COTERRA
ENVIRONMENT

Environmental Summary Report

Robinson Grove Phase 2 Local Structure Plan

Revision 0 October 2025

CALIBRE | COMMITMENT | COLLABORATION

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1 Introduction

Satterley Property Group (Satterley) on behalf of the landowner Taliska Securities Pty Ltd is progressing development of the Robinson Grove residential estate in Bellevue which is bounded by Wilkins Street to the north, Katharine Street to the east, Roe Highway to the west and government and private landholdings to the south (Figure 1). The project area is located within the Shire of Mundaring (SoM).

The overall Robinson Grove site, including urban development and regional open space areas extends over approximately 99 ha.

The first stages of development at Robinson Grove were progressed in accordance with the Belle View Estate Structure Plan (LandVision, 2018) (Section 1.1.3). The remaining extent of residential development across the site forms part of the Phase 2 Structure Plan. The location and extent of the Phase 2 Structure Plan area, which is the subject of this report, is shown on Figure 2.

1.1 Background

1.1.1 Scheme Amendments

The overall site is zoned 'Urban' and 'Regional Open Space' under the Metropolitan Region Scheme (MRS), with the urban zone, including the entire extent of the Phase 2 Structure Plan area, identified as 'Development' under the SoM Local Planning Scheme (LPS) No. 4.

The initial MRS amendment progressed for the site in 2012 (Amendment 1228/41) resulted in an 'Urban' zone being designated over 24.55 ha. Subsequent to the above, an additional MRS and LPS have been progressed.

1.1.2 Environmental Assessment

The MRS Amendment was referred to the Environmental Protection Authority (EPA) who advised that the proposed amendment did not require formal assessment under Part IV of the Environmental Protection Act 1986, however advice was provided on key environmental factors (WAPC, 2015a).

1.1.3 Phase 1 Local Structure Plan

The Phase 1 Structure Plan prepared by Landvision in 2018 extended over approximately 24.7 ha and comprised Urban areas ranging in density from R20 to R40, public open space and a heritage lot which contained the original 'Belle View' homestead. A living stream concept was provided for the existing open channel drain which was located within Public Open Space. The Structure Plan layout is shown on Plate 1-1.

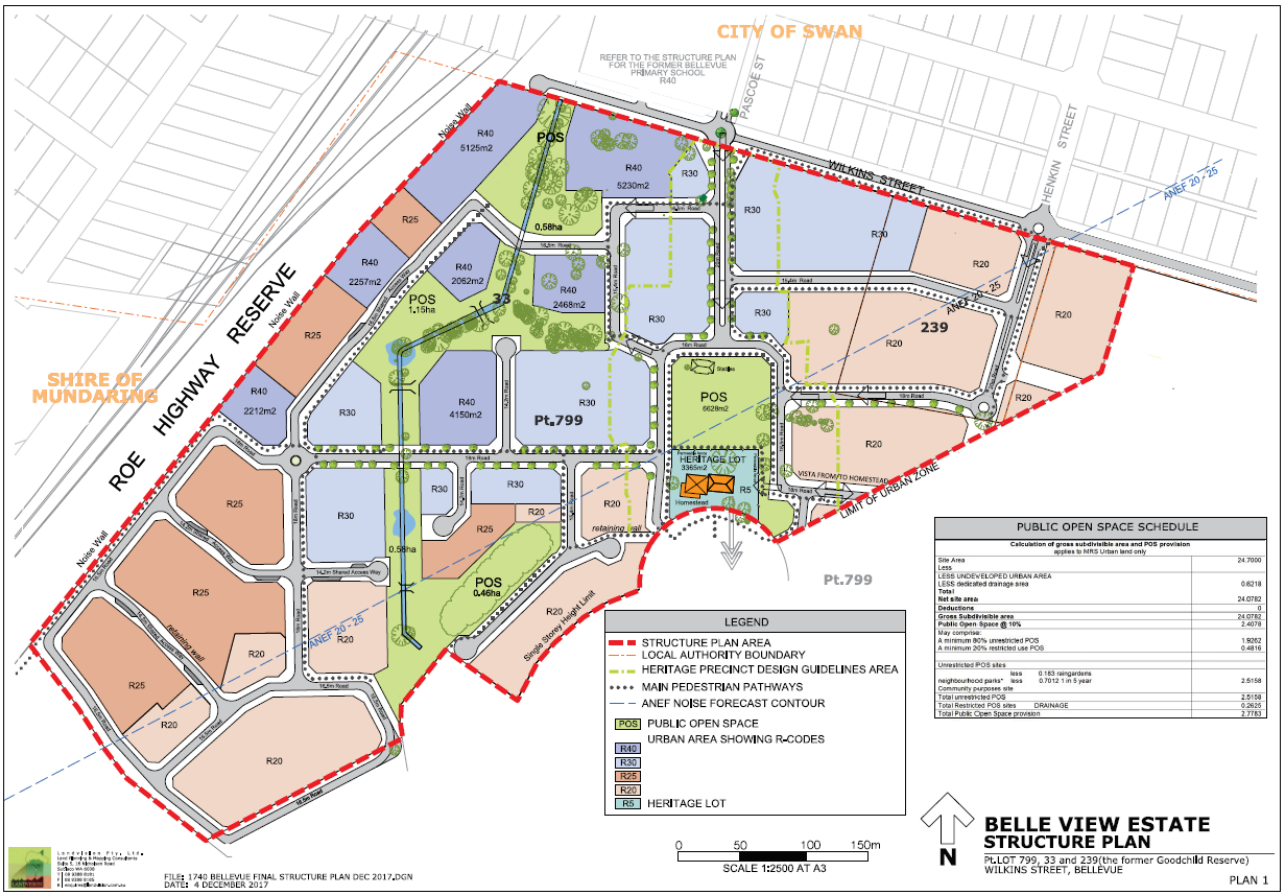

Plate 1-1: Belle View Estate Structure Plan (Phase 1)

Source: LandVision (2018)

1.2 Robinson Grove Phase 2 Local Structure Plan

The Phase 2 Local Structure Plan provides for resident lots, public open space a local centre site and provides an interface to the Parks and Recreation Reserve containing the Helena River watercourse and surrounds. A copy of the concept design for the Phase 2 LSP is provided in Appendix 1.

1.3 Purpose of this Report

This report has been prepared to accompany the Phase 2 Structure Plan documentation package. The report identifies the key environmental values relevant to the Stage 2 area, potential impacts and discusses the design and management responses to be progressed to address these impacts.

2 Key Guidance and Policies

2.1 Environmental Protection Act 1986

The *Environmental Protection Act 1986* ('the Act') is the pre-eminent environmental legislation in Western Australia. Development projects are regulated under Part IV of the Act.

Assessment opportunities under the Act occur at the rezoning stage (region scheme and/or town planning scheme) under Section 48A of the Act and the subdivision/ development stage under Section 38 of the Act.

The rezoning of the site under the MRS and the Shire of Mundaring LPS No. 4 was reviewed by the EPA under Section 48A of the Act.

2.2 EPA Guidance Statement No. 33 – Environmental Guidance for Planning and Development

Environmental Protection Authority (EPA) Guidance Statement No. 33 – Environmental Guidance for Planning and Development (EPA, 2008) provides general advice on the environmental management recommendations near waterways. This guidance notes the following:

- Hard edges, for example, roads and pathways adjoining foreshore reserves, are recommended. These enable public surveillance, deter vandalism and help control the spread of weeds and grass.
- It is desirable to protect and enhance ecological linkages and to increase the buffer or foreshore reserve width in places to connect with remnant vegetation.
- Any clearing and construction activities that have the potential to drain into waterways, including works outside the buffer, should be timed and managed so as to minimise the risk of increasing stream sedimentation, turbidity and pollution.
- Waterway crossings should be located and designed so as not to cause any erosion to the riverbanks or degradation of the waterway buffer areas.
- Development near waterways may raise mosquito management issues. The EPA encourages adequate setbacks to minimise the need for chemical controls and physical alteration of foreshore areas.
- In floodplains mapped by the Department of Water and Environmental Regulation (DWER), avoiding development in the portion of the floodplain designated as the floodway is recommended.

2.3 State Planning Policies

2.3.1 Draft State Planning Policy 2.9: Planning for Water Policy

The intent of draft State Planning Policy 2.9 is to ensure planning and development considers water resource management, including appropriate management measures to achieve optimal water resource outcomes (WAPC, 2021).

Draft SPP 2.9 consolidates multiple water-related policies and guidelines, with the overall objectives to:

- Protect and improve the environmental, social, cultural and economic values of the State's water resources
- Protect public health and the long-term supply of good quality and affordable drinking water
- Manage the risk of riverine flooding to people, property and infrastructure
- Ensure the secure and sustainable supply, use and re-use of water resources

- Ensure future development is resilient to the water related impacts of climate change
- Minimise future costs and protect public health by ensuring that appropriate wastewater infrastructure is provided.

2.3.2 State Planning Policy 3.7: Bushfire

State Planning Policy 3.7 (SPP 3.7) – Bushfire (WAPC, 2024a) and the associated Planning for Bushfire Guidelines (WAPC, 2024b) have been developed to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure (WAPC, 2024a).

SPP 3.7 applies to all strategic planning, subdivision and development applications in bushfire prone areas, and aims to support development through an assessment of bushfire hazard. The aims of SPP 3.7 are to:

- Avoid increases in the threat of bushfire to people, property and infrastructure
- Reduce vulnerability to bushfire through identification and consideration of bushfire risks
- Ensure higher order strategic planning documents, proposals, subdivision and development applications take into account bushfire protection requirements
- Achieve an appropriate balance between bushfire risk management measures, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration to climate change (WAPC, 2024a).

The Planning for Bushfire Guidelines (WAPC, 2024b) provides guidance on the implementation of SPP 3.7, and assist in:

- Determining appropriate land use planning in relation to bushfire prone areas across Western Australia
- Specifying the requirements to be met at each stage of the planning process
- Ensuring that necessary bushfire protection measures are incorporated into development (WAPC, 2024b).

Bushfire planning and management must be considered for all developments located in Bushfire Prone Areas (DFES, 2025).

2.3.3 State Planning Policy 5.1: Land Use Planning in the Vicinity of Perth Airport

Australia uses the Australian Noise Exposure Forecast (ANEF) system to measure aircraft noise and determine if land is suitable for development, particularly near airports. This system generates noise exposure contours that illustrate different noise levels.

State Planning Policy 5.1 (DoP & WAPC, 2015) provides guidance relating to land use planning in proximity to Perth Airport and aims to:

- protect Perth Airport from unreasonable encroachment by incompatible (noise-sensitive) development, to provide for its ongoing development and operation; and
- minimise the impact of airport operations on existing and future communities with reference to aircraft noise.

Policy guidelines have been based on Table 2.1 from AS2021 – *Building Site Acceptability Based on ANEF Zones*, and apply to areas around Perth Airport that are currently, or may in the future be, impacted by aircraft noise.

Much of the Robinson Grove site falls within the 20 to 25 ANEF contour range, as shown in the Phase 2 Structure Plan Area concept plan (Appendix 1).

2.4 Aboriginal Heritage Act 1972

The *Aboriginal Heritage Act 1972* is the legislation that manages Aboriginal heritage in Western Australia. The laws require approval for activities that may impact or harm Aboriginal heritage.

A Section 18 consent is required under the Act for an activity which may harm an Aboriginal site. Based on the presence of three registered Aboriginal cultural heritage sites within the project area, a Section 18 consent was previously obtained for the project works. This is further discussed in Section 3.6.

2.5 Shire of Mundaring Guidance

Shire of Mundaring guidance documents relevant to the proposed development, include:

- Local Biodiversity Strategy 2023-2030 (Shire of Mundaring, 2023)
- Council Policy 2.20 – Environmental Sustainability (Shire of Mundaring, 2024)
- Landscape and Revegetation Guidelines (Shire of Mundaring, 2020)
- Heritage List (Shire of Mundaring, 2016).

3 Key Environmental Features

3.1 Topography, Geology and Soils

3.1.1 Topography and Landforms

The Phase 2 LSP area is situated on an elevated plain adjacent to the Helena River floodplain (Figure 3).

The eastern portion of the LSP area features topographic elevations ranging from approximately 10 to 26 m AHD, with the terrain gradually rising towards the north, where existing residential areas are present. The western portion of the LSP has an undulating topography, generally ranging from approximately 8 to 18 m AHD, with elevation increasing towards the northeast. Placement and storage of fill has occurred in the western portion of the LSP area increasing the natural elevations in this location.

3.1.2 Geology and Soils

Regional mapping of geology of the Phase 2 LSP areas is representative of (Figure 4):

- Pebbly silt (Unit Mgs1) associated with the Guildford Formation is described as 'strong brown silt with common, fine to occasionally coarse-grained, sub-rounded laterite quartz, heavily weathered granite pebble, some fine to medium-grained quartz sand, of alluvial origin'; and
- Clay (Unit Cm2) associated with Alluvium (Qha) geology is described as 'dark strong brown, hard when dry, soft when moist, variable silt content, no sand, of alluvial origin' (Gozzard, 1986)

The Department of Primary Industries and Regional Development (DIPIRD) identifies the following soil systems and soil subsystems as occurring within the LSP area (Table 3-1) (DPIRD, 2025).

Table 3-1: Land Systems

Mapping Units	Land System	Description
213Pj_Gf1	Pinjarra, Phase Gf1	Very gently undulating plain. Moderately well drained yellow duplex or gradational soils with sand to sandy loam topsoil. Woodland of *E. wandoo* and *E. calophylla*.
213PjSW3	Sw3 (Swan, brown alluvial sands and sandy loams)	Low level, occasionally flooded, alluvial terraces with imperfectly drained variable alluvial soils with sand to sandy loam surfaces
213PjSW1	Sw1 (Swan, poorly drained mixed alluvials)	River margins and low flats with poorly drained variable alluvial soils, subject to frequent flooding.

Source: DPIRD (2025)

3.1.3 Acid Sulfate Soils

A portion of the LSP area correlating to the Cm2 geological unit is mapped as having a moderate to low risk of Acid Sulfate Soil (ASS) risk within 3 m of natural soil surface (Landgate, 2025). The remainder of the LSP area is not mapped as posing an ASS risk.

3.2 Hydrology and Drainage

3.2.1 Groundwater

The site falls within the Perth, Shire of Mundaring groundwater subarea and is underlain by the Superficial Swan, Leederville and Yarragadee North aquifers (DWER, 2025b). The DWER Water Register notes that the superficial aquifer (Perth – Superficial Swan) in this location has additional water available for abstraction, whereas the underlying aquifers (Leederville and Yarragadee North) water are fully allocated (DWER, 2025b).

The site is not within a Public Drinking Source Area (DWER, 2025a).

Historical groundwater levels indicate that that water typically flows from north-east to south-west across the site towards the Helena River (Coterra Environment, 2019). Regional groundwater mapping indicates that maximum groundwater levels determined by DWER for 2019 range from approximately 16 to 20 mAHD across the LSP area (Landgate, 2025).

Site specific groundwater monitoring between 2012 and 2014 recorded maximum groundwater levels from 10.71 m AHD to 10.84 m AHD (5.78 to 6.15 metres below ground level (mbgl)). Three years of post-development groundwater monitoring was undertaken for Stage 1 of the Belle View estate from 2022-2024. Groundwater levels measured during this time period followed seasonal trends with groundwater levels ranging from 9.19 m AHD to 15.53 m AHD.

Further detail regarding groundwater characteristics of the site is provided within the Local Water Management Strategy addendum prepared by Pentium Water to support the Phase 2 LSP.

3.2.2 Surface Water

3.2.2.1 Helena River and Floodplain

The Helena River flows approximately 78 km in a north westerly direction to its confluence with the Swan River at Guildford (Coterra Environment, 2019). The LSP area is located adjacent to the border of Helena River floodplain, which is within the Parks and Recreation zone onsite and forms part of the Swan and Canning River Development Control Area (DCA) (Figure 5).

The Helena River floodplain extent is mapped as extending to the urban zone boundary (Figure 5).

3.2.2.2 Bellevue Drain/Living Stream

The Bellevue Drain is an ephemeral man-made open drain which conveys runoff from both the urban area and a portion of Roe Highway. Historic aerial photographs indicate that the drain was constructed prior to 1953.

The Bellevue Drain is in a narrow local government-owned lot (Lot 33 Wilkins Street) that transects the urban development portion of the site within the Phase 1 LSP area (Figure 5). The drain is being transformed into a Living Stream, that connected to the created wetland system within the foreshore zone.

3.2.2.3 Wangalia Brook

Wangalia Brook is a small ephemeral brook connecting to Helena River. The original Wangalia Brook alignment was mapped within the Phase 2 LSP area, but this was historically modified within the floodplain to flow in a westerly direction through a series of stock watering holes before discharging to the Helena River further downstream (Coterra Environment, 2019). As part of the water quality treatment system constructed onsite which incorporates the constructed open water wetlands onsite, Wangalia Brook was restored to its original flow path (Coterra Environment, 2019).

3.2.2.4 Constructed Open Water Wetlands

The Local Water Management Strategy (Coterra Environment, 2017a) and Constructed Wetland Management Plan (Coterra Environment, 2017b) prepared as part of the Phase 1 LSP works, outlined the plans to construct a series of seasonal and open water wetlands which would have been consistent with the hydrological regime of the area prior to European settlement.

The open water wetlands were constructed in 2018 and 2019 to form part of the overall project drainage and water treatment system. These wetlands manage runoff from development, supplemented by water from the superficial aquifer during summer.

Key components of the system design include (Coterra Environment, 2019; Coterra Environment, 2017b):

- Outflow from the Bellevue Drain is conveyed through four open water wetlands (OW3, OW4, OW2 & OW1; Plate 3-1) prior to entering the Helena River. In normal operation, the system is designed to follow of reverse flow path to the Helena River to maximise residence time and therefore water quality treatment.
- Wangalia Brook has been realigned to its original flow path and discharge into the final wetland, OW1 which will overspill into the Helena River during larger events.
- Wetlands are not be embanked so the whole Helena River floodplain remains operational during periods of high flow.
- Wetlands receive inflow from direct rainfall, the proposed urban development, future urban development, the Bellevue Living Stream, Wangalia Brook and a supplementary supply abstracted from groundwater (via a 18,500 kl/year groundwater license held by the proponent).
- Open water wetlands were designed to be a maximum of 2 m deep, and lie below maximum groundwater level (MGL). A liner prevents groundwater interaction.
- The first wetland in the chain (OW3) also acts as a sedimentation pond.
- Each open water wetland also receives direct rainfall and runoff from their catchments.
- The open water wetlands are connected via vegetated channels. These channels are planted with nutrient stripping species to provide water quality treatment prior to discharge to OW1.
- The final open water wetland (OW1) will overspill into the Helena River during larger events.

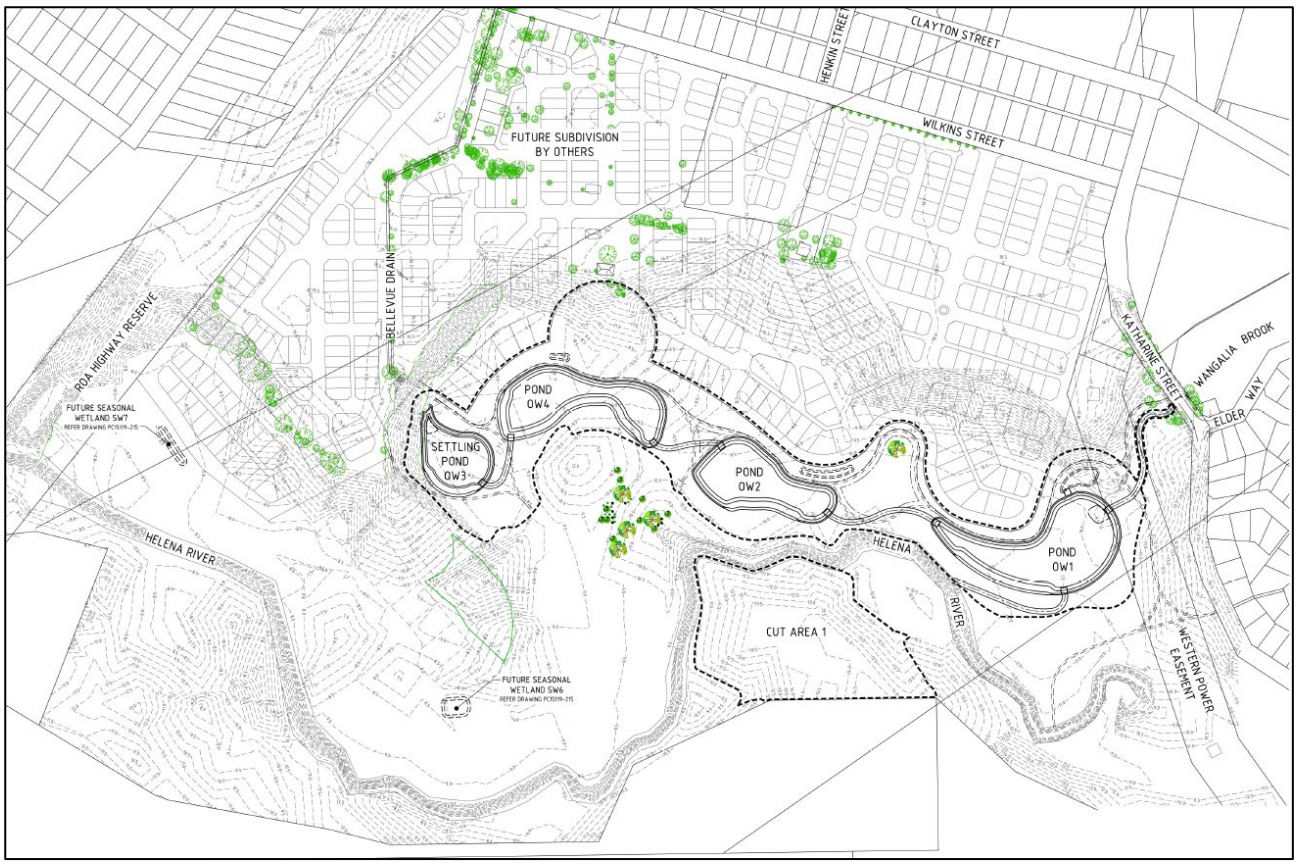

Plate 3-1: Constructed Wetland Proposed Layout

Source: Coterra Environment (2017b)

In addition to the open water wetlands, shallow, unlined seasonal wetlands were also proposed for the foreshore zone adjacent to the site. With their base levels set at Maximum Groundwater Level (MGL), these

seasonal wetlands would treat runoff from parts of the Bell View Estate that drain directly to the foreshore. All seasonal wetlands would then discharge into the Helena River via overland flow. These seasonal wetlands form part of the Phase 2 LSP drainage system design.

3.2.3 Geomorphic Wetlands

The southern portion of the proposed Phase 2 LSP area is mapped within Resource Enhancement Wetland (UFI 14230) associated with Helena River floodplain area (Landgate, 2025) (Figure 5). Resource Enhancement Wetland (REW) are described as wetlands which may have been partially modified but still support substantial ecological attributes and functions. The management objective is to manage, restore and protect towards improving their conservation value (EPA, 2008). As can be seen from the aerial photography these mapped REW extent within the LSP area no longer reflect the characteristics of an REW. As such, retention of this area as not identified as a requirement in the project environmental approvals.

3.3 Vegetation, Flora and Fauna

3.3.1 Vegetation and Flora

The site lies within the mapped extent of four vegetation complexes and described as (Heddle et al., 1980) (Figure 6):

- Forrestfield Complex – Vegetation ranges from open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) to open forest of *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) - *Allocasuarina fraseriana* (Sheoak) - Banksia species. Fringing woodland of *Eucalyptus rudis* (Flooded Gum) in the gullies that dissect this landform.
- Southern River Complex – Open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - Banksia species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds.
- Swan Complex – Fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) with localised occurrence of low open forest of *Casuarina obesa* (Swamp Sheoak) and *Melaleuca cuticularis* (Saltwater Paperbark).
- Guildford Complex – A mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark).

The LSP area has been historically cleared no longer contains vegetation representative of the above complexes.

The adjacent Parks and Recreation zone contains stands of remnant and planted vegetation predominantly along the Helena Rive margins and south of open water wetland OW3. This vegetation includes:

- Vegetation along the Helena River is described as *Eucalyptus rudis* (Flooded Gum; native species) over *Melaleuca rhaphiophylla* (Swamp paperbark; native species), *Schinus terebinthifolius* (Brazilian pepper; exotic species) and *Ficus carica* (fig; exotic species) with an understorey of *Rubus* sp. (blackberry; exotic species), *Watsonia* sp. (exotic species) and mixed weedy grasses (DBCA, 2018).
- The Helena River floodplain beyond the fringing revegetation vegetation comprises kikuyu grass, associated with rural land uses (i.e. cattle grazing)
- The stand of planted vegetation south of open water wetland OW3 comprises non-endemic Eucalypts.

3.3.2 Fauna and Habitat

Due to extensive clearing remnant fauna habitat has been removed from the LSP area.

The adjacent foreshore zone contains limited areas of predominantly upper storey vegetation adjacent to the Helena River, potentially offering habitat for birds, insects and arboreal mammals.

3.3.3 Conservation Significant Vegetation and Flora, Ecological Linkages and Conservation Areas

A portion of the LSP area is mapped as part of a regional ecological linkage (ID 134) associated with the Helena River, with local wildlife corridors being indicatively identified at a width of 40 m around watercourses (WALGA, 2004; SoM, 2023; Plate 3-2) (Figure 6).

Due to the lack of native vegetation within the LSP area, this portion of the mapped linkage does not provide ecological linkage functions. The indicative wildlife corridor extent is also located external to the LSP area.

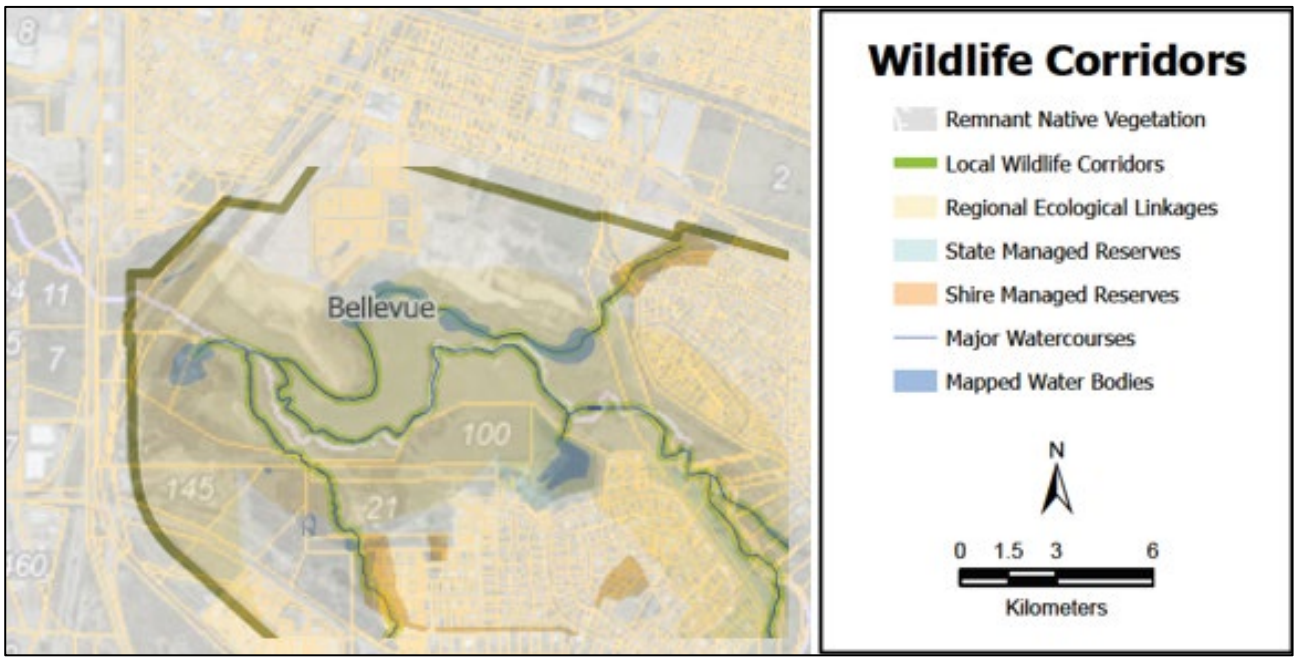

Plate 3-2: SoM mapped Wildlife Corridors

Source: SoM (2023); Landgate (2025)

The site is not mapped within an Environmentally Sensitive Area (ESA).

Three Bush Forever (BF) sites are located within proximity to the site:

- Site 213 (Bushmead Bushland, Swan) is located approximately 0.75 km southwest of the LSP area.
- Site 215 (Helena River, Helena Valley) is located approximately 1.5 km southeast of the LSP area.
- Site 481 (Stirling Crescent Bushland, Hazelmere) is located approximately 1.03 km southeast of the LSP area.

3.4 Bushfire Risk

The site is partially mapped within a Bushfire Prone Area, as defined by the Department of Fire and Emergency Services (Landgate, 2025). These areas are defined as being subject to, or likely to be subject to, bush fire attack, and are identified by the presence of and proximity to bush fire prone vegetation an includes both the area containing the bush fire prone vegetation and a 100 m buffer zone immediately surrounding (Landgate, 2025).

Additional information regarding bushfire risk and associated design and management actions are provided in the Bushfire Management Plan prepared by Bushfire Prone Planning to support the Phase 2 LSP.

3.5 Land Uses

3.5.1 Historical Land Uses

The site has a long history of agricultural land use. In 1829 it was included within Swan Location 16: Governor Stirling's Woodbridge Grant, which originally covered 4,000 acres stretching from the Swan River at Guildford, east to Greenmount Hill (Coterra Environment, 2017a).

The land parcel was subdivided in 1883 and titled Helena Farm. Records indicate that it produced pigs, cattle, horses and farm implements (Heritage Council of Western Australia, 1998). Belle View house was constructed in 1887 to replace a mud-brick cottage (c.1840s) (Coterra Environment, 2017a).

In 1920 the site was purchased by Elder Smith as a holding yard for stock. Since 1987 the site has had several owners who have rented the house and used the land for stock rearing (Coterra Environment, 2017a).

In more recent times, construction of the Roe Highway was progressed to the west of the site in 1983. In 2018, the construction of open water wetlands within the foreshore zone commenced, with earthworks to facilitate development for future residential lots commencing in 2019.

3.5.2 Surrounding Land Uses

The site is bordered by residential areas to the north and east, the Helena River foreshore zone to the south and Roe Highway to the west. Industrial areas are located west of Roe Highway and north of Clayton Street.

3.6 Heritage

3.6.1 Aboriginal Cultural Heritage

Whadjuk people lived along the Helena River system which provided freshwater and food resources (Amergin Consulting, 2013). The river had provided opportunities for hunting and gathering bush foods and medicine. Whadjuk people participated in cultural ceremonies and rituals along the river.

The length of the Helena River from its source to the confluence with the Swan River is a registered site with the Department of Planning, Lands and Heritage (DPLH) for its ceremonial and mythological significance.

One registered Aboriginal Cultural Heritage (ACH) site and two historic records (Aboriginal heritage places assessed as not meeting the criteria for a registered site) overlap the LSP area (DPLH, 2025) (Table 3-2). The location of registered sites within the surrounding the Phase 2 LSP is shown on Figure 7.

Table 3-2: Aboriginal heritage site details

Site ID	Site name	Place Type	Cultural Sensitivity (Nature)	Restricted Place
3758	Helena River	Ritual/Ceremonial; Creation/Dreaming Narrative; Repository/Storage Place	Yes	Yes
3969	Kings Embankment A-C	Artefacts/Scatter	No (no gender/limitation restrictions)	No (ACH Historic)
3980	Kings Home Paddock A	Artefacts/Scatter	No (no gender/limitation restrictions)	No (ACH Historic)

Source: DPLH (2025)

An application to authorise disturbance to Aboriginal Cultural Heritage sites identified as relevant to the proposed development was submitted to the (then) Department of Aboriginal Affairs in 2016. The Minister for Aboriginal Affairs subsequently advised that the Belle View development project was assessed to impact three Aboriginal site, being Site 3758 and former Site 3969 and provided consent pursuant to Section 18(3) of the *Aboriginal Heritage 1972*.

3.6.2 European Heritage

The Belle View house and stables is a heritage site associated with historical farming within the area (SoM, 2016; Heritage Council, 2025; Table 3-3). Belle View house and stables is a listed State heritage place and is subject to a Heritage Agreement (Heritage Council, 2023). This site is located between the eastern and western Stage 2 LSP areas (Figure 7).

The Bellevue Primary School is also listed as a heritage place and is located to the north of the LSP area (Heritage Council, 2016).

Table 3-3: Non-indigenous heritage site details

Place Name/Location	Place Record – Statement if Significance	Significance Category	State Register	inHerit #
Belle View House and Stables [Belle View, 1100 Katharine St & corner of Wilkins Street]	MHI site 213 – 'Belle View' homestead has very high aesthetic, social and historic significance as one of few remaining examples in the metropolitan area of a substantial early farming property that retains high authenticity and integrity and was considered a model farm of its time. As such it is very significant for its rarity and representativeness.	1 – Exceptional	Yes	3836
Bellevue Primary School [62 Clayton Street]	The place is significant for its association with the development of education in the City of Swan. The place has social value for former pupil and staff of the school and is a good example of government school building in the Federation Free style. The school site is reputed to have been used as an Aboriginal meeting place, the site of Robert Dale Camp and finally the site of a camel train camp to Kalgoorlie.	Considerable Significance	No	3512

Source: Heritage Council (2016); Heritage Council (2023)

4 Potential Impacts and Proposed Management

4.1 Drainage and Water Management

4.1.1 Overview

Water management and stormwater drainage design at the site is based on Water Sensitive Urban Design philosophy and incorporates Best Management Practices in the management strategies for surface water, groundwater, nutrients, flood, water use and wastewater (Coterra Environment, 2017a).

Prior to development commencing onsite, the Helena River received untreated runoff from a number of existing industrial and urban developments, with the Bellevue Drain carrying water from upstream developed catchments via the site towards the Helena River (Coterra Environment, 2017a).

The site's drainage system as outlined within the former Local Water Management Strategy (Coterra Environment, 2017a) and the recently prepared addendum report (Pentium Water, 2025) has been designed to direct stormwater towards the Bellevue Drain which has been redesigned as a living stream and the constructed open water wetland system. These features act as natural filters, improving water quality before it potentially discharges into the Helena River during heavy rainfall.

In addition, the use of seasonal wetlands/bioretention basins is also proposed as part of the drainage management system for the site.

4.1.2 Phase 2 Local Structure Plan

Stormwater generated within the Phase 2 Structure Plan area is directed to the following receiving waterbodies:

- Drainage catchments which slope towards the Bellevue Drain/living stream direct drainage to this channel for initial treatment and conveyance prior to discharge into open water wetland OW3. This will then be following the drainage treatment train as descried in Section 3.2.2.4.
- Stormwater from drainage catchments which do not flow towards the living stream is directed to a number of shallow seasonal wetlands/bioretention basins which are located within the foreshore zone. These areas are further discussed below.

4.1.2.1 Seasonal Wetlands/Bioretention Basins

New seasonal wetlands/bioretention basins are planned as part of the Stage 2 works consistent with the LWMS (Coterra 2020) which proposed water quality treatment areas to treat the first 15 mm prior to entering the constructed wetlands adjacent development areas.

The seasonal wetlands/bioretention basins are proposed to be located within the regional open space and within the rehabilitation planting area. They will be planted with local wetland species to enhance water quality, based on guidance prepared by Monash University (2014).

Placing these basins within the foreshore's revegetation zone offers several benefits:

- It creates native vegetation areas for future planning and habitat
- It allows for denser planting by separating these areas from development interfaces, which might otherwise be restricted by bushfire risk management

These seasonal wetlands/biofiltration basin will typically be 300 mm deep and situated at low points on the site to minimise construction in the foreshore zone. Detailed design will be included in the project's future Urban Water Management Plan(s).

Further details on water management for the site are available in Local Water Management Strategy addendum by Pentium Water, which supports the Phase 2 Structure Plan submission.

4.2 Foreshore Management

As described above, the Phase 2 Structure Plan area adjoins the Parks and Recreation zone associated with the Helena River and foreshore.

A Foreshore Management Plan (FMP) (How Far Environmental, 2019) was originally prepared to address subdivision approval conditions applies to the initial stages of development at the site. The need for an update to the FMP has been identified to align the recreational facility and infrastructure provisions and the management proposed to address contemporary expectations.

Consultation regarding the proposed amendments to the FMP has been undertaken to date with DPLH, DBCA and SoM. This has included:

- Site walkovers to view the current state of the foreshore interface and Parks and Recreation Zone and discuss design and management objectives
- Regulatory authority attendance (including DBCA, DPLH and SoM) at a Phase 2 Structure Plan preliminary design workshop
- Additional liaison with DBCA regarding design and management matters

The updated FMP (Coterra Environment, 2025) will address the current state of the foreshore which is characterised by the Helena River, its floodplain and the constructed wetland system. While the zone serves as an ecological linkage, it faces environmental challenges such as extensive weed infestation (e.g., Brazilian pepper and fig), poor native vegetation condition and limited fauna habitat due to past clearing.

To counter this, the updated FMP is proposed to outline a comprehensive management approach which will include (Coterra Environment, 2025):

- Eco-conscious design: Development of interfaces with residential areas using native, water-wise and bushfire-resistant planting, along with drainage basins and lake edge plantings.
- Recreational amenities: Creation of new public access paths and an amphitheatre to provide recreational opportunities.
- Environment management: Implementation of targeted revegetation efforts and weed control to restore ecological balance.

The proposed updated FMP and associated landscape concept plans will also provide detail regarding the interface treatment between the foreshore zone and adjacent development areas. This is proposed to include:

- Provision of a gravel path to divide the development interface revegetation and planting zone from the retained paddock vegetation. This will provide both public access opportunities while also assisting to prevent spread of paddock grasses into the revegetation and planting zone. The proposed path alignment takes into consideration the large elevation changes between the residential area and foreshore zone with direct access to the foreshore restricted along a portion on this alignment based on the level changes.
- Establishment of irrigation low groundwater managed native shrub planting.
- Provision of designated areas of irrigation turf to provide recreational opportunities, including within the amphitheatre.
- Inclusion of seasonal wetlands/biofiltration areas.

The initial implementation of these management actions will be undertaken by the project proponent, with eventual handover of responsibility at the conclusion of the maintenance period to WAPC, DBCA and/or the Shire of Mundaring (to be confirmed).

4.3 Landform Modification

As noted in Section 3.1.1, placement and storage of fill as part of surcharging works has occurred in the western portion of the LSP area increasing the natural elevations in this location. As part of the development of the site the level in this area will be reduced through removal and relocation of portions of the fill, which will more closely reflect the natural landforms in this location.

Specific details regarding earthworks and fill movement will be provided as part of the engineering documentation prepared for the project.

4.4 Erosion and Sediment Control

Erosion and sediment control is proposed to reduce the potential movement of sediment to prevent adverse impact to surrounding environments, including the Helena River. If uncontrolled this can lead to issues related to water quality deterioration, flooding, blocked drainage systems amongst other impacts (IECA, 2008).

Erosion and sediment control measures proposed for the LSP area include:

- Reducing area and duration of exposed soil
- Stabilising slopes by employing techniques like mulching, hydro-seeding or terracing to reduce the potential of erosion
- Controlling site access
- Implementing stormwater management as outlined within the LWMS
- Use of sediment control fencing either side of the living steam alignment to act as a barrier to sediment movement via overland water flow. Note: The living stream is within the Phase 1 LSP, but may receive overland flow from the Phase 2 area.
- Installing an in-stream sediment control infrastructure across the living stream, if required, to capture any silt associated with works in close proximity.

4.5 Nuisance Insects

Mosquito management has been considered in the design of the construction wetland and drainage systems at the site. The mosquito and midge assessment undertaken as part of the constructed wetland approval process and detailed within the Wetland Management Plan (Coterra Environment, 2017b) concluded that the constructed wetland design has a 'low risk' of mosquitoes and midges. Further, seasonal wetlands/ biofiltration basins were not expected to pose a risk of mosquito and midge breeding as the wetland will infiltration within 96 hours, in line with the Better Urban Water Management requirements (Coterra Environment, 2017a).

Specific design elements which have been provided to address mosquito and midge management include (Coterra Environment, 2017b):

- Hard vertical edges have been provided along a portion of the open water wetlands for public access and mosquito management.
- The hard edges have been installed along the edge of the open water wetlands closest to the nearest residential development. They assist to maximise the effect of wave action and disrupt survival of nuisance insects.
- Wetlands are generally oriented in line with the local east-west winds which pass through the valley therefore assisting with the movement/mixing of water
- Water within the open water wetland is recirculated further facilitating water movement

4.6 Noise

The LSP area is located within the 20 to 25 ANEF contour associated with the Perth Airport. Noise insulation is not mandatory for residential development within this noise exposure zone (WAPC, 2015b).

Roe Highway is located the west of the site. Plans for incorporation of noise attenuation infrastructure along the western boundary of the site are being progressed in consultation with Main Roads.

4.7 Construction Management

Construction will be undertaken in accordance with detailed engineering and landscape plans to be prepared as part of future approval processes. Construction environmental management requirements will generally include the following:

Construction works extent

- The construction works extent boundary will be surveyed to ensure it is accurately located
- Temporary fencing will be installed around identified work areas to prevent inadvertent disturbance

Erosion and Dust

- Vehicle movements will be restricted to speeds 25 km/hour within construction areas
- Dust suppression will be implemented during earthworks and construction activities, as required, if visible dust emissions are occurring on or in the vicinity of the site
- Any trucks transporting dust-prone materials will be appropriately loaded/covered
- Wind barriers may be utilised by construction contractors during works to prevent transport of dust offsite. The need for these barriers/fencing will be assessed prior to construction commencing and be included in construction contracts where necessary

Noise

- Works will be undertaken in accordance with *Environmental Protection (Noise) Regulations 1997*
- Site works will be undertaken in accordance with standard construction work operation hours from 7 am to 7 pm, Monday to Saturday.

Waste

- Feral fauna attractants and potential native fauna traps such as open skip bins will be minimised during and post-construction within foreshore areas.

Weed, Pest and Disease Management

- Weed, pest and disease (PSHB, *Phytophthora cinnamomi*) management measures will be implemented as required

Complaints

- A Complaints Register will be maintained during the construction program and details of any dust or noise complaints received will be recorded. If required, corrective actions will be implemented. The Complaints Register will be provided to Shire of Mundaring, upon request.

5 Conclusion

The Robinson Grove Phase 2 Structure Plan has been prepared in consideration of the key environmental features of the site and the previous environmental approvals.

Water management is a key consideration for the overall site, including this Phase 2 LSP area. Drainage design and water management continues to be implemented to facilitate water quality improvement through the onsite treatment train in accordance with the principals and key design element contained within the approved LWMS (Coterra Environment, 2017a) which is also reflected in the LWMS addendum (Pentium Water, 2025).

The interaction with the Parks and Recreation zone is addressed through interface management including provision of public access paths, identification of landscaping planting/recreational zones and providing spaces for water management.

The Phase 2 LSP design and proposed management are concluded to address the environmental requirements of the site and surrounds.

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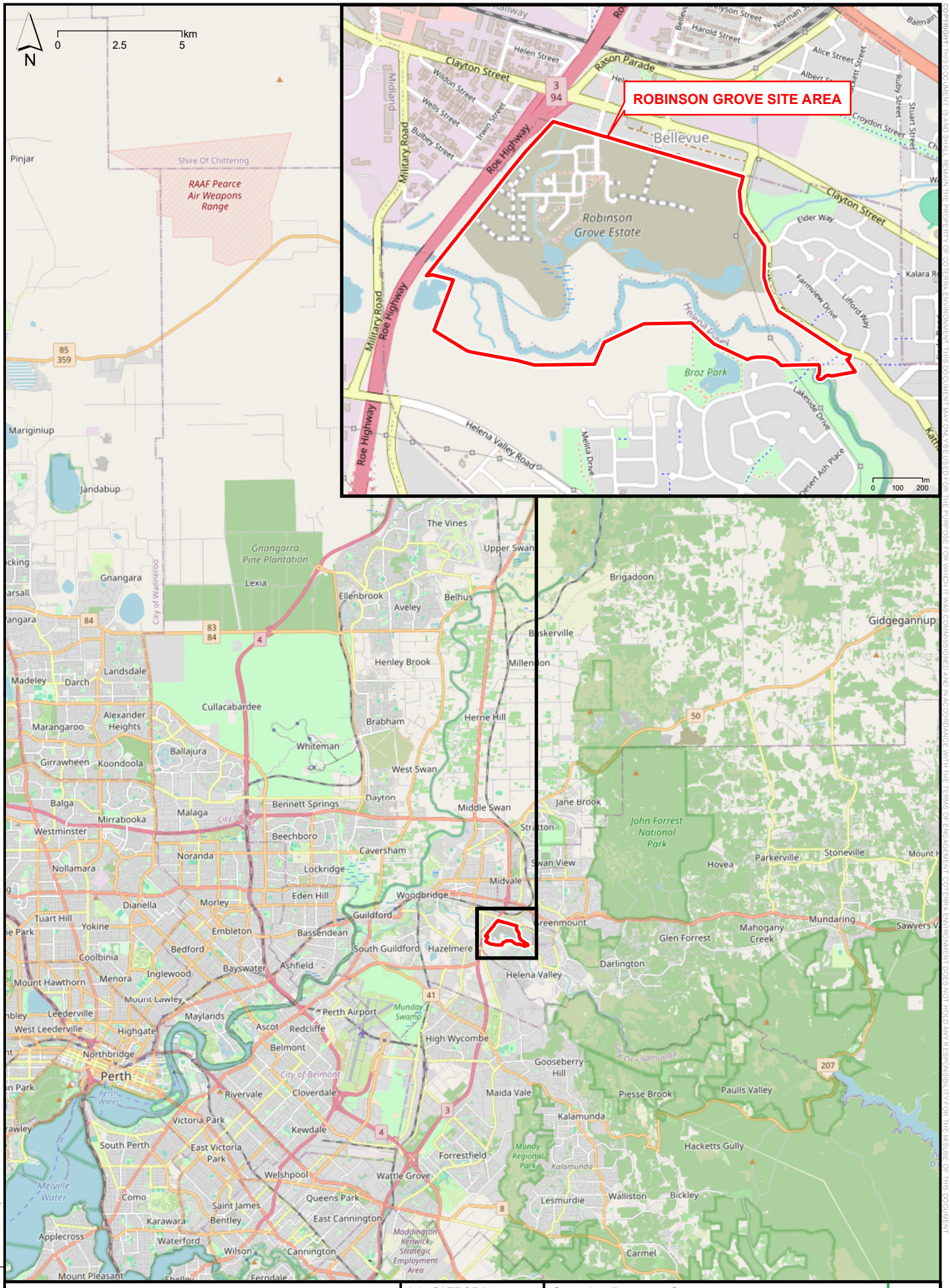
Figures



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ENVIRONMENTAL SUMMARY REPORT
ROBINSON GROVE ESTATE, BELLEVUE

REGIONAL LOCATION

Figure 1

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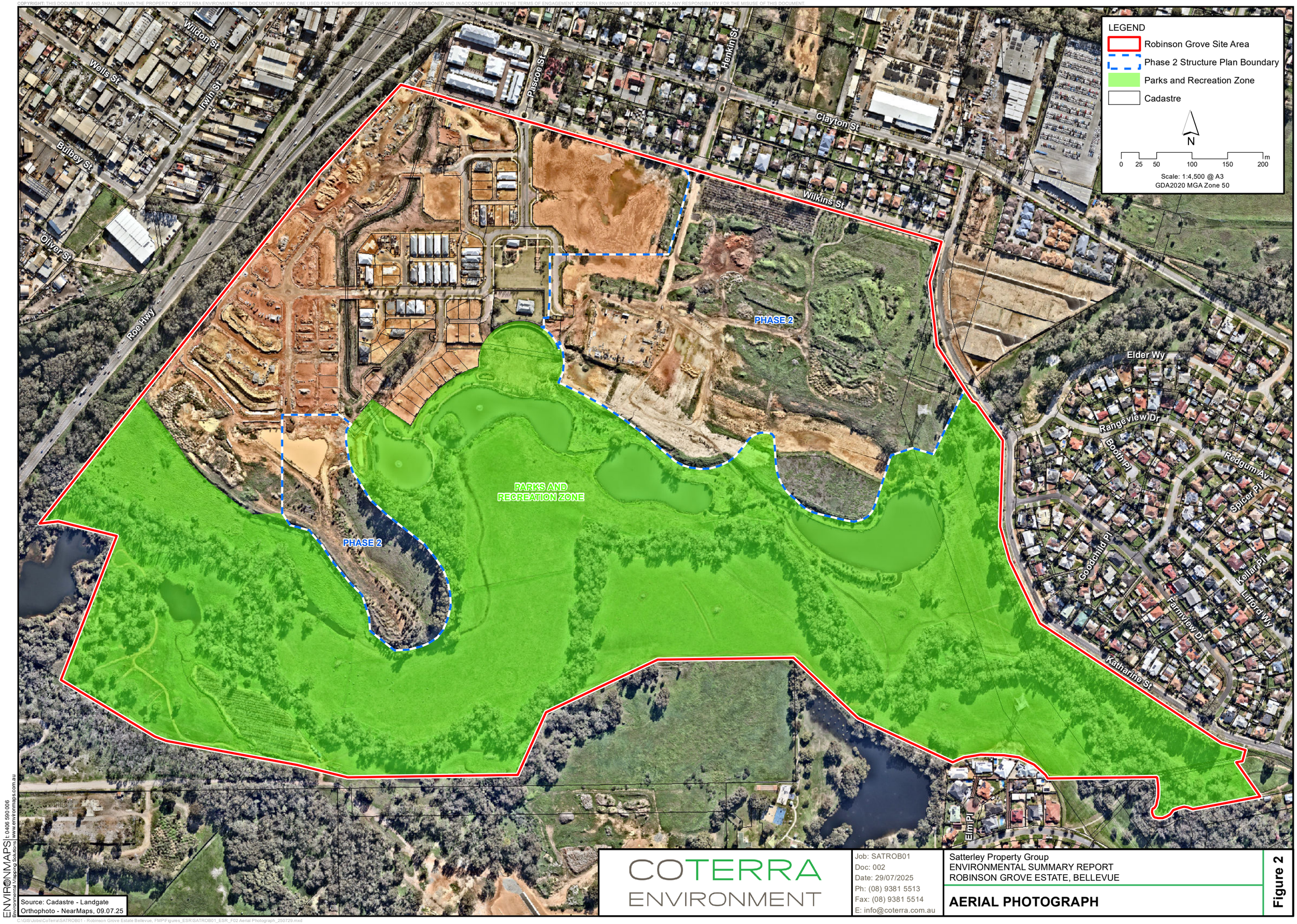

Source: Cadastre - Landgate
Orthophoto - NearMaps, 09.07.25

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ROBINSON GROVE ESTATE, BELLEVUE

AERIAL PHOTOGRAPH

Figure 2

LEGEND
- Robinson Grove Site Area
- Phase 2 Structure Plan Boundary
- Parks and Recreation Zone
- Cadastre
- Contour (mAHD)

Wildon St
Wells St
Irwin St
Bulbey St
Oliver St
Roe Hwy
Pascoe St
Henkin St
Clayton St
Wilkins St
Elder Wy
Rangeview Dr
Booth Pl
Spicer Pl
Goodchild Pl
Redgum Av
Keilar Pl
Farmview Dr
Lifford Wy
Katharine St
Elm Pl
Helena River

N
0 20 40 80 120 160 m
Scale: 1:4,500 @ A3
GDA2020 MGA Zone 50
Source: Cadastre - Landgate | Orthophoto - NearMaps, 09.07.25

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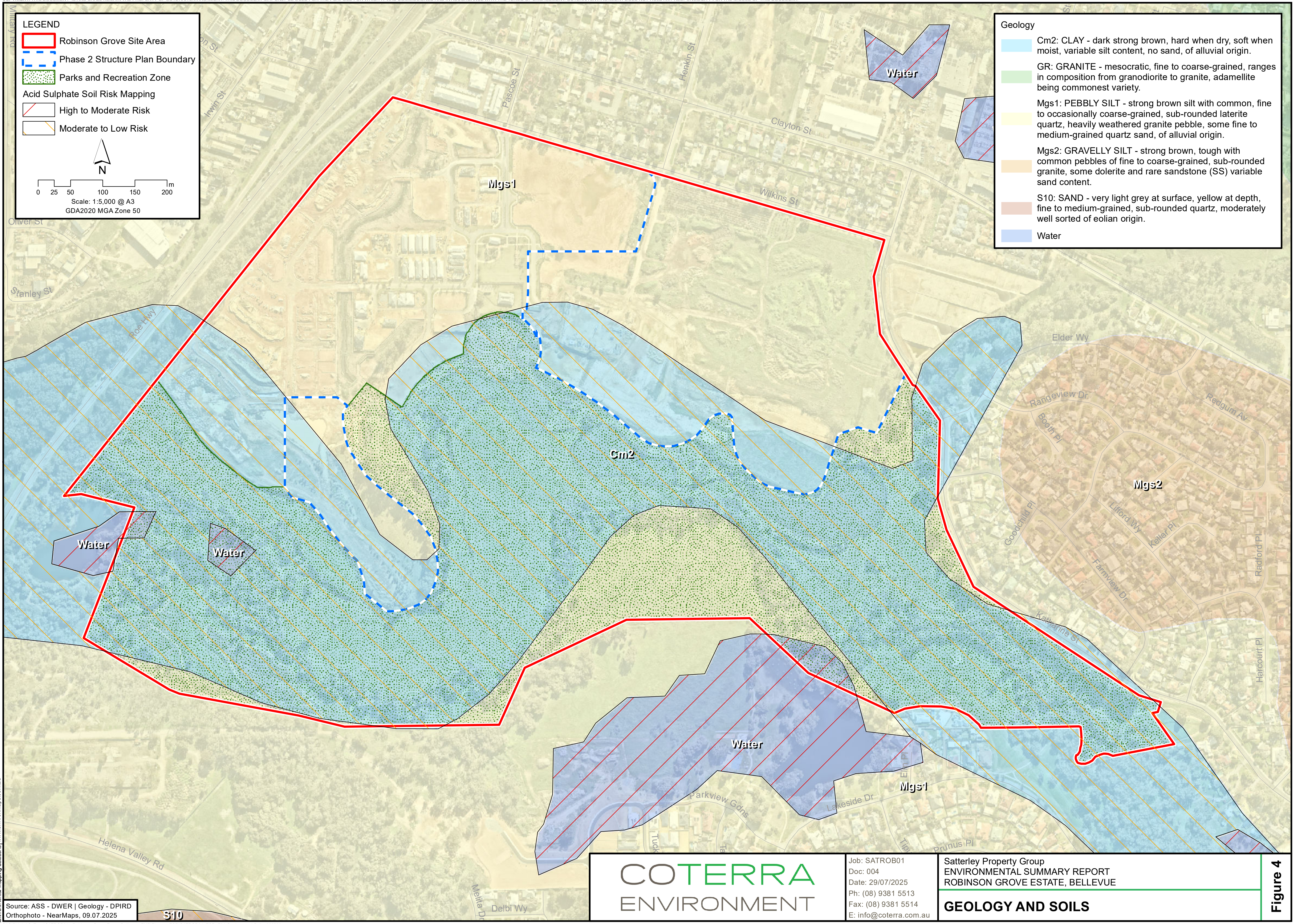
TOPOGRAPHY

Figure 3


LEGEND
Robinson Grove Site Area
Phase 2 Structure Plan Boundary
Parks and Recreation Zone
Acid Sulphate Soil Risk Mapping
High to Moderate Risk
Moderate to Low Risk
N
0 25 50 100 150 200 m
Scale: 1:5,000 @ A3
GDA2020 MGA Zone 50
Geology
Cm2: CLAY - dark strong brown, hard when dry, soft when moist, variable silt content, no sand, of alluvial origin.
GR: GRANITE - mesocratic, fine to coarse-grained, ranges in composition from granodiorite to granite, adamellite being commonest variety.
Mgs1: PEBBLY SILT - strong brown silt with common, fine to occasionally coarse-grained, sub-rounded laterite quartz, heavily weathered granite pebble, some fine to medium-grained quartz sand, of alluvial origin.
Mgs2: GRAVELLY SILT - strong brown, tough with common pebbles of fine to coarse-grained, sub-rounded granite, some dolerite and rare sandstone (SS) variable sand content.
S10: SAND - very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin.
Water
Mgs1
Cm2
Mgs2
Water
Water
Water
Water
Mgs1
S10
Pascoe St
Henkin St
Clayton St
Wilkins St
Irwin St
Oliver St
Stanley St
Roe Hwy
Elder Wy
Rangeview Dr
Redgum Av
Goodchild Pl
Farmview Dr
Radford Pl
Harcourt Pl
Parkview Gdns
Lakeside Dr
Prunus Pl
Helena Valley Rd
Delbi Wy
Source: ASS - DWER | Geology - DPIRD
Orthophoto - NearMaps, 09.07.2025
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ROBINSON GROVE ESTATE, BELLEVUE
GEOLOGY AND SOILS
Figure 4
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LEGEND
- Robinson Grove Site Area
- Phase 2 Structure Plan Boundary
- Parks and Recreation Zone
- Major River
- Watercourse

Wetlands
- Conservation
- Resource Enhancement
- Multiple Use

FPM Floodplain Area
- 1 in 10 (10%) AEP floodplain
- Designated flood event floodplain

LOT 33 (Living Stream Drainage Reserve)

Bellevue Drain

CONSTRUCTED WETLANDS (CW)

CW

Wangallia Brook

Kadina Brook

Helena River

UFI: 15440

UFI: 14230

UFI: 15884

UFI: 15885

UFI: 14427

Military Rd
Wildon St
Wells St
Irwin St
Bulbey St
Oliver St
Stanley St
Pascoe St
Henkin St
Clayton St
Wilkins St
Sophia St
Elder Wy
Rangeview Dr
Booth Pl
Redgum Av
Spicer Pl
Lifford Wy
Kellar Pl
Goodchild Pl
Farmview Dr
Radford Pl
Katharine St
Harcourt Pl
Elm Pl
Parkview Gdns
Lakeside Dr
Prunus Pl
Delbi Wy
Melita Dr

0 25 50 100 150 200 m
Scale: 1:5,000 @ A3
GDA2020 MGA Zone 50
N
Source: Wetlands - DBCA
Orthophoto - NearMaps, 09.07.25 | Flood - DWER

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ROBINSON GROVE ESTATE, BELLEVUE

HYDROLOGICAL CHARACTERISTICS

Figure 5

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LEGEND
- Robinson Grove Site Area
- Phase 2 Structure Plan Boundary
- Parks and Recreation Zone
- Ecological Linkages
- Vegetation Complexes
- Native Vegetation Extent
- SPP 2.8 Bush Forever Area

ROE HWY

EASTERN HWY

Guildford Complex

Swan Complex

Guildford Complex

Forrestfield Complex

Southern River Complex

Forrestfield Complex

213

N

0 50 100 200 300 400 m

Scale: 1:7,500 @ A3
GDA2020 MGA Zone 50

Source: Bush Forever - DPLH | Veg - DBCA
Orthophoto - NearMaps, 09.07.25 | Ecological Linkages - WALGA

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ROBINSON GROVE ESTATE, BELLEVUE

VEGETATION CHARACTERISTICS

Figure 6

C:\GIS\Jobs\CoTerra\SATROB01 - Robinson Grove Estate Bellevue, FMP\Figures_ESR\SATROB01_ESR_F06 Vegetation Characteristics_250729.mxd

LEGEND
- Robinson Grove Site Area
- Phase 2 Structure Plan Boundary
- Parks and Recreation Zone
- Major River
- Local Heritage List
- Aboriginal Heritage - Registered

14560
3512
14549
2458
3836
3968
3973
3758
3967
3966
3971
3720
3937
24646
24646
Military Rd
Wildon St
Wells St
Irwin St
Bulbey St
Oliver St
Stanley St
Roe Hwy
Helena River
Helena Valley Rd
Pascoe St
Henkin St
Clayton St
Wilkins St
Sophia St
Elder Wy
Rangeview Dr
Booth Pl
Redgum Av
Spicer Pl
Lifford Wy
Kellar Pl
Goodchild Pl
Farmview Dr
Radford Pl
Katharine St
Harcourt Pl
Elm Pl
Parkview Gdns
Lakeside Dr
Prunus Pl
Melita Dr
Delbi Wy

0 25 50 100 150 200 m
Scale: 1:5,000 @ A3
GDA2020 MGA Zone 50
Source: Heritage - DPLH | Orthophoto - NearMaps, 09.07.25

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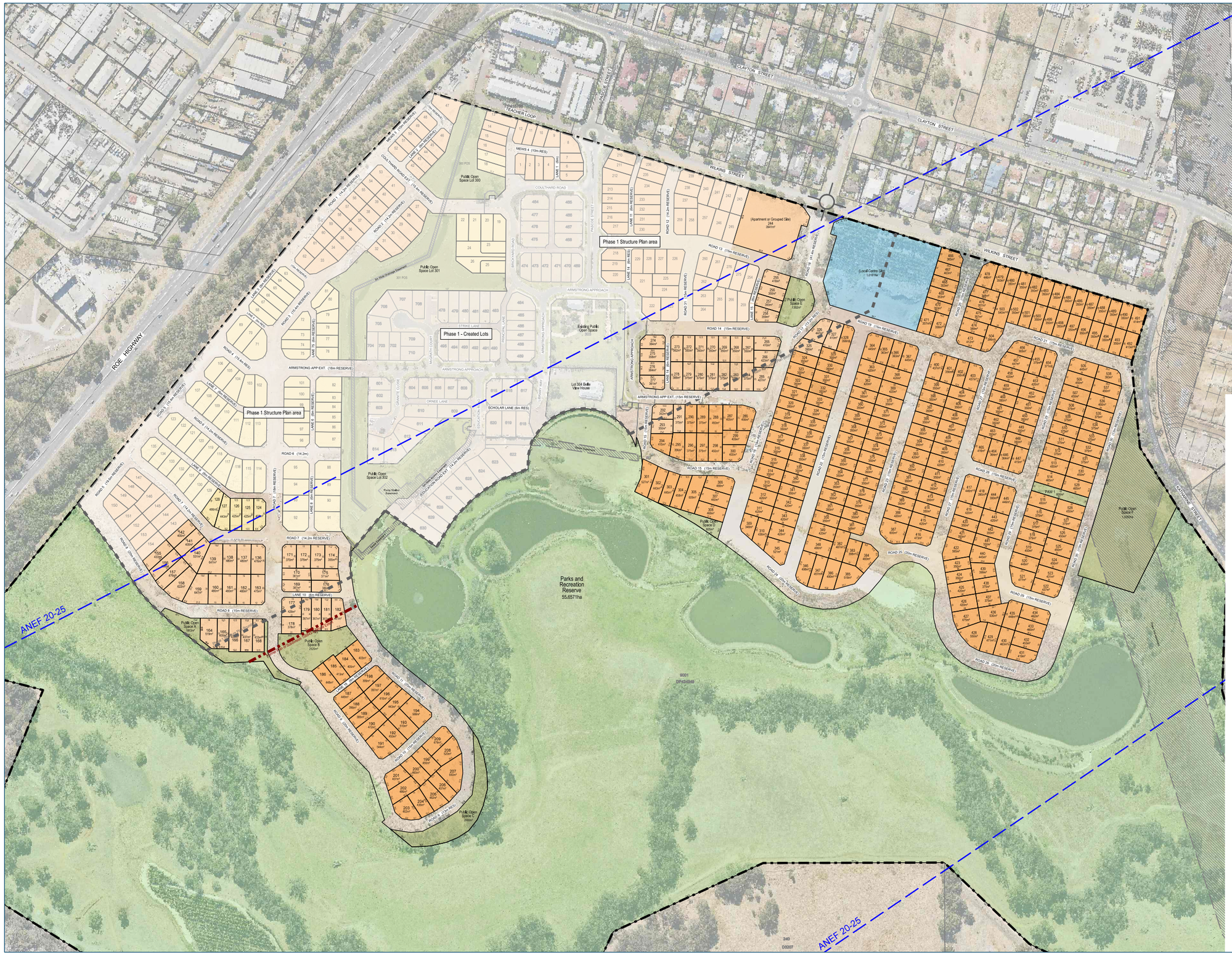
Satterley Property Group
ENVIRONMENTAL SUMMARY REPORT
ROBINSON GROVE ESTATE, BELLEVUE

HERITAGE FEATURES

Figure 7

C:\GIS\Jobs\CoTerra\SATROB01 - Robinson Grove Estate Bellevue, FMP\Figures_ESR\SATROB01_ESR_F07 Heritage Features_250729.mxd

Appendix 1 Concept Plan – Phase 2 Structure Plan Area



Legend

- Estate Area
- Staging Boundaries
- Existing Lots (70 Lots)
- Phase 1 Lots unchanged (83 Lots)
- Phase 1 Lots changed (181 Lots)
- Phase 2 Lots changed (274 Lots)
- Local Centre Lot
- Lot 304 Belle View House
- Regional Parks and Recreation Reserve
- Local Public Open Space
- Existing easements
- Existing sewer pressure main alignment
- Phase 1 Structure Plan Boundary
- Stage 2 Structure Plan Boundary
- Former Plan of Subdivision 158843 Approval Extent
- Potential roundabout
- Australian Noise Exposure Forecast Units

Lot Summary - Structure Plan Phase 2

OVERALL LOT YIELD			LOT AREA	
Size	No. Lots	% Total Lots	Average Size	% of Total Area
320m² - 449m²	272	78.84%	377m²	74.12%
450m² - 499m²	54	15.65%	465m²	18.13%
500m² - 549m²	10	2.90%	526m²	3.80%
550m² - 599m²	3	0.87%	567m²	1.23%
600m² - 699m²	6	1.74%	629m²	2.72%
Number of Lots	**345**			
Minimum Lot Size 348m² Maximum Lot Size 650m²			Average Lot Size 401m² Total Lot Area 138567m²	
Grouped Housing Lot	1			
Local Centre Lot	1			
Total Number of Lots	**347**			

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Perth WA 6000
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E admin@tbbplanning.com.au
tbbplanning.com.au

Scale
1:4000@A3
1:2000@A1

0 20 40 60 80

N

Date
17/09/2025

Plan
24/063/030H

Grid
PCG 94

Drawn
BR

Approved
ED

Concept Plan - Phase 2 Structure Plan Area

LOT 9000 KATHARINE STREET, ROBINSON GROVE

A Satterley Project

TBB PLANNING

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