

Harley Dykstra[®]

PLANNING & SURVEY SOLUTIONS

LOCAL STRUCTURE PLAN SOUTHERN RIVER PRECINCT 2



December 2023

Endorsement Page

This structure plan is prepared under the provisions of the City of Gosnells Town Planning Scheme No. 6

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

01 DECEMBER 2009

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Date of Expiry:

19 October 2030

Table of Amendments

AMENDMENT NO.	DESCRIPTION OF AMENDMENT	DATE ENDORSED BY COUNCIL	DATE ENDORSED BY WAPC
1	Amend Local Structure Plan Map & Supporting Text to provide for residential development, local road network, public open space and wetland management measures.	<p>The amendment was considered by the City of Gosnells Council on 28 February 2017 at which time it resolved to require further information and modifications before the amendment was finalized.</p> <p>In July 2017 the WAPC resolved to refuse the amendment and application was made for review by the State Administrative Tribunal (SAT). In December 2019, the SAT resolved to set aside the decision of the WAPC and require the applicant to modify the structure plan and resubmit to the WAPC for approval.</p>	21 December 2023

Executive Summary

The Southern River Precinct 2 Structure Plan establishes a detailed planning framework to guide future subdivision and development of land generally bound by Southern River Road, Ranford Road, Balfour Street and Aldenham Drive, Southern River. A comprehensive amendment was finalised in December 2023 which introduces a textual component to the structure plan relating to Lot 1627 Ranford Road, Southern River. The textual components below apply only to Lot 1627 (hereafter the subject land). **Plan 1** applies to the whole structure plan area.

The subject land is identified as being “Subject to Future Planning” in the existing Southern River Precinct 2 Phase 2 ODP. This Amendment to the existing ODP provides further guidance regarding the intended development structure and land use distribution for the subject site and is based on additional detailed technical investigations and reporting undertaken for the land.

The subject land is classified by the Department of Environmental Regulation (DER) as being Contaminated – Remediation Required, under the Contaminated Sites Act 2003. It is known that uncontrolled fill, including asbestos, has historically been introduced to the site. The development of the site for medium density housing will facilitate the remediation of contaminated portions of the land. Specific development controls will also limit the risk associated with the potential future exposure to contaminated materials.

This Local Structure Plan (LSP) Amendment seeks to facilitate the development of the subject land for residential and open space purposes. The table below provides a summary of the anticipated development outcome for Lot 1627.

ITEM	DETAIL	SECTION WITHIN REPORT
LSP Amendment Area	11.36ha	Section 1.2.1
Land Use Area:		
• Residential	3.17ha	Section 6.3.1
• Public Open Space & Drainage	4.11ha	Section 6.3.2
• Parks & Recreation	2.30ha	Section 6.3.2
Percentage of Open Space:		
• Gross	56.5%	Section 6.3.2
• Liveable Neighbourhoods Credit	21.5%	Section 6.3.2
Estimated Dwelling Yield	91 Dwellings	Section 6.3.1
Estimated Residential Density:		
• Dwellings - gross urban hectare	12.5 dwellings/ha	Section 6.3.1
• Dwellings - per site hectare	28.7 dwellings/ha	Section 6.3.1
Estimated Population	273 residents	Section 6.3.1

TABLE 1. Structure Plan Summary Table

PART ONE - Statutory Section

1.0 Local Structure Plan Amendment Area

This Local Structure Plan Amendment applies to Lot 1627 Ranford Rd, Southern River being the land contained within the inner edge of the line denoting the Local Structure Plan Amendment boundary shown on the Local Structure Plan Map (**Plan 1**).

2.0 Local Structure Plan Content

This local This Local Structure Plan Amendment comprises:

a) Part One – Statutory Section

This section includes the Local Structure Plan Map and statutory planning provisions and requirements.

b) Part Two – Explanatory (Non-Statutory) Section

This section is to be used as a reference guide to interpret and justify the implementation of Part One.

c) Appendices

This includes all specialist consultant reports and documentation used in the preparation of and to support the land use outcomes of the Local Structure Plan Amendment.

3.0 Operation

This Local Structure Plan Amendment shall come into operation on the date when it is approved by the Western Australian Planning Commission (WAPC).

4.0 Land Use & Subdivision

The Local Structure Plan Map (**Plan 1**) outlines land use, zones and reserves applicable within the Local Structure Plan Amendment area.

4.1 Land Use Permissibility

Land use permissibility within the Local Structure Plan Amendment area shall be in accordance with the corresponding zone or reserve under the Scheme.

4.2 Subdivision

Subdivision within the Local Structure Plan Amendment area shall be in accordance with the residential density code depicted on **Plan 1**.

4.3 Residential Density Target

Residential density targets applied under Perth and Peel @3.5million and the Southern Metropolitan Peel Sub-Regional Structure Plan of 26 dwellings per residential site hectare are to be achieved.

4.4 Public Open Space

The provision of a minimum of 10 per cent public open space being provided in accordance with the WAPC's Liveable Neighbourhoods.

4.5 Conditions of Subdivision Approval

- a) At the time of subdivision, the City may recommend to the WAPC that a condition of subdivision approval be imposed requiring:
- i. the preparation and approval of an Urban Water Management Plan;
 - ii. the preparation and approval of an Irrigation Management Plan;
 - iii. the preparation and approval of an Addendum to the approved Wetland and Wetland Buffer Management Plan;
 - iv. that a memorial be placed on the Certificate(s) of Title(s) to advise that land or lots may be affected by contamination;
 - v. that a notification be placed on the Certificate(s) of Title(s) to advise that land or lots are within the 500-metre kennel buffer area;
 - vi. that a notification be placed on the Certificate(s) of Title(s) to advise that land may be affected by a Bush Fire Hazard as identified in the Bushfire Management Plan contained within **Appendix A**;
 - vii. that a notification be placed on the Certificate(s) of Title(s) to advise that land or lots may be affected by Acid Sulphate soil conditions.

5.0 Site Remediation

5.1 Site Contamination

The subject site is classified by the Department of Environmental Regulation (DER) as being Contaminated – Remediation Required, under the Contaminated Sites Act 2003. It is known that uncontrolled fill, including asbestos, has historically been introduced to the site.

The majority of the southern half of the site is identified as a 'high' risk Acid Sulphate Soils (ASS) area, with the balance of site being identified as 'medium' risk.

5.2 Remediation Works

The subject site is to be remediated in accordance with the following documents:

- Detailed Site Investigation and Remediation Action Plan (Waves Environmental, 2017)
- Voluntary Auditors Report (Australian Environmental Auditors, 2017)

- Acid Sulphate Soils Management Plan (Waves Environmental, 2017)
- Geotechnical Report (Galt, 2017)

Remediation works to involve burial of the Asbestos Containing Material (ACM) beneath a warning barrier and clean fill cover. The depth of clean fill is to be:

- Public Open Space Areas – To be capped with 1.0m of Imported Fill and Topsoil (50/50 blend);
- Buffer and Ecological Link Areas – To be capped with 0.5m of a blended mix consisting of Imported Fill and Topsoil (50/50 blend); and
- Residential Development Areas – To be capped with imported structural fill to design level (>2.0m).

Uncontrolled fill is to be screened to remove putrescible matter (i.e. organic material) and oversized materials (greater than 0.2 m in diameter). This 'unsuitable' material to be transported to landfill for disposal.

The excavation area will be backfilled using the remaining treated/screened material in accordance with geotechnical advice.

The treated uncontrolled fill material to be covered with a high visibility plastic bunting barrier mesh. This will identify the interface between the treated material and the overlying clean capping material.

6.0 Development

6.1 Building Construction

All buildings to be erected within the Local Structure Plan Amendment area shall comply with the requirements of Australian Standard 3959:2009 Construction of buildings in bushfire prone areas under the Building Code of Australia.

PLAN ONE - Local Structure Plan Map

LEGEND

Parks and Recreation

MRS Bush Forever

Public Open Space and Drainage

50m wide Revegetated Ecological Link

Conservation Category Wetlands

Residential R20

Residential R30

42m Buffer to Indicative CCW Boundary

32m Buffer to Indicative CCW Boundary

Mapped Conservation Category Wetland (CCW)

Indicative CCW Boundary for Planning Purposes (DPAW, Jan 2017)

District Distributor

Neighbourhood Connector

500m Kennel Buffer

Common Infrastructure Works Area (Phase Areas)

Indicative 2m wide Shared Footpath

Fencing

NOTES

1. This plan is to be read in conjunction with the following approved plans as included within the Local Structure Plan Amendment Text:

- Concept Plan of Subdivision
- Landscape Concept Masterplan

2. A condition requiring the placement of notifications on titles may be imposed at subdivision stage for the creation of lots within the 500-metre kennel buffer.

LOCAL STRUCTURE PLAN

SOUTHERN RIVER PRECINCT 2

Plan No. | D07-608-30

Date | 13/12/23

Drawn | JW

Checked | MB

Revision | A

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Scale | 1:5000@A3

0

50m

100m

150m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

Harley Dykstra

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PART TWO - Explanatory Section

Document Control

VERSION	DATE	STATUS	DISTRIBUTION	COMMENT
A	06/6/22	Draft	Internal	For Review
B	29/1/23	Draft	Internal	For Review
C	15/2/23	Final	Client	For Comment
D	27/3/23	Final	WAPC	For Lodgement
E	06/10/23	Final	WAPC	For Lodgement (Revised)
F	18/12/23	Final	WAPC	For Lodgement (Revised)

Prepared for: Humich Group Pty Ltd

Date: 18/12/2023

Prepared by: Miranda Bowman

Job No: D07/608

Reviewed by: Henry Dykstra

Ref: LSP2023-D07/608

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PROJECT TEAM

This LSP Amendment has been formulated by Harley Dykstra in collaboration with a team of specialist consultants, who have provided the following technical input in relation to the following matters:

Local Structure Plan Amendment:	Harley Dykstra
Local Water Management Strategy:	Infrastructure Planning & Development
Traffic Impact Statement:	Stantec
Bushfire Management Plan:	Bushfire Prone Planning
Landscape Concept Masterplan:	LD Total
Wetland Buffer Assessment:	Strategen/JBS&G
Wetland & Wetland Buffer Management Strategy	EDS Environmental



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A	Bushfire Management Plan
B	Local Water Management Strategy
C	Concept Landscape Masterplan
D	Wetland Buffer Assessment
E	Wetland Revegetation Management Strategy
F	Traffic Impact Statement
G	Remediation Works (Approval)
H	Certificate(s) of Title

1 INTRODUCTION

1.1. PURPOSE

This Local Structure Plan (LSP) Amendment has been prepared to facilitate the development of Lot 1627 Ranford Road, Southern River for residential purposes. The development of the land will also see the provision of open space and the rehabilitation of the site, which currently has contamination issues based on its historic use.

The LSP Amendment provides guidance on the future urban structure of the site, the distribution of land uses and the necessary development requirements that need to be complied with during construction.

1.2. LAND DESCRIPTION

1.2.1. Legal Description

The subject land is identified as Lot 1627 Ranford Road, Southern River and is owned by I Vote Pty Ltd and Southern Forrest Development Pty Ltd. The details of the subject land are identified as follows in **Table 2**.

LOT NO:	PLAN:	VOLUME/FOLIO:	LOT AREA:	REGISTERED PROVIDER:
1627	3316	1327/738	11.364ha	Southern Forrest Developments Pty Ltd & I Vote Pty Ltd

TABLE 2. Legal Description

A copy of the Certificate of Title and Sketch of the land is included within **Appendix H**.

1.2.2. Location

The subject land is located approximately 19km south-east of the Perth CBD and approximately 8km south west of the Gosnells Town Centre. Lot 1627 has legal road frontage to Ranford Road on its south-western boundary. The existing Bletchley Park Estate, developed by Wallis Property Co, is located immediately to the north-east of the subject land.

1.2.3. Area & Land Use

The subject land has an area of 11.3830ha and is currently (and has previously been) used for horse agistment. A series of smaller fenced paddocks for horses are situated at the northern end of the site. A residential dwelling is situated near the approximate mid-point of the northern boundary. Vehicle access is provided from Ranford Rd, with a driveway running parallel to the northern lot boundary. An existing artificial dam is located at the approximate mid-point of the southern boundary.

2 PLANNING FRAMEWORK

2.1. STATE PLANNING FRAMEWORK

2.1.1. Metropolitan Region Scheme

The majority of the subject land is zoned “Urban” in the MRS, as outlined in **Figure 1**. The southern corner of Lot 1627 is reserved for “Parks & Recreation”. The northern tip is also reserved for Parks & Recreation. The “Bush Forever” overlay also applies to the vast majority of each of the areas reserved for Parks & Recreation.



FIGURE 1. Metropolitan Region Scheme

2.1.2. *State Planning Strategy*

The State Planning Strategy (SPS) is the highest-level strategic planning document in WA and sets out the key planning-related principles.

Specifically, the Strategy provides an overall guide to the management and provision of key matters related to the environment, community, economy, infrastructure, regional development, and government. The Strategy provides the overall vision which is to be articulated and reflected through subsequent planning instruments in the framework.

2.1.3. *South Metropolitan Peel Sub-Regional Planning Framework*

The Framework provides the next level of detail about the planned pattern of growth in the sub region. From a high-level perspective, the Framework seeks to optimise the use of land within and in proximity to activity centres through increases to housing density and diversity, and an intensification of business, commercial and community activity in places such as the City of Gosnells. There is a general preference for focused development and transformation of existing activity centres to ensure vibrant, mixed-use community hubs that are integrated with high-quality public transport connections.

This LSP Amendment is considered to strongly align with these key principles. Lot 1627 benefits from its close proximity to the existing infrastructure, facilities and services in the established Southern River residential community (i.e. existing services associated with Bletchley Park, Ranford Rd, schools, shops and recreational facilities) and represents a logical extension to the existing Bletchley Park urban front.

This LSP Amendment also provides for the protection of environmental assets, namely the adjacent Ballanup Lake and wetlands, whilst ensuring local drainage is dealt with in an appropriate manner.

2.1.4. *State Planning Policy 3.6 – Infrastructure Contributions*

The State Planning Policy 3.6 Infrastructure Contributions (SPP 3.6) applies throughout Western Australia across all development settings where new development results in a demand for additional infrastructure, services, and facilities.

2.2. **LOCAL PLANNING FRAMEWORK**

2.2.1. *Southern River Precinct 2 Phase 2 Outline Development Plan*

The subject land is covered by the approved Southern River ODP Precinct 2 Phase 2 and is identified as being “Subject to Future Planning”, as depicted in **Figure 2**. The Parks and Recreation reserves of the MRS are reflected on the ODP, with 50m wide “Local Open Space” buffers identified. The balance of the subject land is identified for “Residential R30”.

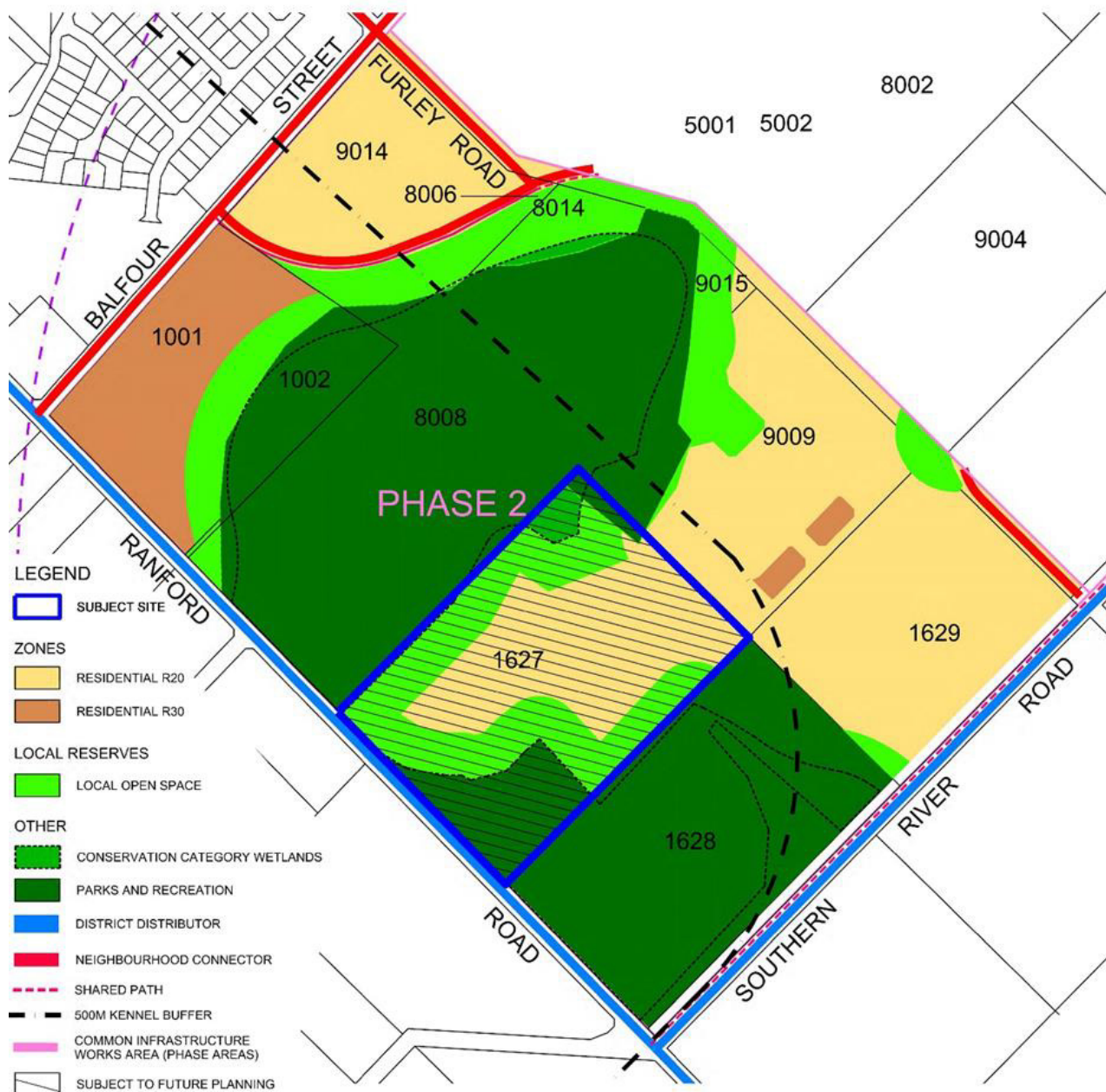


FIGURE 2. Southern River ODP Precinct 2 Phase 2

2.2.2. City of Gosnells Town Planning Scheme No. 6 (LPS 6)

The majority of the subject land is zoned “Residential Development” in TPS 6, as depicted in **Figure 3**. The areas of Parks and Recreation reserves of the MRS are reflected in TPS 6. The land is also the subject of the “Southern River Outline Development Plan Area (ODP B)” and “Special Control Area 2 – Developer Contribution Area”.

Part 7 of TPS 6 requires the preparation and approval of an ODP prior to subdivision and development of land zoned Residential Development and outlines the process and requirements for ODP amendments. Schedule 12 of TPS 6 outlines the common infrastructure items that are included within the Southern River DCA 2, which include land acquisition for open space and arterial roads and costs for drainage and road construction.

2.2.3. *Local Planning Policy 3.4 - Development Contribution Arrangements*

The City administers development contribution arrangements (DCAs) for various areas where it has been determined that the City will facilitate the shared provision of certain infrastructure among land owners. DCAs typically involve five phases:

The principles of this policy, in addition to relevant State legislation and policies, will guide the City in administering DCAs through these phases.

2.2.4. *Local Planning Policy 3.6 - Structure Plans*

The challenges of planning efficient road access, open space provision and servicing for large parcels of land creates the need for structure plans to be prepared to guide the subdivision and development of land. Council has identified that these precincts require a Structure Plan before subdivision and development is allowed to occur. The objective of this Policy is to ensure that any subdivision and/or development within areas requiring a Structure Plan does not compromise the longer-term planning for those areas.

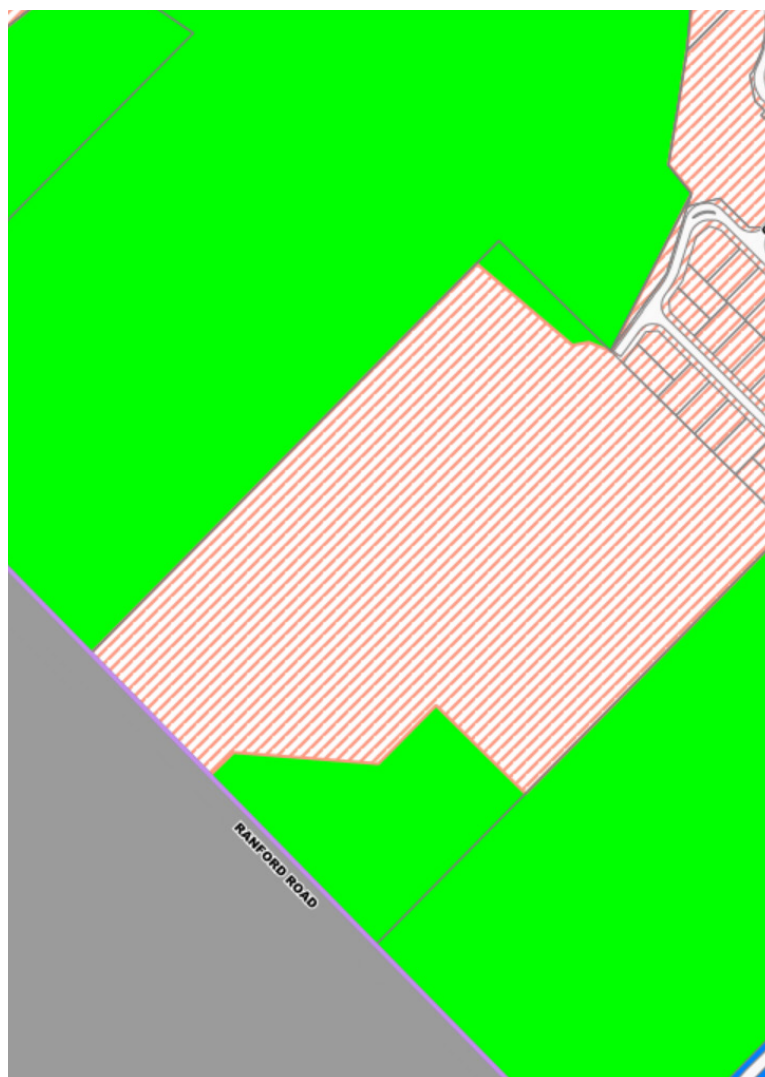


FIGURE 3. Town Planning Scheme No. 6

3 SITE CONDITION

A series of technical investigations and reports have been prepared in support of the preparation of this LSP Amendment and key elements of these reports regarding the existing site are included below. Full copies of the relevant reports are included as appendices to this LSP Amendment.

3.1. PHYSICAL & NATURAL ENVIRONMENT

3.1.1. Landform

The site is predominantly flat (refer **Plate 1**), with a height of approximately 22m AHD. The land abutting the subject to the north-east has been filled (as part of the construction and development of the Bletchley Park estate), with a retaining wall and batter slopes (refer **Plates 2 & 3**). The finished ground level of the abutting land is approximately 1.5m above the current natural ground level of Lot 1627.



PLATE 1. Existing Site Condition (Looking East from Western Corner)



PLATE 2. Existing Interface (Looking North-West, from the eastern corner of site.



PLATE 3. Existing Interface (Looking South-West from northern corner of site.

3.1.2. Soil Type

The Geological Survey of Western Australia Environmental Geology dataset identifies a large portion of the site, from the southern corner extending outward, as peat-rich sand and described as follows: “fine to medium-grained quartz sand with much brown to black organic material, grades to peat, of lacustrine origin”. This mapping coincides with the historical extent of the Lake Ballanup wetland evident from historical aerial photography. The remainder of the site is mapped as sand of eolian origin: white to pale grey at the surface, yellow at depth, fine to medium-grained, over sandy clayey sand of the Guildford Formation. A significant amount of uncontrolled fill has been imported to the site historically, filling lower lying areas and creating a horizon of up to 1.3m thick overlying relic wetland sediments.

3.1.3. Site Contamination

The subject land is classified by the Department of Environmental Regulation (DER) as being Contaminated – Remediation Required, under the Contaminated Sites Act 2003. It is known that uncontrolled fill, including asbestos, has historically been introduced to the site.

A series of site investigations and reporting have been undertaken previously to assess the nature and extent of the existing site contamination issues for Lot 1627. Golder Associates undertook a Preliminary Geotechnical Investigation in 2006, which found uncontrolled fill material in the western and central portions of the site to depths of between 0.6m and 1.3m. The fill was found to comprise loose to medium dense sand containing pieces of wood,

concrete and steel, tin, bricks and car tyres as well as asbestos containing material.

Ace Environmental undertook further investigations of the site in October 2012 and prepared a Limited Detailed Site Investigation report. These investigations found one occurrence of zinc at levels above Ecological Investigation Levels as published in Assessment Levels for Soil, Sediments and Water (DER, 2010) as well as copper, chromium, and total nitrogen in groundwater above Aquatic Ecosystems – Freshwater guidelines (DEC, 2000).

An Asbestos Investigation was undertaken by Ace Environmental at the site in July 2013. A total of 80 test pits were sampled, of which 56 were found to contain asbestos material. The asbestos material was found to be in good condition and unlikely to generate asbestos fibres and vegetation growth was found to be limiting the potential dust generation. Subsequent to these investigations, the site was classified as Contaminated – Remediation Required on 3 September 2013.

The DER advised that further investigation was required regarding contaminants other than asbestos in order to demonstrate that the site was suitable for development for residential purposes and to demonstrate that there would not be an unacceptable risk to the environment. A Detailed Site Investigation (DSI) was prepared by Endemic & Associates and provided to the DER in September 2014 and subsequently updated and resubmitted to the DER in February 2015 in response to feed back. This was submitted alongside an application for the clearing of native vegetation, but was refused due to the absence of planning approval for the clearing having been obtained from the City of Gosnells.

A development application for remediation earthworks was lodged with the City of Gosnells on the 1st of November, 2017 but was refused on the 5th of February, 2018 due to concerns that the use of the land was likely to result in significant adverse impacts on the physical environment and wetlands, and that the absence of an approved structure plan would prejudice the future planning for the site.

Deliberations between the applicant and City of Gosnells continued across 2018 before the matter was resolved as part of a SAT mediation in January 2019, subject to a raft of conditions pertaining to the proposed wetland buffers and indicative boundaries.

Finally, as a result of the 2019 SAT case for the Local Structure Plan Amendment, further modifications to the approved remediation earthworks were required to encompass the increased wetland buffer widths and inclusion of the 50m ecological linkage.

3.1.4. Asbestos

The Ace Environmental Asbestos Investigation notes that the presence of asbestos material is considered a human health risk and that the site consequently needs to be managed strictly in accordance with the DoH's requirements. Ace Environmental identified the following potential management strategies that could be implemented in the development of the subject land in order to safely manage the risk:

- Removal of the uncontrolled fill material and disposal at an appropriately licensed landfill facility. Such an option would require strict management to minimise any dust generation and defined strategies to protect contractors undertaking the work. The site would need to be validated as free of asbestos by an environmental consultant following removal, to the standard required by the DoH.

- The site could be capped, which would involve the installation of a gauze mat across the site overlain with a minimum of 0.5m of certified clean fill material. The site would then require a memorial on title to ensure that all future site owners and/or residents are made aware of the site history and that no digging can be undertaken.
- The site could be capped with approximately 3m of certified clean fill material, which would eliminate the risk to human health and not require a memorial on title.

The preferred remediation and management option for the asbestos containing material at the site is to cover the fill in-situ with a geotextile fabric and 0.5m of clean fill. However, geotechnical requirements associated with the uncontrolled fill dictate that it requires excavation and screening in order to remove large rubble and to strip the unstable underlying relic (wetland) muds. An increased asbestos exposure risk is associated with this activity. A Remediation Action Plan, Dust Management Plan and Site Management Plan (to minimise the potential for future disturbance of asbestos remaining on site) are proposed in order to manage the exposure (and ongoing) risk.

3.1.5. *Acid Sulphate Soils*

Acid Sulfate Soils (ASS) have not historically been identified as a problem within other similar subdivision areas in the City of Gosnells. The majority of the southern half of the site, however, is identified as a 'high' risk ASS area, with the balance of identified as 'medium' risk.

The high risk ASS area coincides with the southern Bush Forever/CCW area, which will not be developed and with areas that will have fill brought in as part of the development. There is therefore limited risk of exposing potential ASS to oxidation.

Should dewatering be required in or adjacent to potential ASS areas, or excavation required that extends greater than 0.5m into the natural soil profile (for example for the installation of sewerage infrastructure), then an Acid Sulphate Soil Management Plan will be prepared and implemented during subdivision. Any management required for the site will be in accordance with DER guidelines and requirements and administered through the subdivision and construction phases of development.

3.1.6. Wetlands

The Department of Parks and Wildlife (DPaW) geomorphic wetlands mapping identifies the presence of several wetlands on and immediately adjacent to the subject land. The southern corner of the subject land has been identified as part of a Conservation Category Wetland (CCW) and the extent of the CCW approximately corresponds with the extent of the MRS Parks & Recreation zoning and Bush Forever designation in this area, as depicted in **Figure 4** below. This represents the northern extent of Lake Ballanup. The mapped extent of this CCW extends to the south-west, south and south-east of Lot 1627. A Resource Enhancement Wetland is identified further to the south and west of the subject land.

A thin strip along the north-western boundary of the Lot 1627 is identified as part of a larger CCW located on Lot 8008 to the north. This thin strip corresponds with the majority of the existing driveway on the property that serves the existing dwelling. An additional portion of this mapped CCW affect the northern corner of the subject land. The majority of the balance of the subject land is identified as a Multiple Use Wetland.

The LSP Amendment layout shows the retention of all mapped CCWs that affect the subject land within open space. Due to existing site contamination within the buffers and the practicalities and feasibility of remediation, 42m buffers between wetlands and development are proposed, other than at the common boundary with Lot 1628 where the buffer shall be 32m.

A Wetland Buffer Assessment has been prepared for the subject land by JBSG/EDS Enviro and is included within **Appendix D**.



FIGURE 4. Existing Wetland Topography

3.2. BUSH FOREVER

Bush Forever areas are designated in the MRS, as depicted in **Figure 1** above. The southern Bush Forever area corresponds with the Parks & Recreation reservation. The northern Bush Forever area largely (although not exactly) corresponds with the Parks & Recreation reservation in this area. The LSP Amendment layout shows the retention of both areas in open space reservations.

3.3. VEGETATION

The Ballanup Lake CCW/Bush Forever area in the southern corner of the subject land is associated with native vegetation and will be retained within open space. The majority of the remainder of the subject land has been cleared (noting historic use as uncontrolled landfill site), with some non-native regrowth and plantings occurring subsequent to fill materials being brought on site. The majority of the north-eastern portion of the site is cleared pasture/paddocks, which have been used for horse agistment and incorporate rows of planted trees corresponding with individual horse paddock areas.

3.3.1. *Vegetation Condition*

In 2018, a Wetland Buffer Assessment was prepared by Strategen to assess the degradation to existing vegetation across the site. The assessment found that the vegetation ranged from 'Completely Degraded' to 'Excellent'.

3.3.2. *Flora*

No Threatened or Priority flora were recorded during site surveys. No conservation significant flora are anticipated to occur within the Management Area or the wider Wetland Area.



A summary of the identified vegetation types has been included in **Table 3** below. Furthermore, the condition of the existing vegetation across the subject land has been illustrated in photo points, associated vegetation descriptions and photographs (refer **Plates 4-8**). The proposed buffer of the CCW will be revegetated with an appropriate suite of groundcover and tree species as described in the Landscape Concept Masterplan provided at **Appendix C**, and the Wetland & Wetland Buffer Management Plan provided at **Appendix E**.

PLATE NO.	DESCRIPTION
P4	Planted non-native Eucalyptus sp. saplings and juveniles 3m over buffalo (Bouteloua dactyloides and couch grass (Cynadon dactylon) (Degraded condition)
P5	Planted non-native Eucalyptus sp. saplings and juveniles over bare understorey with scattered buffalo (Bouteloua dactyloides) and couch grass (Cyandon dactylon) (Degraded condition)
P6	Drain delineating wetland boundary
P7	Boundary of Bush Forever site
P8	Scattered Eucalyptus rudis, Melaleuca preissiana, Melaleuca raphiophylla over Astartea affinis, Lepidosperma angustatum, Cyperus tenuiflorus, Dielsia stenostachya (Very Good condition)

TABLE 3. Vegetation Summary



PLATE 4. Existing Vegetation



PLATE 5. Existing Vegetation

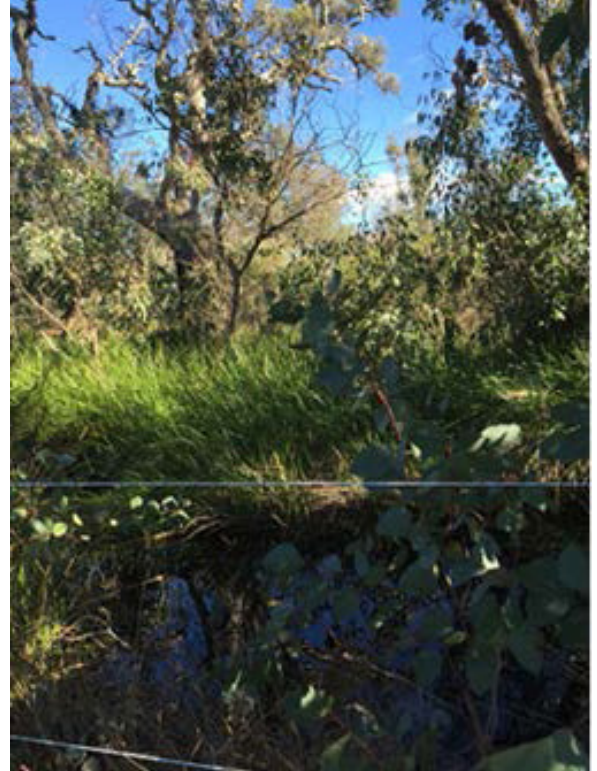


PLATE 6. Existing Vegetation



PLATE 7. Existing Vegetation



PLATE 8. Existing Vegetation

3.4. HYDROLOGY & DRAINAGE

The site is located within the Armadale Area Superficial Aquifer, which is bound by the Canning River to the north, the Darling Scarp to the east and the Byford area to the south. This unconfined aquifer occupies an area of approximately 68m² and has flow lines terminating in the Southern River and Lake Forrestdale.

Groundwater recharge in this area occurs mainly via rainfall infiltration into the Bassendean Sands and Guildford Clays and discharge occurs into Lake Forrestdale and Southern River. The Perth Groundwater Atlas indicates that the regional groundwater flow is in an approximately easterly direction from the site towards Southern River. Groundwater is located at or near the ground surface in the lower lying parts of the site.

There is one surface drainage line on the site running from a small (constructed) soak, existing through the northern corner of the site and discharging into the adjoining Bush Forever site. This drain can flow in either direction according to local groundwater conditions. Under flood conditions, surface water will shed towards both Lake Ballanup in the southern corner and adjoining wetland area at the northern corner of the site. In an extreme flood event, these two wetland areas become linked through a low lying central portion of the site.

3.5. BUSHFIRE HAZARD

The subject land contains an area of existing vegetation greater than 1ha in area and is therefore subject to the provisions of State Planning Policy 3.7 – Planning in Bushfire Prone Areas. This area renders the site as being bushfire-prone but does not in itself indicate bushfire risk. It does, however, require the assessment of bushfire hazard risk by a suitably qualified fire consultant.

A hazard assessment and Bushfire Management Plan (BMP) has been prepared for the subject land and is included within **Appendix A**.

3.6. HERITAGE

No places of heritage significance are identified in the State Heritage Register or the Aboriginal Heritage Inquiry System for the subject land.

4 SITE CONTEXT

4.1. LAND USE

The subject land abuts the existing Bletchley Park estate to the north-east. The wider area to the north and east is largely zoned for urban development, with considerable areas developed for single residential dwellings. Much of this development has occurred in recent times, which is evident in the nature of the building stock.

Local open space areas have been developed within the newly created nearby estates and incorporate existing natural features. As noted above, the subject land is located between two Parks and Recreation/Bush Forever/CCW areas and consequently benefits significantly from this natural amenity.

Sutherlands Park Reserve is located approximately 3.5km to the north-east of the site and consists of six large sporting ovals, which accommodate soccer, cricket and AFL and include change rooms, a kiosk facilities and a large public playground. Gosnells Golf Club is located approximately 3.5km north-west of Lot 1627. The subject land therefore benefits from its proximity to district recreational facilities.

A number of education establishments are located in the vicinity of the subject land as follows:

- Bletchley Park Primary School (Kindergarten to Year 7) – approximately 800m to the north;
- Carey Baptist College (Kindergarten to Year 12) – approximately 800m to the west; and
- Thornlie Christian College (Kindergarten to Year 12) – approximately 2km to the north.

A commercial centre exists approximately 1km to the north of the subject land, in the vicinity of the intersection of Ranford Rd, Wright Rd and Parkview Dr. The centre includes a Coles supermarket, associated specialty shops (liquor, chemist, cafes), offices, fast food outlets, a medical centre and Bunnings Warehouse.

4.2. MOVEMENT NETWORK

The subject land is bounded by Ranford Road to the south. Ranford Road is a major arterial, running south-east/north-west and connecting Roe Highway with Armadale Road. Ranford Road becomes South Street in the north and connects to the Kwinana Freeway, providing access to the Perth CBD. It also intersects with Tonkin Highway to the south, which provides good access to the eastern corridor (both north and south). The Ranford Road reservation abutting the subject land has a width of 34m, with a 2m median that widens to approximately 5.5m at the northern end of the subject land, and a posted speed limit of 60km/h.

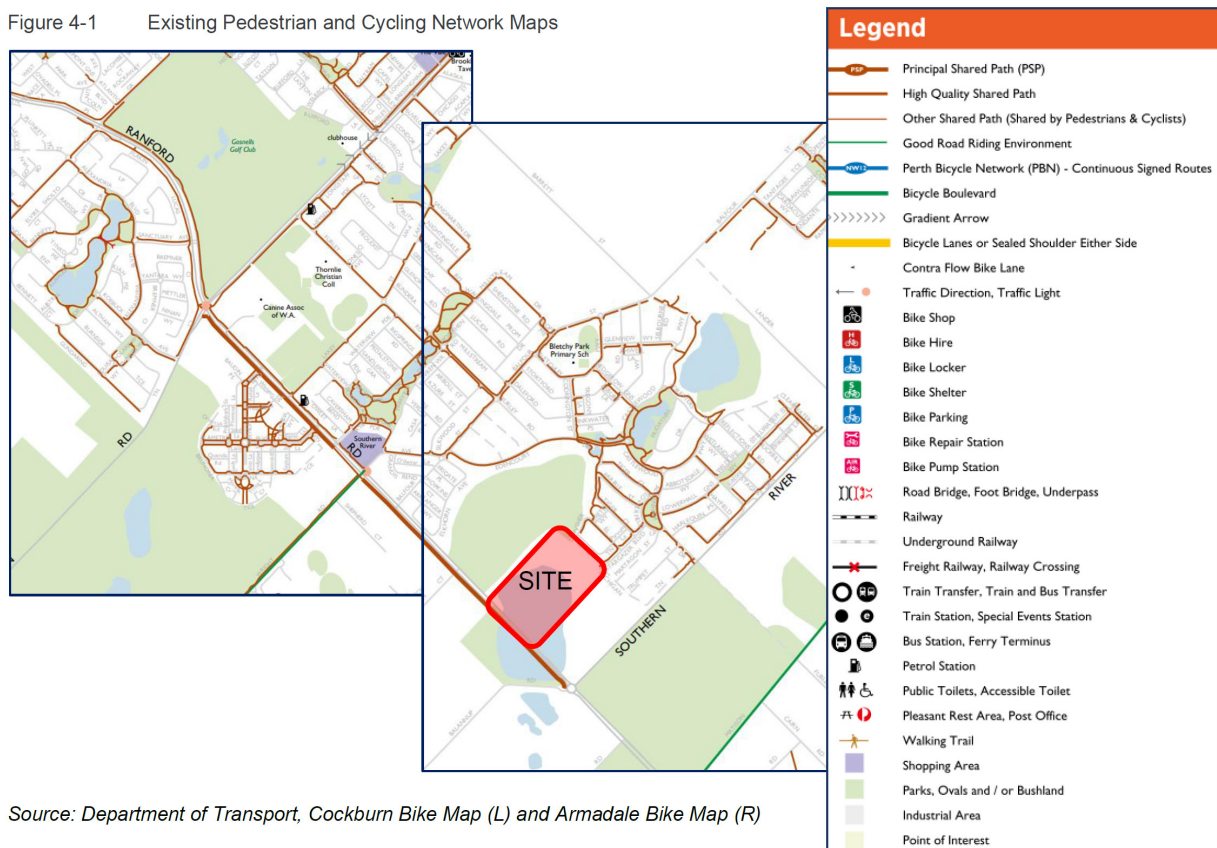
Dedicated and constructed road access is provided on the eastern boundary of the site, via two subdivisional roads that have been created in the development of the abutting Bletchley Park estate. These roads, Panther Elbow and Stargazer Boulevard, have 12m and 16m wide reserves abutting the subject land respectively.

A two-way shared use path is located on the western side of the Ranford Road reserve. Footpaths are provided on the northern side of Stargazer Boulevard and southern side of Panther Elbow. Overall, the Site benefits from good access to existing high-quality shared paths and cycling and walking connectivity, as depicted in **Figure 5** below.

Two Transperth bus services currently operate in the vicinity of the subject land. These are as follows:

- Route 517 – linking Thornlie Train Station to the north-east with Murdoch Train Station to the north-west. This route travels through Bletchley Park estate along Furley Road, Edencourt Drive and Castlewood Parkway approximately 400m to the east of the subject land.
- Route 518 – linking Murdoch Train Station to the north-east with the Cockburn Train Station to the west. This route runs along Ranford and Wright Roads, approximately 500m to the north-west of the subject land.

Figure 4-1 Existing Pedestrian and Cycling Network Maps



Source: Department of Transport, Cockburn Bike Map (L) and Armadale Bike Map (R)

FIGURE 5. Existing Pedestrian & Cycle Networks

A number of train stations are located in the wider area surrounding the subject land. The Thornlie (north), Kelmscott (north-east), Challis (east) and Sherwood (east) Train Stations are an approximate 10 minute drive from the subject land. The Cockburn Central (west) and Murdoch (north-west) Train stations are located approximately 20 minutes and 15 minutes respectively from the subject land by car.

4.3. INFRASTRUCTURE

An assessment of the presence and capacity of existing services in the vicinity of the subject land has been undertaken by Infrastructure Planning & Design (IP&D) and the outcomes of this assessment is documented in the Remediation Works Approval included at **Appendix G**. Key items regarding the existing situation are summarised below.

4.3.1. Power

The closest 22kV feeder to the subject land is along Ranford Road, which could be the connection point for the development. Alternatively, and subject to capacity, Western Power may require the developer to extend 22kV cable from the corner of Ranford Road and Southern River Road into the development and connect into the existing 22kV along Ranford Road near Hatch Court.

4.3.2. Water

The subject land will be served from the Gosnells-Riverton Water Scheme. The site could be served by extending the existing DN100mm reticulation mains located on Stargazer Boulevard and on Panther Elbow.

4.3.3. Sewer

The subject area will be served by the Ballanup Sewer District Wastewater Scheme. Current Water Corporation planning for the area indicates a Gravity Sewer Design Flow (GSDF) of 1.2 L/s from the site.

The current sewer concept design is based on the site gravity draining to the north-east into an existing 150mm sewer (invert level of 21.52m AHD) located at the intersection of Stargazer Boulevard and Michigan Turn. The existing 150mm sewer located on Panther Elbow has an invert level of 23.18m AHD and, therefore, is not a feasible connection point given that existing ground levels within the site range from 22m AHD to 23 m AHD.

Due to the shallow depth of the site's connection point (only 0.5m to 1.5m below existing ground levels), the option of providing a pump station would require discharge into a DN150 sewer which is less than the minimum DN225 typically required for discharge. The closest DN225 sewer is located on Streamside Street, which is approximately 850m from the site, and would require construction works along Southern River Road and a Preliminaries/Formalities process to notify all the authorities and landowners of the works. Construction of a pump station may also trigger a formal EPA assessment due to the potential for overflows into the adjacent CCW. Consequently, the benefits of providing a pump station are not considered to outweigh the costs associated with this process, unless the Water Corporation approves discharge into a DN150 via a pressure main.

Preliminary flow calculations using the Water Corporation Wastewater Manual indicate that the GSDF of 1.2 L/s can service approximately 96 residential dwellings (R30 average), however, this calculation is based on 3.5 persons per dwelling which is considered unlikely for the whole of the site. A higher yield can be accommodated where differential occupancy rates are used, based on different dwelling sizes, and this results in a reduced flow estimate. The total GSDF from the site is approximately 1.18 L/s, which is similar to the GSDF of 1.2 L/s reported by Water Corporation Planning.

4.3.4. Gas

ATCO Gas has advised that site can be served by extending the existing mains located on Stargazer Boulevard and Panther Elbow.

4.3.5. Telecommunications

NBN Co has advised that there are underground fibre optic/telecommunications facilities that are owned or controlled by NBN Co in the vicinity of the site.

5 SITE ANALYSIS

An analysis of the site has been undertaken to inform the preparation of a new urban structure for the subject land and the extent and location of some of the key physical and regulatory items outlined in Section 4 above. Further discussion regarding key matters impacting the design for and development of the subject land is presented below.

5.1. ASBESTOS CONTAMINATION & REMEDIATION STRATEGY

As outlined in Sections 3.1.3 and 3.1.4 above, a large portion of the site has been contaminated with uncontrolled fill, with asbestos being the primary contaminant of concern in the redevelopment of the subject land. The preferred development strategy, which has influenced the structural layout of the LSP Amendment, has been formulated with a focus on the effective, safe and cost-efficient remediation of the site.

5.1.1. Site Remediation

To ensure the subject land is fully remediated for the proposed residential development, remediation works will involve the burial of the Asbestos Containing Material (ACM) beneath a warning barrier and clean fill cover. The depth of clean fill cover (or capping) above the barrier will be 1.0m for public open space areas and a minimum of 0.5m for the wetland buffers and the 50m Ecological Link. The depth of clean fill for the residential development area will be 2.0m to 2.5m.

Remediation of the site to consist of the following actions:

1. Excavate Uncontrolled Fill material.
2. Process/Screen Uncontrolled Fill Material and Backfill in accordance with the following:
 - Uncontrolled fill to be screened to remove putrescible matter (i.e. organic material) and over size materials (greater than 0.2 m in diameter). This 'unsuitable' material will be transported to landfill for disposal;
 - The excavation area to be backfilled using the remaining treated/screened material in accordance with the geotechnical report.
3. Place Barrier and Capping Layer above Treated/Screened Uncontrolled Fill Material:
 - Treated uncontrolled fill material to be covered with a high visibility plastic bunting barrier mesh. This will identify the interface between the treated material and the overlying clean capping material.
4. Capping material placed above the treated uncontrolled fill; material varies in specification based on the following:
 - Residential Footprint – This area to be capped with imported structural fill to design level (>2.0m);

- Buffer and Ecological Link Areas – This area to be capped with 0.5m of a blended mix consisting of Imported Fill and Topsoil (50/50 blend).
- POS Adjacent to Ranford Road/Ecological link – This area to be capped with 1.0m of Imported Fill and Topsoil (50/50 blend).

5.2. WETLAND BUFFERS & REVEGETATION MANAGEMENT

In accordance with the 2019 SAT determination, an indicative buffer width of 42-metres between the CCW and development site was approved for the Local Structure Plan Amendment area, excepting where the edge of the mapped CCW on Lot 1628 is approximately 10 metres away from the common boundary with the site, where a 32-metre buffer was considered to be appropriate. Additionally, a 50m Ecological Link located adjacent to Ranford Road was established to assist the revegetation and remediation of the site while also re-establishing a 'habitat corridor' between the wetland areas to the north and south of the subject land.

5.3. EXISTING MANMADE DAM

An existing manmade dam is located at the approximate mid-point of the southern boundary, just to the north of the Lake Ballanup Parks & Recreation MRS reservation/CCW/Bush Forever area. The opportunity exists to fill this area in with the development of the site and create useable space in this location. Doing so would also have a beneficial impact on the adjacent Lake Ballanup. Some of the inert historical fill can also be disposed of in this location, avoiding the need for it to be transported offsite. A minimum amount of clean fill would be placed on top of the historic inert fill materials to minimise exposure risk.

5.4. INTERFACE TO BLETCHLY PARK

Due consideration needs to be given to the interface to the existing Bletchley Park residential estate to the east. Given the existing interface (lots backing on to Lot 1627), the most suitable and logical interface is for new residential lots on the subject land to share a common rear boundary with these existing lots and gain vehicle access from a new north-south road to the west.

5.5. RANFORD ROAD

While vehicular access to the subject land is only proposed from the Bletchley Park estate accessways of Panther Elbow and Stargazer Boulevard, a shared pedestrian path is proposed to link the proposed development and neighbouring estate with access to existing pedestrian networks along Ranford Road.

Consideration will need to be given to traffic noise mitigation measures required for new development in close proximity to Ranford Rd. The specific affected areas and mitigation requirements can be determined at the detailed, post-subdivision approval stage.

6 LSP AMENDMENT

6.1. VISION

The development of Lot 1627 will see the creation of a mixture of residential dwelling options that complement the existing housing stock in the Southern River locality. Development will capitalise on and benefit from the significant natural amenity within and in close proximity to the subject land. Considerable areas of open space will be provided that serve ecological and environmental, drainage and active and passive recreation purposes. Development of the subject land will also enable the comprehensive remediation of the portions of the site subject to contamination due to historical dumping of uncontrolled fill.



6.2. LSP AMENDMENT SUMMARY

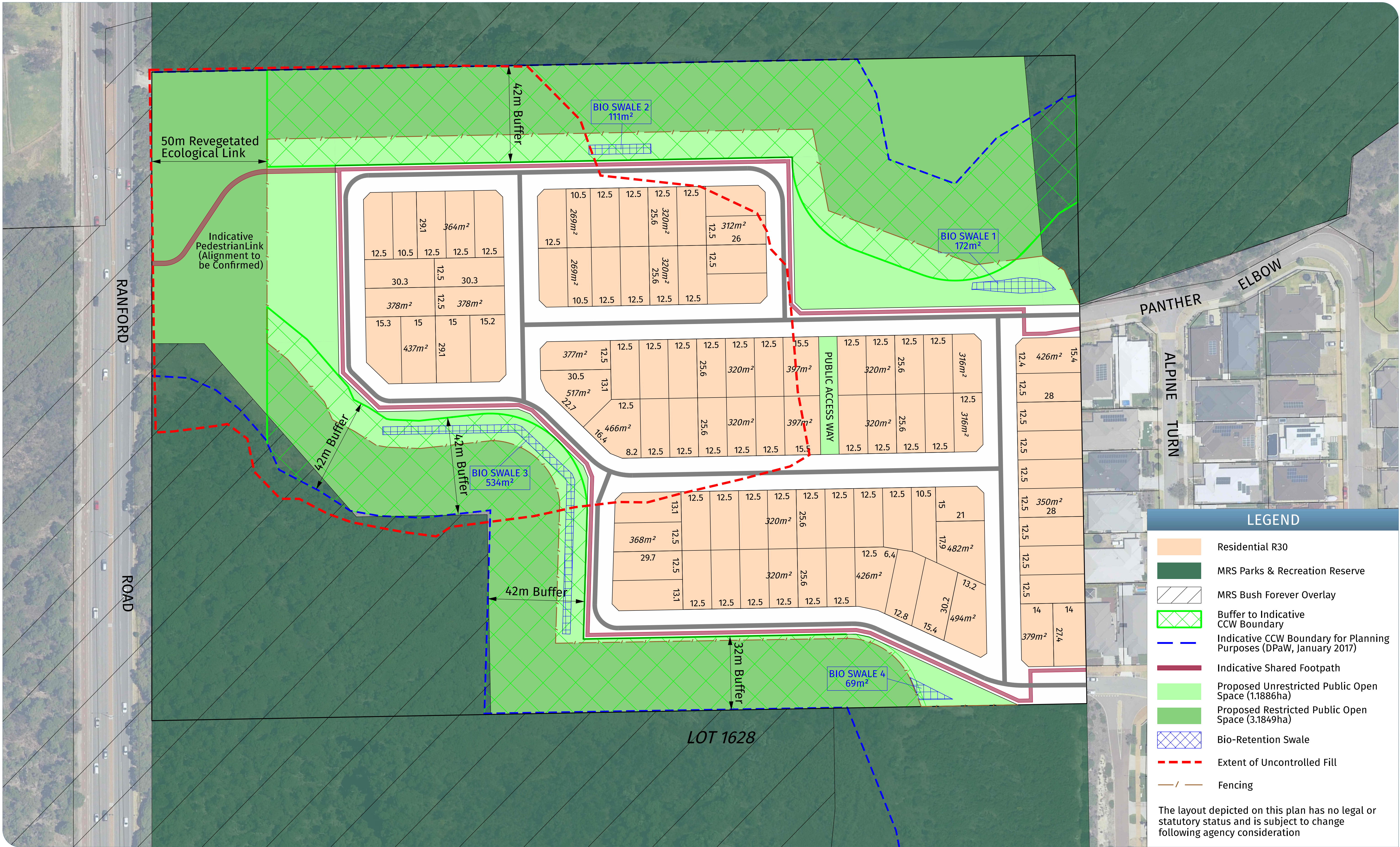
The LSP Amendment encourages the development of a new residential estate that seeks to capitalise on the existing natural and functional amenity that is located within close proximity to the site. The key elements of the LSP Amendment are as follows:

- Provision for a mixture of new residential dwellings, with a proposed density of R30 across the site;
- Provision of over 6ha of new public open space areas that accommodate ecological, environmental and local drainage requirements and that provide passive recreational opportunities;
- Provision of public road interfaces to all proposed open space areas;
- Provision of vehicular access onto Panther Elbow and Stargazer Boulevard;
- Provision for new pedestrian linkages from Bletchley Park to Ranford Rd, including connections to POS areas for all residential areas;
- Identification of Building Attack Level (BAL) ratings for bushfire hazard mitigation purposes;
- Progressive remediation of the portions of the site subject to contamination (asbestos) associated with the previous dumping of uncontrolled fill; and
- Identification of the requirement for a Traffic Noise Assessment and Management Plan to be prepared prior to development of new dwellings in close proximity to Ranford Rd.

In addition to the LSP Amendment map included within Part One – Statutory Section of this report, a Concept Plan of Subdivision (refer **Plan 2**) has been prepared to provide an illustration of the development intent. This graphical representation is indicative only; however, it does demonstrate the intent for the future subdivision pattern and how the built form will orientate to the surrounding public realm, with a general preference for development to orientate towards the new open space areas.

The LSP Amendment seeks to stipulate the key boundaries between land uses (i.e. between residential development and open space), address the key interface considerations (i.e. road interface to open space, back of lot interface to the existing Bletchley Park dwellings) and identify the key matters that need to be addressed at the detailed subdivision and development stages (i.e. BAL compliance etc).

As such, the LSP Amendment affords a certain degree of flexibility for innovative and creative detailed design responses, provided that there is compliance with the key elements and principles of the LSP Amendment and the key objectives are realised.



CONCEPT PLAN OF SUBDIVISION

Lot 1627 Ranford Road,
SOUTHERN RIVER

Plan No. | D07-608-26
Date | 15/12/23
Drawn | JW
Checked | MB
Revision | E

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
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ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

Scale | 1:750@A1
1:1500@A3

0 20m 40m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

6.3. LAND USE

The LSP proposes the development of the subject land for residential and open space purposes. Each are discussed in further details below.

6.3.1. Residential

Density

The LSP Amendment Map specifies a proposed density of R30 across the subject land. This will allow for diversity of residential lot sizes available in the Southern River locality while seeking to preserve the single-dwelling residential character of the area. Furthermore, the development seeks to capitalise on the proximity of the site to a considerable amount of existing and proposed high quality natural amenity (i.e. Lake Ballanup, Bush Forever, new multi-use open space buffers and new neighbourhood park).

Residential development will be orientated towards the surrounding open space areas and will be developed as green title lots with single dwellings preferred. The LSP Amendment does not, however, mandate that a particular form of development must occur in any particular location.

Yield

An indicative yield is outlined in **Table 4** below. It is emphasised that this yield is indicative and may change, should the assumptions underpinning the yield calculations change with the progression of detailed design.

R-CODE	NET DEVELOPABLE AREA	ASSUMED DEVELOPMENT TYPE	LOT YIELD	DWELLING YIELD
R30	3.20ha	Single Dwellings	91	91

TABLE 4. Indicative Yield Calculations

The R30 yield for single dwellings is based on the indicative lot layout shown on the Concept Plan of Subdivision included in **Plan 2**, however to ensure a realistic lot layout for the site is demonstrated, a range of lot areas for R30 are depicted with an indicative dwelling of 91 lots/dwelling.

Gross & Site Density

The gross area of urban zoned land is 9.1508ha, which is calculated by deducting the MRS Parks & Recreation reservation and CCW areas (1.595 ha, 0.332 ha, 0.112 ha and 0.172, ha as depicted in **Table 5**) from the total site area (11.364ha). Based on the yield outlined in **Table 4**, the estimated gross residential density is 11.5 dwellings/ha. This does not achieve the target of 15 dwellings per gross hectare of urban zoned land as outlined in the SPP 4.2, however this is due to the considerable amount of additional land that is required to be provided as open space. As noted in Section 5.3.2 below, over 6ha of the site (including the MRS Parks & Recreation reservations) will be provided as open space in some form and function.

The estimated residential density per site hectare, using the net developable area of 3.20 ha outlined in **Table 4** above, is 33.1 dwellings/ha. This density accords with the target of the SPP 4.2 of 26 dwellings per

residential site hectare and demonstrates that the residential densities depicted on the LSP Amendment Map are necessary in order to achieve the targets established by the WAPC.

Population

Assuming an occupancy rate of approximately 3 persons per dwelling, the LSP Amendment area could accommodate approximately 273 residents upon full development.

6.3.2. Open Space

New open space areas are proposed to be provided as part of the development of the LSP Amendment area. These open space areas will provide passive recreation opportunities and amenity benefits for future local residents while facilitating the restoration of the degraded wetland areas through comprehensive revegetation and on-going management.

A Concept Landscape Masterplan including individual concept plans for each area of unrestricted POS has been prepared by LD Total to illustrate the precise areas of POS including, turf, play areas and the revegetated 50-metre ecological linkage, and is included at **Appendix C**.

Proposed Public Open Space

The MRS Parks and Recreation reservations will be retained as part of the development of the subject land. These areas onsite are part of larger Parks and Recreation reservations and will facilitate the protection of the identified natural assets (i.e. Bush Forever, Lake Ballanup). In addition, new areas of local open space will be provided immediately abutting the Parks and Recreation reservations on site, to be located within the indicative CCW buffer areas and incorporate a multitude of functions.

Firstly, a 50-metre ecological linkage is proposed between the proposed development and Ranford Road, in order to restore the linkage between wetland area UFI - 148882 to the north of the subject land and UFI 15509 to the south of the subject land. Furthermore, to protect these areas from further degradation as a result of the proposed development, conservation fencing with the inclusion of self-closing gates are proposed to be installed on the development side of the wetland areas to restrict access and prevent damage to native species from dogs etc.

Secondly, due to significant portions of the wetland areas being environmentally degraded as a result of historical uses (horse agistment, grazing pastures) it was considered acceptable that these areas be available for the use of residents as POS, as determined in the 2019 SAT hearing (WASAT 2019). As a result, the unrestricted POS area adjacent to the 50-metre ecological linkage on the development side of the proposed fencing was determined to be best suited for the provision of active and passive recreation. This will be facilitated by a combination of turfed areas, a children's playground, water features such as bioswales and areas of nature play, which will be connected with the proposed development and to Ranford Road by a shared pedestrian path.

The CCW areas across the site (including within the restricted and unrestricted POS areas) will be revegetated with an appropriate suite of locally endemic native wetland species as described in the Wetland & Wetland Buffer Management Plan provided at **Appendix E** and depicted on the Concept Landscape Masterplan attached at **Appendix C**.

The provision of open space in the LSP Amendment area seeks to achieve a logical and reasonable

balance between environmental protection and restoration, site remediation and the provision of public amenity for future residents. Buffers of between 32m-42m to the mapped CCWs are proposed, given the contaminated nature of these buffer areas and requirement for remediation works to ensure the site is suitable to accommodate the proposed residential development. Rehabilitation of the cleared and degraded areas is proposed to provide functional (i.e. drainage) and amenity (i.e. recreation) benefits. The proposed approach to open space seeks to facilitate development of the site, to enable remediation to occur and to facilitate the protection of environmental assets, whilst also providing for the highest and best use of these open space areas into the future.

Fencing, Gates & Retaining Wall Locations

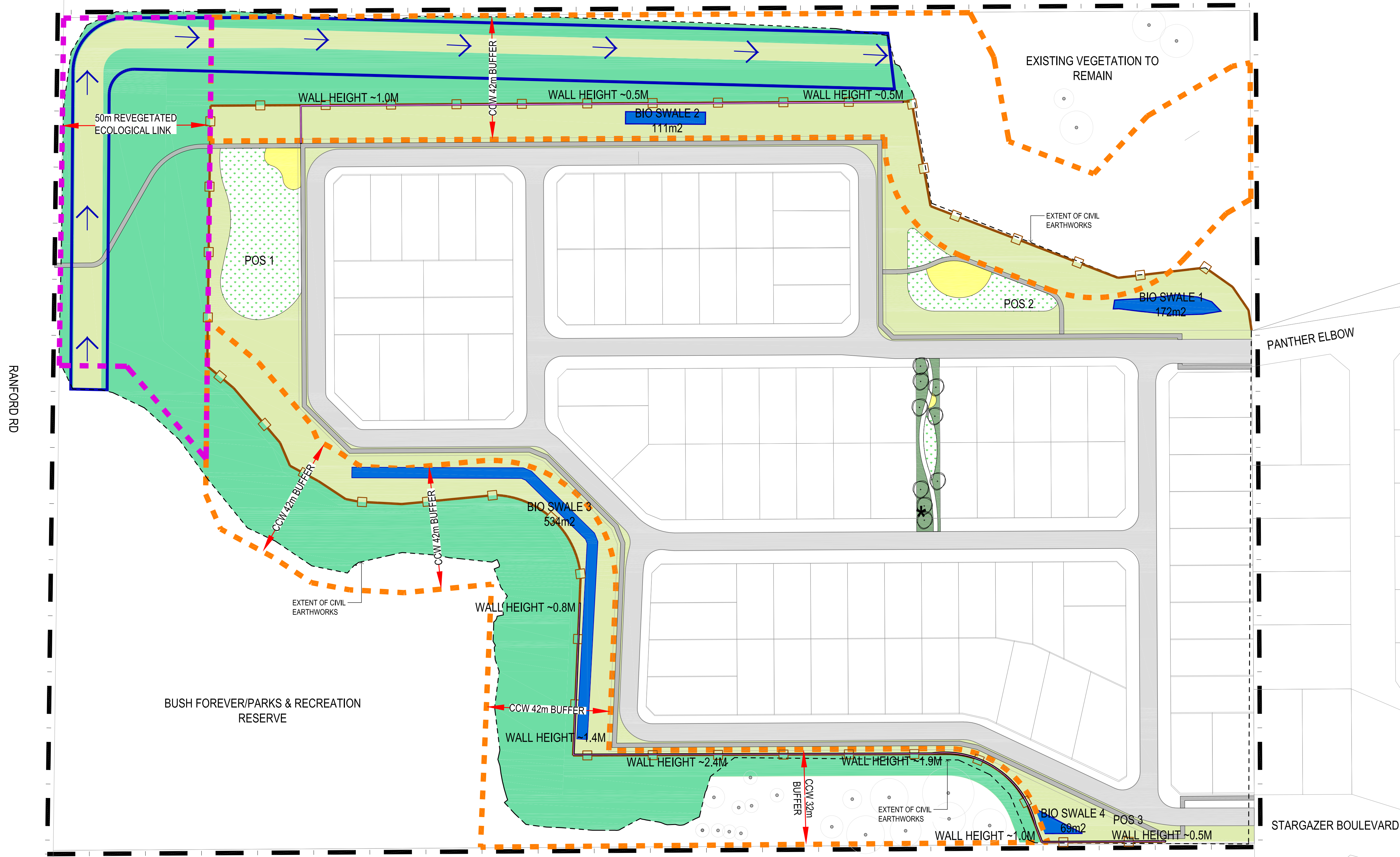
As part of the modifications imposed as part of the WASAT (2019) hearing to determine the local structure plan amendment, the CCW areas are required to be protected from adverse impacts through the inclusion of secure fencing to be provided on the development side of the wetland conservation areas. Additionally, self-closing gates are required to be provided to further protect the wetland from pets/pests accessing the conservation areas from the proposed development, while also ensuring that residents have free access to the proposed POS areas. The type and proposed height of the fencing to the wetland and wetland buffer areas will be in accordance with specifications to be provided in consultation with the City.

Gates must be self-closing (tension-adjustable spring loaded hinges), must not open across any shared/pedestrian paths, and must open in the direction of ingress to the CCW areas. Maximum heights for proposed fencing and gates should not exceed 1.2m from the natural ground level (NGL); an example of the type and height of fencing to be installed has been included in **Figure 6** for reference. Indicative fencing and self-closing gate locations are depicted in the Wetland & Wetland Buffer Management Plan (WWBMP) included at **Appendix E**.



FIGURE 6. Example of Conservation Fencing

Due to the remediation works required as a result of the historical site contamination that has occurred on the subject land, retaining walls have been proposed in various locations to manage the fill required as part of the approved site remediation works. To ensure that residents of the proposed development will not be obstructed from accessing the proposed POS areas, the self-closing gates have been located to ensure they do not allow access within the vicinity of any area subject to retaining walls. The indicative retaining wall heights are depicted on the Overall Landscape Concept Plan provided in **Plan 3** below and within the Landscape Concept Masterplan attached at **Appendix C**.



- LEGEND:
- EXTENT OF WORKS
 - CCW BUFFER
 - 50m REVEGETATED ECOLOGICAL LINK
 - PROPOSED FENCE BETWEEN POS & ROS (BY OTHERS, TO CoG STANDARDS)
 - PROPOSED INDICATIVE RETAINING WALL LOCATIONS
 - INDICATIVE SHARED PATH
 - PROPOSED DRAINAGE BASINS SEDGES & RUSHES @ 4m²
 - 1:100YR DRAINAGE FLOW PATH & DIRECTION
 - KIKUYU TURF (MANAGED TO 50mm HEIGHT)
 - VERGE & POS PLANTING
 - POS NODE
 - EXISTING TREE TO REMAIN WHERE POSSIBLE
 - INDICATIVE POS TREES
 - PROPOSED BORE LOCATION
- VEGETATION CLASSIFICATIONS:
- CLASS D - SCRUB, 2m² PLANTING TALL SHRUBS ie BANKSIA & MELALEUCA, CONTINUOUS UNDERSTOREY
 - CLASS G - GRASSLAND, 2m² PLANTING LOW GRASSES & SHRUBS
- NOTES:
- BUSHFOREVER / PARKS & REC RESERVES TO BE RETAINED AND PROTECTED. NO WORKS TO OCCUR IN THESE AREAS
 - AREAS OF RETAINED VEGETATION OUTSIDE OF EARTHWORKS BOUNDARY TO BE RETAINED AND PROTECTED.
 - REVEG PLANTING TO BE IN ACCORDANCE WITH CITY OF GOSNELLS REVEGETATION GUIDELINES
 - LANDSCAPE CONCEPT IS HIGH LEVEL ONLY AND SUBJECT TO FURTHER DETAILED DESIGN & APPROVALS
 - PROPOSED UNRESTRICTED POS 1.18886ha
 - PROPOSED RESTRICTED POS 3.1849ha
 - BIO RETENTION SWALES 0.089ha

NOT FOR CONSTRUCTION

REV	DATE	DWN	DESCRIPTION
C	04.05.22	NZ	ISSUE FOR COMMENT
D	02.02.23	JC	ISSUE FOR REVIEW
E	13.02.23	JC	ISSUE FOR REVIEW
F	19.07.23	SP	ISSUE FOR REVIEW
G	21.08.23	SP	ISSUE FOR REVIEW
H	04.10.23	SP	AMENDED LOCATION OF PROPOSED BORE

SANPOINT PTY LTD
172 BURSWOOD ROAD, BURSWOOD WA 6100 AUSTRALIA
TEL: +61 8 9438 1111 FAX: +61 8 9367 2034
www.ldtotal.com.au

PROJECT:
Lot 1627 Ranford Rd, Southern River

CLIENT:
Humich

TITLE
Landscape Concept

PROJECT NO	DRAWN BY	APPROVED BY	REV
10.7016	JC	SP	H

SCALE	SHEET NO	SHEET NOS
1:750	101	A1

Humich Group Lot 1627 Ranford Road
CLIENT PROJECT NO

H
REVISION

04.10.2023
DATE

2 OF 6
PAGE

Public Open Space Schedule - Lot 1627 Ranford Road, Southern River

Public Open Space Provision

The LSP Amendment has been prepared with due regard to the requirement of Liveable Neighbourhoods to provide a minimum of 10% of the net site area as public open space. **Table 5** below documents the open space calculations for the LSP Amendment area.

	GROSS AREA (HA)	(HA)	(HA)	NOTES
Lot 1627		11.3644		
A	TOTAL		11.3644	
	Less Environmental Assets			
	Proposed CCW Area (South)	1.5957		Indicative CCW Boundary
	Proposed CCW Area (North)	0.3328		Indicative CCW Boundary
	Bush Forever (South - outside CCW	0.1125		
	Bush Forever (North - outside CCW	0.1726		
	Deductions			
	1 Year ARI Bio-Retention Areas	0.0886		
	Additional Restricted Open Space	3.0317		
B	TOTAL		5.3612	
C	Net Subdivisible Area (A - B = C)		6.0032	
D	10% Requirement (10% of C = D)		0.6003	
	POS Requirement			
E	Minimum 80% Unrestricted POS (80%	0.4803		
F	Maximum 20% Restricted Open Space	0.1201		
	TOTAL		0.6003	
	POS Provision			
	Unrestricted Open Space (Minimum			
	Total (includes Ranford Road POS,	1.1888		Excludes 1 Year Bio-retention
G	SUB-TOTAL		1.1888	
	Restricted Open Space (Maximum 20%			
	Proposed CCW Buffer (South)	1.0869		Including 32m CCW Buffer
	50m Buffer Link	0.6337		Excluding P & R Reserve
	Proposed CCW Buffer (North)	1.1386		
	Bush Forever (Outside 30m buffer)	0.2926		
H	SUB-TOTAL	3.1849		
I	Credited Restricted Open Space		0.1201	
J	Total Credited POS (G + I)		1.3089	
K	Surplus POS (J - D = K)		0.7086	
	Percentage POS Provided (J as % of C)		21.8%	
	Total Gross Open Space Area Provided		6.675	
	Total Gross Open Space Percentage		58.7%	

TABLE 5. Public Open Space Schedule

Waterwise POS Design & Irrigation

Public Open Space (POS) areas will be landscaped based on the following demand management strategies in order to reduce the irrigation and watering requirements for the development:

- Reduced areas of lawn and turf.
- Soil improvement.
- 'Waterwise' plant selection/native plant species.
- Water efficient irrigation systems.
- Bioretention swales.

The estimated irrigation volumes and the available groundwater allocation for the City of Gosnells superficial subarea are presented in Appendix G of the LWMS Addendum Report.

The total irrigation volume of 23,156 kL/year includes an initial establishment volume for the site (not required in the long term). The establishment volume of 21,225 kL/year includes 15,000 kL/year to re-vegetate the buffers. The long term irrigation volume for the site 1,931 kL/year.

The long term and establishment irrigation volumes are considerably lower than the available allocation of 1,029,853 kL/year for the aquifer.

The groundwater abstraction bore could potentially be located within the Public Access Way (PAW) which is able to achieve a minimum separation distance of at least 100m setback from all CCW boundaries and is located centrally to the development. In addition to the sufficient clearance from the wetlands afforded by the PAW, this location would allow for easy and efficient access to infrastructure for maintenance vehicles. Furthermore, this area is centrally located between all areas proposed for irrigation across the site, which could assist in reducing the required amount of infrastructure to service the proposed areas for irrigation.

Alternatively, the groundwater abstraction bore could potentially be located within one of the surrounding POS areas either located within or adjacent to the subject land, however, this will be subject to further discussions with the City of Gosnells during subdivision stage.

Irrigation Management Plan

Due to the complexities of the groundwater on site and the proximity to the nearby CCW wetlands, the City may require the preparation and approval of an Irrigation Management Plan (IMP) as a condition of subdivision approval.

The following matters may need to be addressed as part of the IMP for the LSP area:

- Protection of Conservation Category Wetland (CCW) conservation values from adverse effects associated with nutrient runoff and other pollutants seeping into wetlands;
- Additional groundwater testing and monitoring to determine abstraction bore 'cone of influence' and potential draw-down effects to wetlands;

- Detailed design of irrigation system and delivery strategy including volumes, timings, and integration of alternative sources;
- Detailed design of irrigation infrastructure including abstraction bore, power dome and any filtration methods deemed necessary;
- Water use efficiency, uptake and nutrient impact to endemic plant species within revegetation areas.
- Contingency/corrective methods to be employed if adverse effects to wetland conservation values are recorded during groundwater monitoring and testing.

6.4. BUILT FORM

It is envisaged that an attractive and contemporary built form will be delivered in the development of the LSP Amendment area. Some key principles for the consideration of detailed built form design are as follows:

- New development shall orientate to the surrounding public realm (i.e. public roads and open space areas) to facilitate community interaction and passive surveillance.
- New built form shall provide for the creation of a varied and interesting streetscape, through articulation and the use of a mixture of materials and colours. Elevations may be articulated using some or all of the following measures: glazing, awnings, porticos, verandas, balconies, major openings to habitable rooms.
- Blank facades to the public realm should be avoided wherever possible.
- Bushfire mitigation requirements shall be incorporated into the built form in accordance with the requirements of the Bushfire Management Plan and AS 3959.
- Appropriate noise mitigation measures shall be incorporated into the built form in accordance with the requirements of a Transport Noise Assessment and Management Plan and the requirements of SPP 5.4.

6.4.1. Local Development Plans

Local Development Plans (LDPs) may be required to be prepared and approved by the City of Gosnells as a condition of subdivision approval and prior to the creation of new laneway lots. LDPs shall address, amongst other things, open space, orientation and access matters for each new lot.

LDPs should be prepared with acknowledgment and due consideration given to the following development principles:

- All dwellings shall have at least one major opening from a habitable room, outdoor living area and/or balcony facing all abutting public road reserves and/or public open space areas; and

- Specific built form measures required to mitigate potential bushfire hazards and noise impacts associated with Ranford Rd.

6.5. MOVEMENT NETWORK

A Traffic Impact Statement (TIS) has been prepared by Stantec in support of the LSP Amendment and is included within **Appendix F**.

A series of new local road reserves are proposed on the LSP Amendment Map, which will provide access to the new lots and development site and will provide public access between Ranford Rd and Bletchley Park. The new roads will also provide a clear demarcation between the public and private realms, particularly to the open space areas that surround the residential development area of the site.

Additional roads and/or laneways may be provided where necessary. The need for and suitability of additional road reserves will need to be demonstrated at the detailed subdivision design stage, to the satisfaction of the WAPC on the recommendation of the City.

The inclusion of additional roads shall not require an amendment to the LSP Amendment, however, any additional roads and/or laneways shall be consistent with orderly and proper planning and not compromise the intent of the LSP Amendment layout.

6.5.1. Road Width

The ultimate reserve widths for new local roads and possible laneways within the LSP Amendment area will be determined at the detailed subdivision design stage, to the satisfaction of the WAPC on recommendation from the City of Gosnells.

A series of assumptions regarding road reservation width have been in the preparation of the LSP Amendment. These are summarised as follows:

- Local Access Street (development both sides) – 15m wide, with a 6m central carriageway and 4.5m wide verges on either side. A 4.5m verge is sufficient to accommodate the necessary servicing alignments, footpaths and street tree planting. A lesser width may be suitable, subject to the approval of the WAPC and City of Gosnells, which would result in a reduced overall reserve width.
- Local Access Street (development one side only) – 12m wide, with a 6m wide offset carriageway, 4.5m verge on the development side and a balance verge of 1.5m on the non-development side. The ultimate reserve width and cross section is subject to the approval of the WAPC and City of Gosnells. Roads with this reduced width are proposed abutting all new public open space areas.
- Laneways – 6m wide, in accordance with Liveable Neighbourhoods.

6.5.2. Road Layout

In determining the location of the new local roads, consideration has been given to the following

items:

- Interface with existing Bletchley Park estate;
- Provision of access to Ranford Rd;
- Principle of providing a public road interface between new private development and new public open space areas; and
- Provision of legible movement network that maximises land use efficiency.

The LSP Amendment layout proposes the extension of Panther Elbow and Stargazer Boulevard from Bletchley Park. Public roads are identified abutting all public open space areas. Additional local access streets, running north-west to south-east, are proposed to provide road frontage to new lots.

6.5.3. *Intersections*

Details associated with the design of any required intersection treatments, including any new and upgraded local road connections to the primary road network will be identified and concept designs will be prepared during the detailed subdivision stages of the development, in consultation with the City of Gosnells. All intersections within the LSP Amendment area will be basic priority-controlled T-intersections, due to the relatively low traffic volumes.

6.5.4. *Pedestrian & Cyclists*

New shared pedestrian and cyclist paths will be provided within the new road reserves and open space areas. These paths will connect the proposed residential areas with the Bletchley Park estate and Ranford Rd to enable future residents to access the attractions in the wider area (i.e. schools, shops etc) on foot and by bicycle.

6.6. **WATER MANAGEMENT**

A comprehensive Local Water Management Strategy (LWMS) has been prepared by IP&D and has been provided under **Appendix B**. The LWMS considers in detail the work undertaken to date that applies to the subject land and outlines the key water management objectives and principles that will guide the development of Lot 1627.

The key guiding principles of the LWMS are as follows:

- Facilitate implementation of sustainable best practice in urban water management;
- Encourage environmentally responsible development to meet the intent and recommendations of the Southern River Integrated Land and Water Management Plan and the Forrestdale Main Drain Arterial Drainage Strategy (FMDADS);
- Provide clarity for agencies involved with implementation;
- Facilitate adaptive management responses to the monitored outcomes of development;
- Minimise public risk, including risk of injury or loss of life; and

- Maintain the total water cycle.

Some of the key elements of the various sections of the LWMS are outlined below.

6.6.1. *Surface Water Management*

Flood Management Strategy

- The proposed open space areas will provide a 1:100 ARI flow path between the wetlands, located to the north and south of the site.
- No buildings are to be constructed within the 1:100 ARI flow path.
- Structures at road crossings over the 1:100 ARI flow path are to be sized to adequately convey flows so that there is minimal afflux at entrance of the structure (i.e. structures are to be sized so that there is no increase in the flood levels upstream of the structure).
- Open space and the wetland areas will be used as part of the flood management system to protect the surrounding area from flooding, subject to no disturbance to the long term hydrologic regime of the wetlands.

Local Stormwater Management

- Post-development paths, flow rates and volumes to be similar to the pre-development situation.
- An overland flow path is to be provided within the subdivision to direct runoff from storms greater than the 1:5 ARI event towards open space areas.
- Flows for events up to 1 year 1 hour ARI will be retained within lots and/or within in the bioretention swales located in the open space area.
- Implement Water Sensitive Urban Design (WSUD) and structural best management practices (BMP) treatment trains for pre-treatment of stormwater.

6.6.2. *Groundwater Management*

The groundwater water management objectives for the LSP Amendment area will be achieved through compliance with the following criteria:

- Subsoil drains are not to be placed below the controlled groundwater level to ensure that there are no adverse impacts on the Environmental Water Requirements (EWRs) of the wetlands;
- Subsoil drains are to be placed at the controlled groundwater level to control the potential increase in water levels due to urbanisation;
- Subsoil drains will be designed with a free draining outlet into bio-retention swales within the open space areas;
- All flows will be retained on site to maintain the predevelopment water balance; and

- Predevelopment groundwater flow paths will be maintained as part of development.

Subsoil drains will be graded from the outfalls in the bio-retention areas to ensure the above criteria are met, and fill levels will be determined to ensure that adequate separation is provided between the peak groundwater levels and final road and pad levels.

The final fill levels will be developed at the UWMP stage based on the controlled groundwater level as determined through detailed design.

6.6.3. *Water Quality Management*

The design objectives for surface and groundwater quality will be achieved in the LSP Amendment area by implementing a treatment train approach to stormwater management, where structural and non-structural measures are implemented in parallel or sequence (along with monitoring) to achieve best practice stormwater management outcomes.

Structural treatment train measures will be selected and designed based on the following 'local level' design principles:

- Maximise at source retention (via infiltration) where possible;
- 'Disconnect' the low flow (storm events up to 1 year 1 hour ARI) stormwater drainage system from the wetlands (minimise the 'Effective Imperviousness' of the sub-catchment).
- Retain and/or detain stormwater within open space prior to overflow into the wetlands; and
- Retain the pre-development hydrology of a site.

The order of management priorities is:

- The volume of catchment run-off;
- The seasonality of catchment run-off; and
- The magnitude of peak flows.

Structural controls may be located at source, in transit or at end-of-pipe. The hierarchy for stormwater management is to:

- Implement source controls to prevent pollution or treat stormwater as high in the catchment as possible;
- Install in transit measures to treat stormwater throughout the conveyance systems; and
- Implement end-of-pipe measures to mitigate any contaminants remaining in the stormwater prior to discharging to receiving environments.

Implementation of structural measures into the urban landform has multiple environmental benefits including reducing pollutant export, retarding storm flows, maintaining and improving urban landscape, protecting receiving environments and reducing irrigation requirements.



6.7. BUSHFIRE MANAGEMENT

A Bushfire Management Plan (BMP) has been prepared by Bushfire Prone Planning (BPP) in support of the LSP Amendment and is included at **Appendix A**.

The bushfire hazard assessment within the BMP concludes that the strategic placement of building envelopes within the site and increased construction standards in accordance with Australian Standard 3959:2009 Construction of buildings in bushfire prone areas (AS 3959) will ensure that the Bushfire Attack Level (BAL) remains adequately low. Furthermore, the proposed development will not be subject to an unacceptable level of radiant heat impact or hazard level.

6.7.1. Bushfire Attack Levels

BAL modelling has been undertaken for the proposed development and BAL contour mapping has been prepared. The BAL contours are depicted within **Figure 7** below for reference.

The majority of the site is subject to a BAL-12.5 rating, which is the lowest level that requires mitigation from bushfire risk through dwelling construction. BAL-19 and BAL-29 ratings affect small portions of land identified for residential development around the periphery of the site. Future dwellings can potentially be set back in such a way so as to reduce the BAL ratings applicable to dwellings construction in these areas and the BMP specifies the necessary setbacks.

A BAL-40 rating is identified as being applicable to a very small area of a new proposed lot near Stargazer Boulevard. Future dwellings can potentially be set back further to ensure the building envelope is located wholly outside of the BAL-40 identification area; alternatively, the lot layout could be rearranged or reduced to ensure that bushfire compliance can be met in accordance with the BMP included at **Appendix A**.














Part 1 of the LSP Amendment notes that a condition of approval may be applied to a subdivision approval requiring a notification to be placed on new Certificates of Title advising landowners that the subject lots may be affected by a Bush Fire Hazard as identified in the BMP. Furthermore, Clause 5.1 requires that all dwellings are constructed in accordance with AS 3959, which outlines the specific mitigation measures that need to be implemented for different BAL ratings. The LSP Amendment therefore has suitable controls in place to suitably mitigate against bushfire risk.

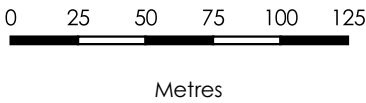
Figure 3.2a

BAL Contour Map (Post Development)

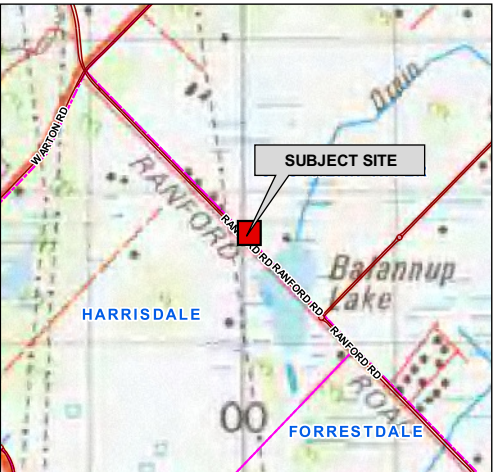
Lot 1627 on Plan / Diagram: P003316
Ranford Road
Southern River
City of Gosnells

----- LEGEND -----

-  CCW Buffer
-  Subject Site
- Proposal**
-  Residential Area
-  Road Layout
-  Restrictive Covenant
- Assessment Area**
-  100m Buffer
-  150m Buffer
- Bushfire Attack Levels**
-  BAL-FZ
-  BAL-40
-  BAL-29
-  BAL-19
-  BAL-12.5
-  BAL-LOW



----- LOCALITY -----



AERIAL IMAGERY: Landgate/SLIP



Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Mercator Units: Metre
Map by: Sarina Gorman 29-08-2023
SCALE (A3): 1 : 2800

6.8. WETLAND & WETLAND BUFFER MANAGEMENT PLAN

A Wetland & Wetland Buffer Management Plan (WWBMP) has been prepared for the subject land by EDS Enviro and is included within **Appendix E**.

The purpose of this WWBMP is to outline and describe the proposed management measures to achieve an ecologically functioning wetland buffer that will assist with the protection of the adjacent wetland from the potential impacts of the development and provide added visual and passive recreational amenity.

In addition, the WWBMP has been prepared to satisfy planning conditions which require:

‘Preparation of a management plan for the ecological linkage area and the other restricted use Public Open Space areas to identify the fencing, including self-closing gates, revegetation and ongoing management responsibilities.’

The ‘Management Area’ including the ecological linkage area and areas of restricted POS, subject to this condition are shown in **Figure 8** below.



FIGURE 8. Management Areas

To this end, the objectives of this WWBMP are to:

- Outline and describe all areas subject to revegetation and provide the methodology by which revegetation will be undertaken.
- Define the nature of access to and within the Ecological Corridor and 'Restricted Public Open Space (RPOS)'.
- Develop an environmental monitoring program.
- Outline trigger criteria for the implementation of contingency actions.
- Establish roles and responsibilities.
- Provide indicative timeframes for the implementation of the above objectives.

6.8.1. Wetland Revegetation Strategy

The Management Area covers an area of approximately 3.2 ha, including the proposed ecological linkage that will join the two currently separated wetland bodies. Revegetation is proposed to be undertaken throughout the entire Management Area in accordance with the Concept Landscape Masterplan and the City of Gosnells Retention, Rehabilitation and Revegetation of Natural Areas Guidelines.

While noting the revegetation intent and final end-state of a fully vegetated buffer, pieces of infrastructure are required to be located within the Management Area (including pedestrian access tracks to Ranford Road), significant opportunity remains for enhancement of the environmental values, and long-term protection of the CCW's through revegetation.

The following describes the proposed methodology of the revegetation works:

- Target linking existing remnant native upper-storey species with seedling plantings
- Include infill planting around native remnant vegetation patches
- Encourage natural regeneration through weed control in existing native vegetation patches
- Include direct seeding in large bare areas.

Revegetation will be undertaken to ensure the completion criteria included within the WWBMP are achieved before the formal handover of the Management Area to the CoG.

If completion criteria are not achieved prior to the formal handover, then the associated contingency measures included within the WWBMP will be implemented.

6.8.2. Schedule of Works

To outline the activities, frequencies and timings of the proposed revegetation strategy, a schedule of works will need to be prepared to cover both the implementation of the revegetation during construction and including the two-year on-going management period.

7 IMPLEMENTATION

7.1. SERVICING

7.1.1. *Power*

Based on Western Power's current policies for clearances, it is expected that new transformers will be required to service the development of the subject land. The development load would be based on Western Power's minimum load allocation of 200kVA per ha, equating to some 2MVA.

The green title lots will be supplied from the Western Power network in the existing subdivision located on the north-eastern boundary and cannot be supplied from the development site transformer. Due to the location of these lots, the adjacent development network should have sufficient capacity to service the lots via the low voltage cable network.

The NCMT (Network Capacity Mapping Tool) shows capacity in the network and as such the headworks component would be the extension of the 22kV cable network into the development.

7.1.2. *Water*

The Water Corporation reticulation system will be designed to provide lot connections to the green title lots and one connection for the development site at its entry point in accordance with Water Corporation standards. An internal reticulation system will be provided for the development site at the time of development.

There is no indication that headworks upgrades will be required in the short term and it is unlikely that the proposed development will require any headworks construction.

7.1.3. *Sewer*

Water Corporation will provide sewer connections to the green title lots and one connection for the development site at its entry point. The sewer reticulation system for the green title lots and for the development site will be in accordance with Water Corporation standards.

Preliminary sewer planning for the development of the site proposes the construction of a section of DN150 reticulation main from the connection point at Stargazer Boulevard to the development site at a grade of 1:250 to minimise the imported fill volumes and avoid the construction of a pump station.

7.1.4. *Gas*

It is unlikely that any additional headworks extensions will be required to service the site, however, this is dependent on timing of the proposed subdivision and other developments in the surrounding area. It is ATCO Gas' policy to provide internal reticulation for free under the condition that a common trench is provided by the developer for both green title lots and residential strata developments.



7.1.5. Telecommunications

Further discussions will be required with NBN Co at the subdivision stage to confirm whether the subdivision falls within their roll-out area. Subject to their program, a pit and pipe system in accordance with NBN Co standards will be required as part of the subdivision works for future installation of the fibre optic cables.

7.2. STAGING

As noted above in Section 5.1, the first stage of development is likely to be at the eastern end of Lot 1627 near the existing Bletchley Park residential area. The intention is to develop the largely uncontaminated parts of the site in the first instance for green title lots without memorials on title to generate cashflow to fund the remediation of the contaminated areas and creation of the development site.

7.3. SITE REMEDIATION

A series of action and management plans may be prepared prior to the implementation of remediation works. The anticipated plans, and relevant approval authorities, may include the following:

- Remediation Action Plan – DER (with collaboration with DoH);
- ASS Dewatering Management Plan – DER;
- Dust Management Plan – DER (with collaboration with DoH);
- Site Management Plan – DER (with collaboration with DoH);
- Site and Civil Works Development Approval – City of Gosnells;
- Noise Management Plan – City of Gosnells; and
- Traffic Management Plan – City of Gosnells.

8 CONCLUSION

This LSP Amendment seeks to facilitate the development of Lot 1627 Ranford Road, Southern River for residential purposes. The development of the land will also see the provision of open space, revegetation of degraded wetland areas, and rehabilitation of the site. It is known that uncontrolled fill, including asbestos, has historically been introduced to the site. The development of the site for low/medium density housing will facilitate the remediation of contaminated portions of the land and specific development controls will limit the risk associated with the potential future exposure to contaminated materials.

Extensive planting of native wetland species will facilitate the revegetation and restoration of wetland areas that have been severely degraded through historical use of the site for horse agistment and grazing. Furthermore, the creation of a 50-metre ecological linkage area will restore the connection between the wetland areas to the north and south of the subject land and provide for a continuous wildlife habitat corridor. These proposed improvements to the site will significantly increase the environmental and ecological benefits of the wetland areas in comparison to its existing degraded condition.

The LSP Amendment seeks to stipulate the key boundaries between land uses, address the key interface considerations and identify the key matters that need to be addressed at the detailed subdivision and development stages. This LSP Amendment therefore affords a certain degree of flexibility for innovative and creative detailed design responses, provided that there is compliance with the key elements and principles of the LSP and that the key objectives are realised.



APPENDICES

BUSHFIRE MANAGEMENT PLAN

LOCAL WATER MANAGEMENT STRATEGY

LANDSCAPE CONCEPT MASTERPLAN

WETLAND BUFFER ASSESMENT

WETLAND & WETLAND BUFFER MANAGEMENT PLAN

TRAFFIC IMPACT STATEMENT

REMEDIATION WORKS (APPROVAL)

CERTIFICATE OF TITLE

