo respectively, and 140 potential nesting trees (no suitable hollows) • 2.8 ha planted and maintained gardens: low quality foraging habitat for all three black cockatoos and 6 potential nesting trees (Coterra Environment *et al*. 2024). In consideration of the residual impact of black cockatoo potential nesting trees, the EPA has considered that the replacement of black cockatoo trees (2:1 ratio) is a key mitigation response and recovery action item (recovery plan) that was outlined in the ERD. Therefore, the EPA has recommended condition 6(3). Subject to the above recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for this factor. **3.4 Indirect impacts (Fauna mortality, fragmentation of fauna habitats)** The EPA notes that fauna habitat is highly fragmentated across the amendment area and that key consolidated habitat areas are proposed to be retained (Figure 2). With regard to the management of fauna injury or mortality, in accordance with the Environmental Management Framework, a CEMP will be required for subdivision or development works within 100m of remnant patches of vegetation. An outline of a CEMP is provided in section 7.7.3.3. of the ERD. **3.5 Cumulative impacts** The EPA has considered the existing and reasonably foreseeable cumulative impacts to terrestrial fauna from developments occurring in the vicinity of the amendment area. The EPA's cumulative impact assessment has considered the cumulative effects from the range of threats and pressures within proximity to the amendment and whether the environment affected by the implementation of the amendment has significant value due to other successive, incremental and interactive cumulative impacts in the assessment area. While cumulative impacts to black cockatoo habitat impacted by this amendment are not at a level that would warrant a decision to allow no clearing of this value for this amendment, the EPA considers that the incremental loss of foraging habitat across these species' ranges must be appropriately managed. The EPA has therefore recommended environmental outcome conditions to retain values within retention areas (Figure 2). **3.6 Offsets** The EPA has considered the above potential maximum clearing in the context of the proposed retention of black cockatoo habitat in retention areas (Figure 2) and that further mitigation measures (through other planning decision-making processes) such as the development and implementation of the TCRLMS and TCRLMP at structure plan and subdivision will retain additional environmental values outside the retention areas (Figure 2) in POS and road reserve areas. Based on these considerations, the implementation

	of the amendment is unlikely to have a significant residual impact to terrestrial fauna.

Recommended conditions to ensure consistency of environmental outcome with EPA objectives

MRS Amendment (schedule)

Environmental outcomes

- Condition 1. Objective of scheme
- Condition 2. Responsible Authority must act consistently with Ministerial Statement
- Condition 3. Environmental outcomes

Conservation Area Management Plans

- Condition 4. CAMP prepared for the retention areas

Black cockatoo

- Condition 5. Survey
- Condition 6. Assessment of potential nesting tree (outside retention areas) and replacement in the amendment area

Tree canopy

- Condition 7. TCRLMP prepared for areas outside the retention areas

Reporting

- Condition 9 and 10. Environmental performance report

Consideration of further protection (avoidance) and mitigation of environmental values through future planning processes

Strategies and Plans

The EPA has considered mitigation measures at subsequent future planning processes and the implementation of TCRLMS and TCRLMP at structure plan and subdivision. It is the EPA's expectation that clusters of foraging trees are retained within POS, road reserve, lots, etc. The EPA understands that there are minimal cut and fill requirements within the amendment area and it is likely that substantial area of remnant scattered trees can be retained (Coterra Environment *et al*. 2024).

The EPA acknowledges the WAPC commitment of potential nesting trees being retained (wherever possible) and that the future development design will facilitate the retention of trees with a DBH of >500 mm and/or that are foraging species for black cockatoos. Where it is not possible to retain such trees, they will be replaced with suitable potential black cockatoo nesting tree species at a ratio of 2:1 via the TCRLMP. The EPA supports the above WAPC commitments and the implementation of this mitigation and restoration measure through future planning processes.

Unsurveyed areas

The EPA notes that ecological surveys have not been completed for the several lots which contain environmental values (Figure 6-1 of ERD). The EPA supports that future structure plan design be informed by adequate ecological surveys. This will assist in the environmental planning design and development process to inform land use decisions on prioritising different areas of vegetation or assessing the significance of any proposed impacts. To inform the proposed mitigation of black cockatoo trees being retained or replaced at 2:1 ratio, conditions 5 and 6 have been recommended to inform the TCRLMP (condition 7).

3 Holistic Assessment

While the EPA assessed the impacts of the amendment 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.

There is a high level of connectivity between the environmental factors of flora and vegetation and terrestrial fauna, particularly the conservation significant ecological communities and native vegetation which provides foraging, potential nesting, and roosting habitat for black cockatoos. The implementation of the amendment (change in land use) will result in the loss of pockets/fragments of remnant vegetation which will affect the available fauna habitat. Impacts to flora and vegetation also has the potential to impact water quality.

The concept plan (Figure 2) (which depicts retention areas containing significant environmental values) has been a fundamental consideration for the EPA. The concept plan has avoided direct impacts to known TEC and significant flora habitat. Residual impacts can likely be regulated through reasonable conditions that require clearing extent limitations, further surveys, and avoidance (retention) of these values through design of structure plan and subdivision/development application.

The EPA considers that the proposed mitigation and management measures and recommended conditions for managing impacts to flora and vegetation and terrestrial fauna will also mean the interrelated impacts to the health of other factors of the environment including the values associated with inland waters, are likely to be consistent with the EPA environmental factor objectives.

In the context of the GBSW, the EPA has had regard to the conservation significant flora and ecological communities which are likely to be associated with certain hydrological requirements and that minimising hydrological impacts is likely to contribute to the ecological integrity of the GBSW. Maintaining these holistic interactions is important and aligns with the expectations set out in the EPA (2022) s.16(j) advice for the GBSW. The EPA considers that the recommended conditions and the proposed mitigation and management measures for impacts to inland waters will also mean the interrelated impacts to the health of other environmental factors, including the values associated with flora and vegetation and terrestrial fauna, are likely to be consistent with the EPA environmental factor objectives.

Conclusion

The EPA considered the assessment of impacts for inland waters, flora and vegetation and terrestrial fauna together in a holistic assessment and has formed the view that the proposed mitigation and management measures are adequate to reduce the risks to the environmental values, and that the holistic impacts would not alter the EPA's conclusions about consistency with the EPA factor objectives for the key environmental factors.

4 Recommendations

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

- environmental values likely to be significantly affected by the amendment
- assessment of key environmental factors, separately and holistically (including consideration of cumulative impacts of the amendment 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
- EPA's confidence in the WAPC's proposed mitigation measures
- whether other statutory decision-making processes can mitigate the potential impacts of the amendment on the environment through subsequent planning processes
- principles of the EP Act.

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

5 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 this amendment. The EPA provides the following information for consideration by the Minister.

Greater Brixton Street Wetlands

The GBSW is recognised as one of the most important wetlands remaining on the SCP. The EPA reiterates the findings of its s.16j advice (EPA 2022) including:

- the complexity and uncertainties of the hydrological processes sustaining the GBSW and
- potential cumulative effects of development within the GBSW catchment.

The EPA provides the following strategic advice and recommendations to the Minister, Responsible Authorities, DMAs, government agencies and proponents/developers. It is the EPA's opinion that the implementation of these recommendations will assist and improve long-term management and environmental outcomes for the GBSW.

Collaboration on information and coordinated management approach

Based on historical developments, recent environmental impact assessments completed in proximity to GBSW and EPA (2022) s.16j advice, the EPA provides the following comments and recommendations:

- the disparate land management of the GBSW and surrounds has resulted in hydrological monitoring within and around the GBSW being undertaken by different stakeholders. The EPA considers:
    - that a coordinated approach to the collection and analysis of hydrological data across the GBSW and surrounds would inform a better understanding of the hydrology and hydrogeology supporting the GBSW
    - the consolidation of all recent monitoring datasets in the GBSW region and building of a single regional groundwater surface map is likely to assist in defining the GBSW groundwater catchment
    - development of models (such as conceptual/numerical surface water/groundwater) would allow better understanding of the GBSW processes and function
- State government agencies should be custodians of hydrological datasets in a consolidated database
- a working group is established for the analysis of the data and its application to the understanding of, protection and enhancement of the GBSW
- a GBSW management body to be established with all relevant stakeholders, including Traditional Owners, with a government agency as a support coordinator of the management body

- integration of Aboriginal cultural knowledge into the coordination and management of the GBSW.

Groundwater influences and management

As discussed in Table 1, the groundwater mound within the amendment area extends across the northern boundary of the GBSW and since the ceasing of operations and irrigation of the turf farm in 2023 groundwater levels in this area are declining. The influence and impact of this localised decline on surrounding groundwater levels and flow is not certain, in the context of impacts to the GBSW.

The EPA notes that at this MRS level of the planning process, the staging of urban development is not able to be confirmed but will be addressed at structure planning. Therefore, it is the EPA's understanding that there is likely to be a considerable amount of time before the water management strategy is fully implemented. In the interim, actions may need to be taken to maintain the hydrological regime of the GBSW in the context of the unknown influences of ceasing of irrigation of the former turf farm. The EPA advises that to understand/predict outcomes and potentially resolve this issue, actions aligned with the EPA's recommendations are required along with a coordinated management approach led by relevant State government agencies.

Consideration of Yule Brook Regional Park

The EPA acknowledges that there is significant community support for the creation of the Yule Brook Regional Park providing a connection from Lesmurdie Falls to the Canning River through the GBSW. The area is also identified as part of an ecological linkage (Del Marco *et al* 2004). A contiguous reserve system may provide a strategic opportunity for restoration and enhancement. This, however, would require a coordinated government approach to achieving formulation and implementation.

The EPA notes that the WAPC has been progressively purchasing some of the private land within the GBSW area and reserving these lots to Regional Open Space- restricted public access[7] under the MRS for future inclusion in the Brixton Street Nature Reserve. The EPA supports this approach by WAPC. The potential acquisition of these lots, and other proposed future retention areas, would also assist with coordinated management of the environmental values associated with GBSW. The EPA considers there may be further opportunities to expand the Class A nature reserve within the GBSW and its buffers to create a more contiguous reserve system.

[7] Formally known as Parks and Recreation reservation

Appendix A: Recommended conditions

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

METROPOLITAN REGION SCHEME AMENDMENT 1388/57 –
WATTLE GROVE (SOUTH) URBAN PRECINCT

Scheme Purpose:	The Metropolitan Region Scheme (MRS) Amendment proposed to rezone land in Wattle Grove South from the 'Rural' zone to the 'Urban' zone. The proposed 'Urban' zone will facilitate future residential development, areas of public open space and retention areas (conservation of environmental values) following a Local Planning Scheme (LPS) amendment, structure planning and subdivision and development approval.
Responsible Authority:	Western Australian Planning Commission (WAPC) Australian Company Number (ACN) 35 482 341 493
Responsible Authority address:	Gordon Stephenson House, 140 William St, Perth WA 6000
Assessment number:	2335

Report of the Environmental Protection Authority: 1788

Introduction: Subject to the following conditions being incorporated into the Metropolitan Region Scheme (MRS), the Amendment to which the above Report 1788 of the Environmental Protection Authority (EPA) relates may be implemented.

ENVIRONMENTAL CONDITIONS FOR MRS AMENDMENT 1388/57

Environmental outcomes

1. Within the **Amendment Area**, it is an objective of this scheme that **subdivision** and **development** is consistent with the achievement of the environmental outcomes in condition 3.

2. The **Responsible Authority** must act consistently with:

   (1) the requirements of **Ministerial Statement XXX**; and

   (2) the achievement of the environmental outcomes in condition 3;

   when exercising powers under this scheme or when determining an application to **subdivide** land in the **Amendment Area.**

3. The environmental outcomes are:

   (1) Avoid disturbance to the following environmental values within **retention areas** (Figure 1), except when undertaking **low impact activities:**

      (a) Banksia attenuata woodlands over species rich dense shrublands (**FCT** 20a);

      (b) Shrublands and Woodlands of the Eastern Swan Coastal Plain (**FCT** 20c);

      (c) **Viable populations** of *Conospermum undulatum;*

      (d) **Viable populations** of *Isopogon autumnalis;*

      (e) **medium to high quality foraging habitat** for carnaby's cockatoo (*Zanda latirostris*) and baudin's cockatoo (*Zanda baudinii*); and

      (f) **potential nesting trees**.

   (2) Avoid disturbance to black cockatoo **known nesting trees** and **roosting sites** within the **Amendment Area.**

   (3) Retain trees or, where retention is not practicable, replace trees in the **Amendment Area** to:

      (a) achieve a generally even distribution of trees across parts of the **Amendment Area** that are not within **retention areas**; and

      (b) to create connectivity between **retention areas** and retained black cockatoo habitat.

   (4) Avoid or where not practicable, minimise adverse impacts to the **Greater Brixton Street Wetlands** from urban development of the **Amendment Area**, including impacts to the wetlands' persistency, hydrological regime, water quality, ecological integrity and ecological function.

Conservation Area Management Plans

4. The Responsible Authority must not approve any subdivision (other than minor subdivision) or development for land that includes all or part of a retention area unless it is satisfied, after consulting with DWER, DBCA and the local government, that:

(1) a Conservation Area Management Plan has been prepared for the **retention area**; and

(2) the Conservation Area Management Plan is consistent with the achievement of the environmental outcomes in condition 3 and:

(a) provides for the installation and maintenance of appropriate fencing around the periphery of the **retention area**;

(b) provides for the monitoring of occurrences of **Threatened Ecological Community** (**TECs)** and populations of **threatened** flora; and

(c) identifies actions that will be implemented to ensure that:

(i) occurrences of **TECs** that are in 'degraded' condition are restored to achieve a condition rating of 'good' or better, in accordance with **Keighery 1994**;

(ii) populations of **threatened** flora are maintained or increased;

(iii) buffers to **threatened** flora are established and maintained;

(iv) the spread of existing weed species and pathogens, and the introduction of new weed species and pathogens, is minimised;

(d) provides that the only **development** to occur within the **retention area** is to be **development** for the purposes of conservation or incidental purposes; and

(3) satisfactory arrangements have or will be made for the implementation of the Conservation Area Management Plan.

Black cockatoos

5. The **Responsible Authority** must not approve any **subdivision** (other than **minor subdivision**) or **development** for any land in the **Amendment Area** that is **unsurveyed land** unless it is satisfied that a **black cockatoo** survey that meets the requirements of **DWER** has been carried out for that **unsurveyed land.**

6. The **Responsible Authority** must not approve any **subdivision** or **development** for any land in the **Amendment Area**, if the subdivision or development is likely to impact a **potential nesting tree** unless it is satisfied, after consulting with **DWER**, that:

(1) an assessment has been carried out to determine the number of **potential nesting trees** likely to be impacted;

(2) the number of **potential nesting trees** likely to be impacted has been quantified; and

(3) at least twice the number of **potential nesting trees** likely to be impacted will be replaced by planting within the **Amendment Area**.

Tree canopy

7. The **Responsible Authority** must not approve any **subdivision** (other than **minor subdivision**) or **development** for any land in the **Amendment Area** unless it is satisfied that:

(1) a Tree Canopy Retention and Landscape Management Plan for the land has been prepared, having regard to any urban forest strategy adopted by the City of Kalamunda; and

(2) the Tree Canopy Retention and Landscape Management Plan is consistent with the achievement of the environmental outcomes in condition 3 and:

(a) identifies the location, species, size and structural health of any trees to be retained;

(b) identifies the location, species, number, planting size, mature height and spread of trees to be planted;

(c) identifies the planting schedule for the trees to be planted; and

(d) estimates the percentage of canopy coverage expected to be achieved through implementation of the plan; and

(3) satisfactory arrangements have or will be made for the implementation of the Tree Canopy Retention and Landscape Management Plan,

unless the **Responsible Authority** considers that a plan, or a plan that meets all the requirements in condition 7(2), is not required.

Water management

8. The **Responsible Authority** must not approve any **subdivision** (other than **minor subdivision**) or **development** unless it is satisfied, after consulting with **DWER** and the local government, that:

(1) an **Urban Water Management Plan** (**UWMP**) has been prepared; and

(2) the **UWMP** is:

(a) consistent with the achievement of the environmental outcome in condition 3(4); and

(b) is informed by the **results of any pre development monitoring program;** and

(3) satisfactory arrangements have or will be made for the implementation of the **UWMP**,

unless the **Responsible Authority** considers, after consulting with **DWER**, that a **UWMP**, or a **UWMP** that meets the requirements in condition 8(2), is not required.

Reporting

9. The **Responsible Authority** must submit an environmental performance report which is inclusive of all **subdivisions** within the **Amendment Area** to **DWER** within three months after the end of the **Initial Report Year** and subsequently within three months after the end of each **Report Period** or by such later date as **DWER** confirms in writing, until **DWER** confirms in writing that reports no longer need to be submitted under this condition.

10. An environmental performance report must:

(1) identify any **structure plan** approved by the **Responsible Authority** for all or part of the **Amendment Area**; and

(2) demonstrate, in relation to the preceding **Report Period** how the **Responsible Authority** has acted consistently with the requirements of **Ministerial Statement XXX** and the achievement of the environmental

outcomes in condition 3 when exercising powers under this scheme or when determining an application to **subdivide** land in the **Amendment Area.**

Definitions

11. Defined terms in these conditions have the meaning set out in Table 1 of **Ministerial Statement XXX.**

Hon Matthew Swinbourn MLA
MINISTER FOR ENVIRONMENT

Responsible Minister consulted under section 48F(1):
Minister for Planning

Table 1: Definitions

Acronym or abbreviation	Definition or term
Adverse impacts	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 implementation of the scheme. In relation to flora and vegetation and terrestrial fauna, includes but is not limited to change in hydrology, altered fire regime and edge effects.
Amendment	MRS Amendment 1388/57
Amendment area	The land subject of MRS Amendment 1388/57. As depicted on Figure 1
Black cockatoo	Includes carnaby's cockatoo (*Zanda latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) and baudin's cockatoo (*Zanda baudinii*).
Buffer	Adequate area adjacent to the environmental value important for protecting its integrity and providing protection from direct disturbance, to reduce the risk of significant adverse impact.
DBCA	Department of Biodiversity, Conservation and Attractions
Development	As defined in the *Planning and Development Act 2005*
Disturb/ disturbance	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 death, destruction, removal, severing or doing substantial damage to. In relation to fauna, includes to have the effect of altering the natural behaviour of fauna to its detriment. In relation to inland waters, includes to have the effect of altering hydrological regimes or water quality to the detriment of the environmental values supported by or dependent on surface water and/or groundwater.
DWER	Department of Water and Environmental Regulation
Environmental Review Document (ERD)	Coterra Environment, Pentium Water, Hyd2o, Emerge Associates, Phoenix Environmental Services, JBS&G, EPCAD Pty Ltd, Element, CLE Town Planning + Design, MBS Environmental, GBG Group, Douglas Partners, Bennelongia Environmental Consultants 2024, Environmental Review Metropolitan Region Scheme Amendment 1388/57 – Wattle Grove South. EPA Assessment No: 2335. Rev 4 (September).

FCT	Floristic Community Type
Greater Brixton Street Wetlands (GBSW)	As depicted in Figure 1 of the EPA 2022. Environmental values and pressures for the Greater Brixton Street Wetlands on the Swan Coastal Plain Advice in accordance with section 16(j) of the *Environmental Protection Act 1986, EPA, WA.*
Initial Report Year	The 12 month period commencing on the date the first **subdivision** within the **Amendment Area** is first approved.
Keighery 1994	Keighery, B.J. (1994). Bushland Plant Survey: a Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc.), Nedlands, Western Australia
Known nesting trees	Trees (live or dead but still standing) which contains a hollow where black cockatoo breeding has been recorded or which demonstrates evidence of breeding (i.e. showing evidence of use through scratches, chew marks or feathers).
Low impact activities	Activities involving minimal disturbance of ground or vegetation, including revegetation, rehabilitation monitoring of fauna, vegetation or water, or management activities associated with feral fauna control or weed control.
Medium to High quality foraging habitat	As defined in Table 7-10 of **Environmental Review Document (ERD)**.
Ministerial Statement XXX	Statement that a Scheme may be Implemented No. XXX published on XXX 2025.
Minor subdivision	Subdivision of a minor nature that does not involve any subdivision works and does not impede the achievement of the environmental outcomes in **Ministerial Statement XXX.**
MRS Amendment Area	The land the subject of MRS Amendment 1388/57, as shown in Figure 1.
Potential nesting trees	Trees that have a Diameter at Breast Height greater than 300mm but do not currently have hollows.

Recovery plan	Plans that outline the actions that are needed to help threatened species or ecological communities survive and 'recover' to a healthy level, including: • Department of Parks and Wildlife (2016). *Banksia attenuata* woodlands over species rich dense shrublands (Swan Coastal Plain community type 20a – Gibson et al. 1994). Interim Recovery Plan No. 359. Parks and Wildlife, Kensington, Western Australia. • Department of Environment and Conservation (2009). Wavy-leaved smokebush (*Conospermum undulatum*) Recovery Plan. Commonwealth Department of the Environment, Water, Heritage and the Arts, Canberra.
Report Period	The 36 month period commencing on the date of conclusion of the **Initial Report Year**, and every subsequent 36 month period.
Responsible authority	Western Australian Planning Commission (WAPC)
Results of any pre development monitoring program	Any results of pre development monitoring associated with implementation of: • Hyd_2o 2024, WATTLE GROVE SOUTH District Water Management Strategy. Ref: H22076Bv8, 19 July 2024, or any subsequent District Water Management Strategy that includes the **Amendment Area**; and • any local water management strategy prepared for the relevant land.
Retention area(s)	Retention area(s) as shown in Figure 1
Roosting site	Habitat that contains one, or a group of, known or potential roosting trees as defined in Department of Agriculture, Water and the Environment (DAWE) 2022, Referral guideline for 3 WA threatened black cockatoo species Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo, Department of Agriculture, Water and the Environment, Canberra.
Structure Plan	As defined in the *Planning and Development (Local Planning Scheme) Regulations 2015*
Subdivide/Subdivision(s)	Division or amalgamation of lots as approved by the WAPC under the *Strata Titles Act 1985 / Planning and Development Act 2005*
Threatened	Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (WA).
Threatened Ecological Community (TEC)	A Threatened Ecological Community is a vegetation community which is found to fit into one of the following categories; "presumed totally destroyed", "critically endangered", "endangered" or "vulnerable" under the *Biodiversity Conservation Act 2016* (WA) and/or *Environment Protection and Biodiversity Conservation Act 1999* (Cth).
Unsurveyed Land	Areas depicted as "Unsurveyed Areas" in Figure 2.

Urban Water Management Plan (UWMP)	Water management document prepared in accordance with the relevant guideline and informed by any local water management strategy, to support a land-use planning proposal at the **subdivision** or **development** stage. *Better Urban Water Management (WAPC 2008); Urban water management plans – Guidelines for preparing plans and for complying with subdivision conditions* (DoW 2008).
Viable populations	The viability of a population (including in relation to species function, habitat requirements and buffers, and population stability) is to be determined in consultation with **DBCA** consistently with any relevant **recovery plan.**

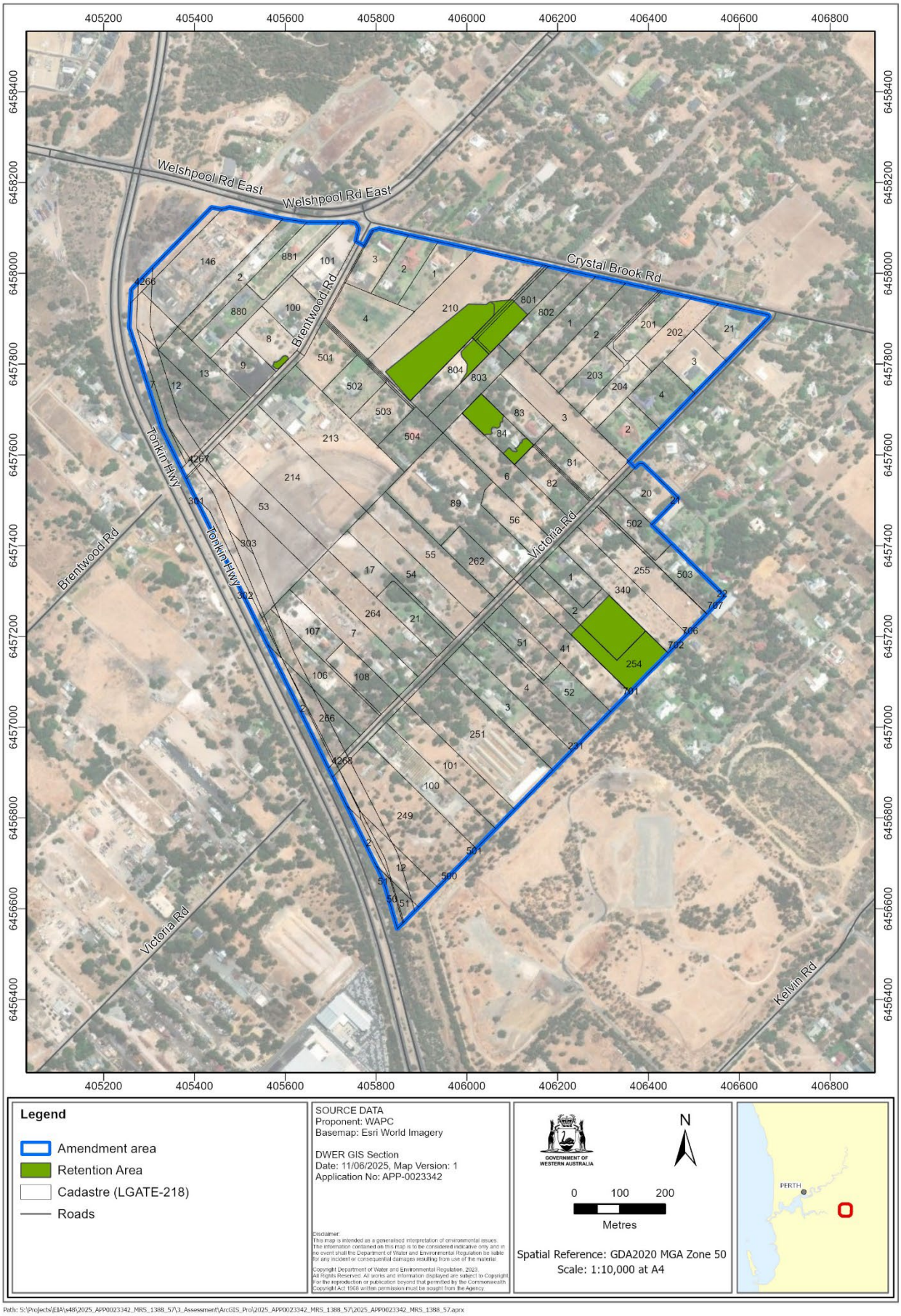

Figure 1: Amendment area and retention area

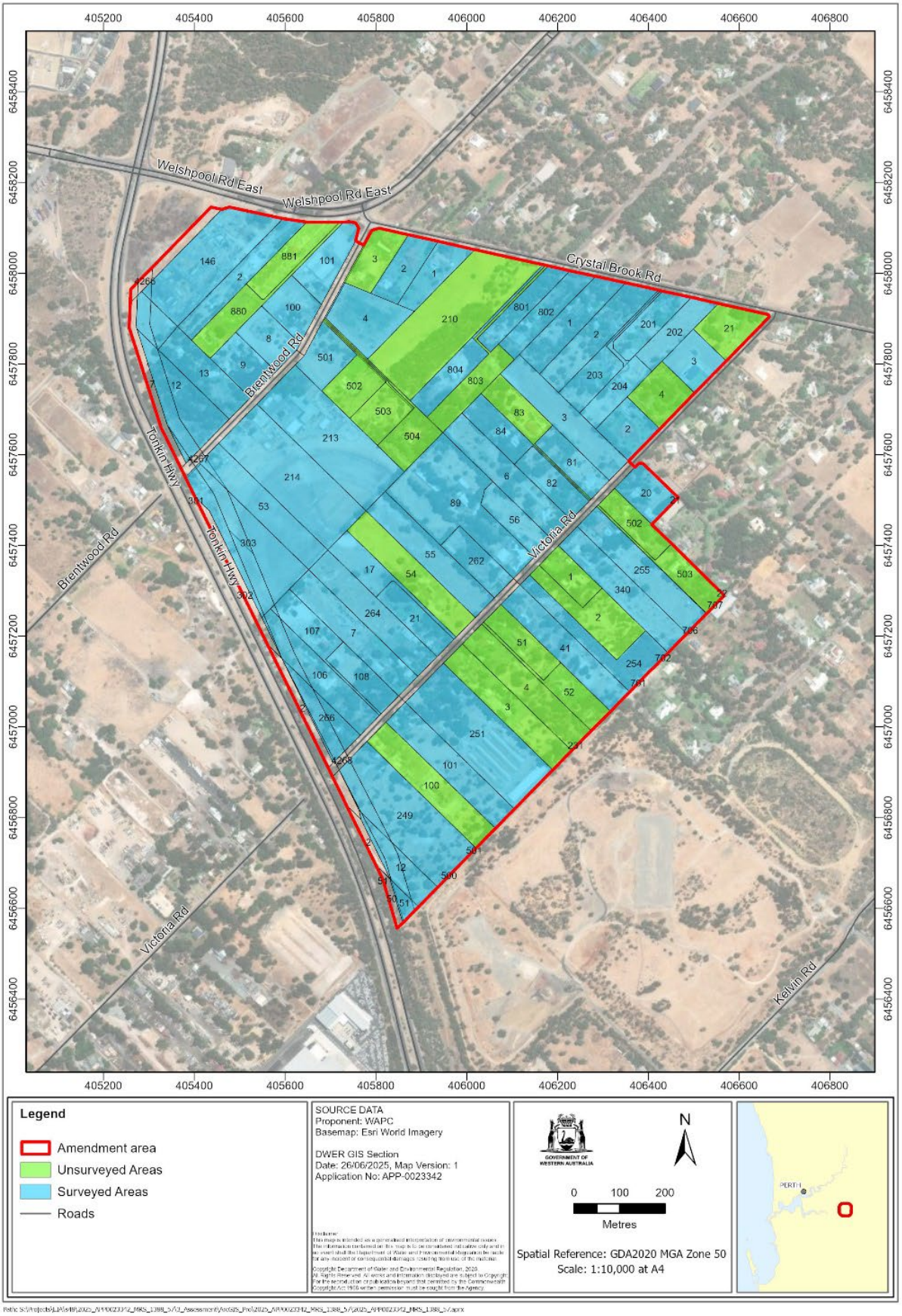

Figure 2: Unsurveyed areas (source: ERD)

Appendix B: Decision-making authorities

Section 48F of the EP Act requires the Minister for Environment to consult with the responsible Minister and, if possible, agree with them on the conditions, if any, to which the scheme that the report relates should be subject if that scheme is to be implemented.

Table B1: Responsible Minister.

Responsible Minister	Legislation (and approval)
1. Minister for Planning	*Planning and Development Act 2005* – Approval of the scheme amendment

Appendix C: Environmental Protection Act principles

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

EP Act principle	Consideration
1. The precautionary principle *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* *In application of this precautionary principle, decisions should be guided by –* *(a) careful evaluation to avoid, where practicable, serious, or irreversible damage to the environment; and* *(b) an assessment of the risk-weighted consequences of various options.*	The EPA has considered the precautionary principle in its assessment and has had particular regard to this principle in its assessment of inland waters, flora and vegetation and terrestrial fauna. The WAPC has undertaken appropriate studies (at a regional scheme level) and has investigated the biological and physical environment to identify environmental values of the amendment area. The EPA notes that the ERD has demonstrated avoidance and mitigation measures to reduce potential serious or irreversible damage to known environmental values by proposing retention areas (Figure 2). The EPA is supportive that through subsequent planning phases i.e. structure plan subdivision/development application there are opportunities to retain further values through amendments to the retention areas. The EPA has applied conditions to impose limits on the disturbance of environmental values and has applied conditions where there is uncertainty, to prevent and avoid environmental impacts from occurring. The EPA has concluded that subject to the recommended implementation conditions, the amendment is unlikely to pose a threat of serious or irreversible harm.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity, and productivity of the environment is maintained and enhanced for the benefit of future generations.*	The EPA has considered the principle of intergenerational equity in its assessment and has had particular regard to this principle in its assessment of inland waters, flora and vegetation and terrestrial fauna. The EPA notes that the ERD has identified measures to avoid and minimise 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. The EPA considers consistency with this principle could be achieved with the implementation of its recommended conditions, which requires the Responsible Authority to:

EP Act principle	Consideration
	• avoid or where not practicable, minimise adverse impacts to the GBSW, • limit the extent of disturbance to flora, vegetation, and fauna habitat types, and • undertake additional black cockatoo survey to further inform retention of known nesting trees, to inform replacement of any potential nesting trees proposed to be impacted and the retention of significant environmental values in additional retention areas. The EPA has concluded that the environmental values will be protected through the region scheme, local scheme (structure plan) and subdivision/DA, and the health, diversity and productivity of the environment will be maintained for the benefit of future generations.

3. The principle of the conservation of biological diversity and ecological integrity
 	
Conservation of biological diversity and ecological integrity should be a fundamental consideration.
	The EPA has considered the principle of conservation of biological diversity and ecological integrity in its assessment and has had particular regard to this principle it its assessment of flora and vegetation, terrestrial fauna, and inland waters.
	
	The EPA has considered:
	
	• the threatened statuses of significant flora and TEC and their rarity and risk of extinction in the context of the amendments likely impacts
	• the endangered and vulnerable statuses of the black cockatoo species
	• cumulative threats and pressures (including historical habitat losses, a drying climate, altered hydrology, fragmentation and edge effects, weeds, and surrounding land-uses)
	• to what extent the potential impacts from the implementation of the amendment 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 through:
	  ○ proposed retention areas (Figure 2) and by conditions
	  ○ proposed minimisation and management measures for impacts to inland waters, where those impacts may cause indirect impacts to flora and vegetation,
	
	and has concluded the amendment will be likely to conserve biological diversity and ecological integrity, and the environmental outcomes are achieved.

EP Act principle	Consideration
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1) Environmental factors should be included in the valuation of assets and services.* *(2) The polluter pays principle — those who generate pollution and waste should bear the cost of containment, avoidance or abatement.* *(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.* *(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.*	In considering this principle, the EPA notes that the City of Kalamunda and landowners/developers will bear the costs relating to implementing the amendment to achieve environmental outcomes, and management and monitoring of environmental impacts pre and post development.
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.*	The EPA has considered the principle of waste minimisation and its discharge into the environment and has had particular regard to this principle in its assessment of inland waters. The EPA notes the rezoning to 'Urban' and subsequent concurrent rezoning of the City of Kalamunda's LPS will facilitate urban development. Future structure plans and subdivision/DA will progress more specific land uses and reservation of the land, and detail key infrastructure (roads, reticulated sewerage and drainage requirements) and specific subdivision and development requirements.

Appendix D: Other environmental factors

Table D1: Evaluation of other environmental factors

Environmental factor	Description of the amendment 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.	No agency or public comments were received for this environmental factor.	EPA considers that greenhouse gas emissions is not a key environmental factor requiring evaluation. The EPA considers that it is highly unlikely that the potential emissions from clearing up to 29.54 ha of vegetation (consisting of 0.16 ha Banksia Woodland, 26.58 ha of scattered trees and 2.8 ha planted and maintained gardens) would meet or exceed the annual 100,000 tonnes of CO_2-e threshold.
People			
Social surroundings (Aboriginal cultural heritage, noise and visual amenity)	The amendment has the potential to impact social surroundings via increased traffic and noise emissions.	<u>Public comments</u> • Creation of urban heat island/climate change • Loss of rural character and amenity (visual landscape) • Impacts to Aboriginal cultural heritage- Brentwood Road Swamp	<u>Aboriginal cultural heritage</u> The amendment area is located within the south-east area of Whadjuk Noongar boodja was the territory of Munday, leader of the Beeloo people. The EPA has considered the Aboriginal and Cultural Heritage Evaluation (Element 2024- Appendix H of ERD) which discusses that GBSW is a place of special meaning for a wide cross section of groups and individuals in the community, particularly the Beeloo people. The GBSW and Yule Brook are not located within the amendment area and any potential impacts to the hydrological regime of the GBSW can be mitigated and managed through the DWMS, LWMS and UWMP and strategic hydrological management of the GBSW catchment (refer to Section 5- 'Other Advice'). Refer to Section 2.1- Inland waters for further discussion. The EPA notes that the only registered Aboriginal heritage site within the amendment area is the Brentwood Road Swamp (#4343- Artefact scatter) (Figure 8-1 of ERD). The EPA also notes that previous archaeological survey and site visit with Traditional

Environmental factor	Description of the amendment likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
		Agency comments • N/A	Owners (5 December 2022) found no archaeological evidence (Coterra Environment *et al*. 2024). The EPA acknowledges the WAPC commitment to complete a tree survey (through engagement with Traditional Owners) to identify the presence of any endemic trees with important cultural associations within the MRS amendment area. Should important cultural trees be recorded they are likely to inform the landscape design of future urban development. Accordingly, the EPA has considered the above and the requirements under the *Aboriginal Heritage Act 1972* and did not consider social surroundings to be a key environmental factor at the conclusion of its assessment. Visual amenity The EPA has noted the evaluation of the visual amenity values assessment which was undertaken in accordance with the WAPC's Visual Landscape Planning in Western Australia Manuel which maps 5 landscape character units (LCU) (Figure 4, EPCAD 2024- Appendix I of ERD). These units consist of remnant woodland (10%), open woodland (5%), rural open plain (20%), rural residential plain (dominant) and urban fringe (15%). The EPA considered: • the amendment area has been earmarked for urban development since the release of the WAPC's North-East Sub-regional Planning Framework in 2018 and is surrounded by urban, industrial, recreational and semi-rural land uses • local landscape viewed and experienced by the local population residing within and adjacent to the amendment area and that the local landscape is experienced very differently from within the area to that of the external viewing locations • the location and direction of view from local and regional level, and notes EPCAD conclusion that from Lions Lookout (Korung National Park, in the Darling Range) amendment area is barely visible from the lookout and is almost insignificant in the context of the entire viewshed, which takes in the 20km distance leading to the

Environmental factor	Description of the amendment likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			Perth city skyline and that the 5 LCUs are not distinguishable in the context of panoramic views • the visual landscape preference indicators which assess the indicator for viewing experience of state and regional experience (including vehicles on local road networks and visitors to Lions look) (EPCAD 2024). The proposed TCRLMS and TCRLMP interlink with the City of Kalamunda (2023) Urban Forest Strategy, which applies to trees on public and private land and identifies goals and objectives (relating to urban heat and amenity) to protect and grow the urban forest, and outlines specific, measurable actions needed to achieve these. Accordingly, the EPA did not consider social surroundings to be a key environmental factor at the conclusion of its assessment.

Appendix E: Relevant policy, guidance, procedures and references

Bennelongia Environmental Consultants Pty Ltd 2024, *Wattle Grove South SRE Invertebrate Fauna Desktop Assessment,* Bennelongia Environmental Consultants, Perth, WA.

CB Geotechnics (Australia) Pty Ltd 2024, *Geophysical Subsurface Investigation for MRS Amendment 1388/57. Wattle Grove Western Australia,* CB Geotechnics (Australia) Pty Ltd, Perth, WA.

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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.

DPAW 2016, *Banksia attenuata woodlands over species rich dense shrublands (Swan Coastal Plain community type 20a – Gibson et al. 1994). Interim Recovery Plan No. 359.* Parks and Wildlife, Kensington, Western Australia.

Emerge Associates 2024, *Water Balance Assessment Wattle Grove South MRS Amendment*, Emerge Associates, Perth, WA.

Element 2024, *MRS Amendment 1388/57 Wattle Grove South' Aboriginal and Cultural Heritage Evaluation*. Issue 4. Prepared for the WAPC and Hesperia.

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

EPA 2022, *Environmental values and pressures for the Greater Brixton Street Wetlands on the Swan Coastal Plain. Advice in accordance with section 16(j) of the Environmental Protection Act 1986*, EPA, Western Australia.

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.

EPCAD PTY LTD 2024, *Wattle Grove Environmental Review - Visual Landscape Assessment,* EPCAD Pty Ltd, 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

Hyd2o 2024, *Wattle Grove South District Water Management Strategy*, Hyd2o, Perth, WA.

JBS&G 2024, *Wattle Grove South MRS Amendment Area Ecological Survey Effort Technical Memo*, JBS&G, Perth, WA.

Pentium Water Pty Ltd 2024, *Wetland Assessment Wattle Grove South MRS Amendment 1388/57*, Perth, WA.

Phoenix Environmental Sciences Pty Ltd, 2024, *Black cockatoo habitat assessment for the Wattle Grove (South) MRS Rezoning Project,* Phoenix Environmental Sciences Pty Ltd, Perth, WA.

Plant Ecology Consulting 2024, *Numerical analysis and assignment of plot data to existing Floristic Community Types of the Swan Coastal Plain - Wattle Grove*, Plant Ecology Consulting, Perth, WA.

Threatened Species Scientific Committee (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.

Threatened Species Scientific Committee (TSSC) 2017, *Approved Conservation Advice for Shrublands and Woodlands of the eastern Swan Coastal Plain* (s266B of the *Environment Protection and Biodiversity Conservation Act 1999*).

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