



# EAST ROSELEA STRUCTURE PLAN

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VARIOUS LANDHOLDINGS  
BALCATT



**ROWE**  
GROUP  
DESIGN

## DOCUMENT CONTROL

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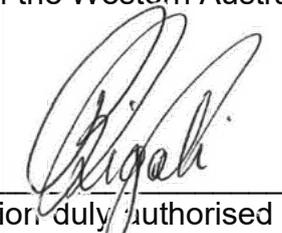
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This structure plan is prepared under the provisions of the City of Stirling Local Planning Scheme No. 3.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: **29 APRIL 2021**

Signed for and on behalf of the Western Australian Planning Commission



an officer of the Commission duly authorised by the Commission pursuant to Section 16 of *the Planning and Development Act 2005* for that purpose, in the presence of:



Witness

29 APRIL 2021

Date

29 APRIL 2031

Date of Expiry



## TABLE OF AMENDMENTS

AMENDMENT NO.	SUMMARY OF THE AMENDMENT	AMENDMENT TYPE	DATE APPROVED BY WAPC

## EXECUTIVE SUMMARY

This Structure Plan addresses the land known as East Roselea, comprising various landholdings generally bound by Grindleford Drive, Karrinyup Road and Albert Street in Balcatta. The subject site is herein referred to as the East Roselea Structure Plan (the 'Structure Plan'). The Structure Plan comprises a total of 29.7 hectares of land which is zoned 'Urban' under the *Metropolitan Region Scheme* and is zoned 'Development' under the *City of Stirling Local Planning Scheme No. 3*.

The site is situated approximately 7.5 kilometres north-west of the Perth Central Area and approximately 3.8 kilometres from the Karrinyup Shopping Centre. The site presently accommodates a number of existing land uses, including residential development along Albert Street, the Chung Wah Association function centre and associated facilities within Lot 63, the Macedonian Club sporting complex within Lot 153, the Sicilian Club within Lot 51, a newly redeveloped Local Centre within Lots 150 – 151 and 139 and areas of recreational open space.

This Structure Plan seeks to facilitate the subdivision and development of the land for a mix of residential, civic use and commercial land uses in a manner that interacts appropriately with the existing urban environment in this locality. Specifically, the Structure Plan will provide for:

- ▲ Residential lots with the applicable density codes ranging from 'R30' to 'R80';
- ▲ A 'Special Use' comprising the existing Chung Wah Association's facility will allow for the future expansion of the facility in accordance with the Association's development aspirations;
- ▲ 'Additional Uses' over the Siciliani Association of WA Inc. landholding and the City of Stirling's northernmost land parcel to allow for the continued operation of the respective club premises.
- ▲ A Local Centre comprising the existing medical centre and associated consulting rooms and newly developed shopping centre; and
- ▲ Public Open Space, which has been designed and located to accommodate the City of Stirling's development aspirations to provide for a mix of uses such as playing fields, club rooms, playgrounds and other such active and passive uses.

This Structure Plan has therefore been prepared in accordance with the requirements of the *City of Stirling Local Planning Scheme No. 3* to facilitate the subdivision and development of the site. The purpose of the Structure Plan is to provide a plan for the coordination of future zoning and subdivision of the subject site to facilitate development for residential purposes, complementary to its 'Urban' zoning under the *Metropolitan Region Scheme*.

The preparation of the Structure Plan has been undertaken in consultation with the City of Stirling and other relevant stakeholders.



## STRUCTURE PLAN SUMMARY

ITEM	DATA	SECTION NUMBER REFERENCED IN PART 2 OF REPORT
Total area covered by the Structure Plan	29.7 hectares	1.2
Area of each land use proposed:		4
<b>Zones</b>		
Residential	11.55 hectares	
Local Centre	2.8 hectares	
Special Use	3 hectares	
<b>Reserves</b>		
Road Reserves	6.1 hectares	
Park Recreation and Drainage (Proposed)	2.89 hectares	
Park Recreation (Existing)	3.4 hectares	
Total estimated lot yield	500 lots	4.3
Estimated number of dwellings	528 dwellings	4.3
Estimated residential site density	35 dwellings per site hectare 17 dwelling per gross urban hectare	4.3
Estimated population	1,150 people based on 2.3 persons per household	4.3
Number of high schools	N/A	4.6
Number of primary schools	N/A	4.6
Estimated commercial floor space	0.56 hectares, comprising: - 0.36 hectares proposed; - 0.20 hectares existing.	4.7
Estimated area and percentage of public open space given over to:		4.2
- Playing Fields (Existing)	3.38 hectares (11.4%) 1 park	
- Neighbourhood parks	1.62 hectares (5.5%) 3 parks	
- Drainage Swale	1.26 ha (4.2%) 5 parks	
Estimate percentage of natural area	Nil	3.1, 4.2

*Note: All information and areas are approximate only and are subject to survey and detailed design.*

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## PART THREE

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APPENDIX NUMBER	DOCUMENT TITLE	NATURE OF DOCUMENT	REFERRAL/APPROVAL AGENCY	APPROVAL STATUS AND MODIFICATIONS
1	Certificates of Title	Supporting	-	
2	Acoustic Report	Approval Required	Main Roads WA / City of Stirling	
3	Environmental Assessment Report	Supporting	Department of Parks and Wildlife	
4	Chung Wah Association Submission	Supporting	-	
5	Macedonian Club Submission	Supporting	-	
6	Sicilian Club Submission	Supporting	-	
7	Landscape Masterplan	Supporting	City of Stirling	
8	Transport Impact Assessment	Supporting	Main Roads WA / City of Stirling	
9	Local Water Management Strategy	Approval Required	Department of Water and Environmental Regulation	
10	Retail Sustainability Assessment	Supporting	City of Stirling	
11	Engineering Services Report	Supporting	-	

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# PART ONE

IMPLEMENTATION



**ROWE**  
GROUP  
DESIGN

## 1. STRUCTURE PLAN AREA

This Structure Plan applies to Lots 50, 86, 88, 109, 114, 129, 400 and 801 Grindleford Drive, Lots 30, 49, 52, 66, 89, 108, 128, 141, 151 and 153 Albert Street, Lots 87, 139, 150, and 350 Karrinyup Road, Lot 51 Sicilia Place, and Lot 64 Radalj Place, Balcatta, comprising the land identified within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan map (refer Plan 1).

## 2. OPERATION

This Structure Plan comes into effect on the day it is approved by the Western Australian Planning Commission.

## 3. STAGING

Given the fragmented ownership of the Structure Plan, initial stages of development will likely be undertaken by the current active landowner being, ABN Development No. 1 Pty Ltd, representing Lots 30 and 39 Albert Street and Lots 86, 88 and 129 Grindleford Drive. The expansion of the local centre and public open space delivery is also likely to be undertaken as part of the initial development stages.

The balance of residential development will be undertaken in due course upon progression of detailed design by the relevant landowners.

Given the siting and location of the Structure Plan, access and servicing is generally readily available to all existing lots and therefore staging of development in a coordinated manner is not necessary to ensure the appropriate delivery of infrastructure in accordance with the Local Structure Plan.

## 4. SUBDIVISION & DEVELOPMENT REQUIREMENTS

The Structure Plan identifies land use zones and reserves applicable within the Structure Plan area in accordance with the zones and reserves listed in the local planning scheme.

### 4.1. PUBLIC OPEN SPACE

The Structure Plan is to provide for a minimum of ten per cent (10%) of the gross subdivisible area as public open space in accordance with Western Australian Planning Commission's *Liveable Neighbourhoods*. Public open space should be provided generally in accordance with Plan 1.

## 4.2. RESIDENTIAL DENSITIES AND DEVELOPMENT STANDARDS

### Dwelling Targets

It is anticipated that the Structure Plan area will accommodate approximately 528 dwellings, with an average of at least:

- a) 35 dwellings per site hectare across the structure plan area; and
- b) 17 dwellings per gross urban hectare across the structure plan area.

### Residential Density

Plan 1 sets out the residential density codes that apply to the structure plan area.

## 5. LOCAL DEVELOPMENT PLANS

Local Development Plan(s) are to be prepared for lots with one or more of the following attributes:

- a) Lot 63 (Chung-Wah Association owned land) is substantially redeveloped, to ensure that development occurs in a coordinated manner and preserves the potential extension of the north-south spine road through the site in the future;
- b) Lots abutting public open space;
- c) Lots abutting the drainage swale; and
- d) Lots subject to quiet house design requirements.

## 6. OTHER REQUIREMENTS

### 6.1. EARTHWORKS

With respect to applications for subdivision approval, landowners/applicants within the structure plan area are advised that, where the local government has identified particular sub-soil conditions, the WAPC will engage a suitably qualified practitioner, at the expense of the landowner/applicant, to:

- a) Provide an independent review report in respect to any drainage, geotechnical or earthworks requirements associated with any conditions of subdivision approval; and
- b) Certify that the conditions of subdivision approval have been satisfied prior to endorsement of the deposited plan

### 6.2. NOTIFICATIONS ON TITLES

Notifications may be placed on the Certificate of Title for each affected lot to advise of:

- a) Transport noise for lots that are the subject of noise levels exceeding the noise target as per *State Planning Policy 5.4 – Road and Rail Noise*; and
- b) Lots where a Local Development Plan is applicable.

### 6.3. PUBLIC OPEN SPACE CONTRIBUTION

Where public open space is required to be provided by subdividing landowners at a minimum rate of 10% of the gross subdivisible area, comprising a minimum of 8% unrestricted open space, and public open space is not identified for that landholding under the Structure Plan (as identified on Plan 1), a cash in lieu contribution will be payable to the City of Stirling for any shortfall in public open space.

Public open space contributions shall be implemented through conditions of subdivision approval.

## 7. ADDITIONAL INFORMATION

ADDITIONAL INFORMATION	APPROVAL STAGE	CONSULTATION REQUIRED
<b>BUILT FORM</b>		
Street Activation and Built-form Guidelines for the Neighbourhood Centre	Prior to lodgement of a Subdivision or Development Application (may be prepared as a Local Development Plan).	City of Stirling
Development Guidelines for those lots abutting the Drainage Swale along Grindleford Drive.	Prior to lodgement of a Subdivision or Development Application (may be prepared as a Local Development Plan).	City of Stirling
<b>CONTAMINATION</b>		
Preliminary Site Investigation	Condition of Subdivision Approval.	Department of Water and Environmental Regulation

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8686\_LSP02N\_2021.03.08 Balcatta (LSP PLAN 1) - DRAWN: WILLIAM CLEMENTS - DATE CREATED: 2021.03.08 - PROJECTION: PCG94 - CADASTRE: LANDGATE - N/TOWN PLANNING/8004-8999/8686/DRAFTING/CAO - WILLIAM CLEMENTS - 2021.03.08

**LEGEND**

**LOCAL SCHEME RESERVES**

- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE - (RESTRICTED)
- PUBLIC PURPOSES - WATER AUTHORITY OF WA

**LOCAL SCHEME ZONES**

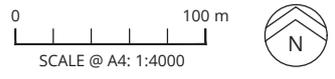
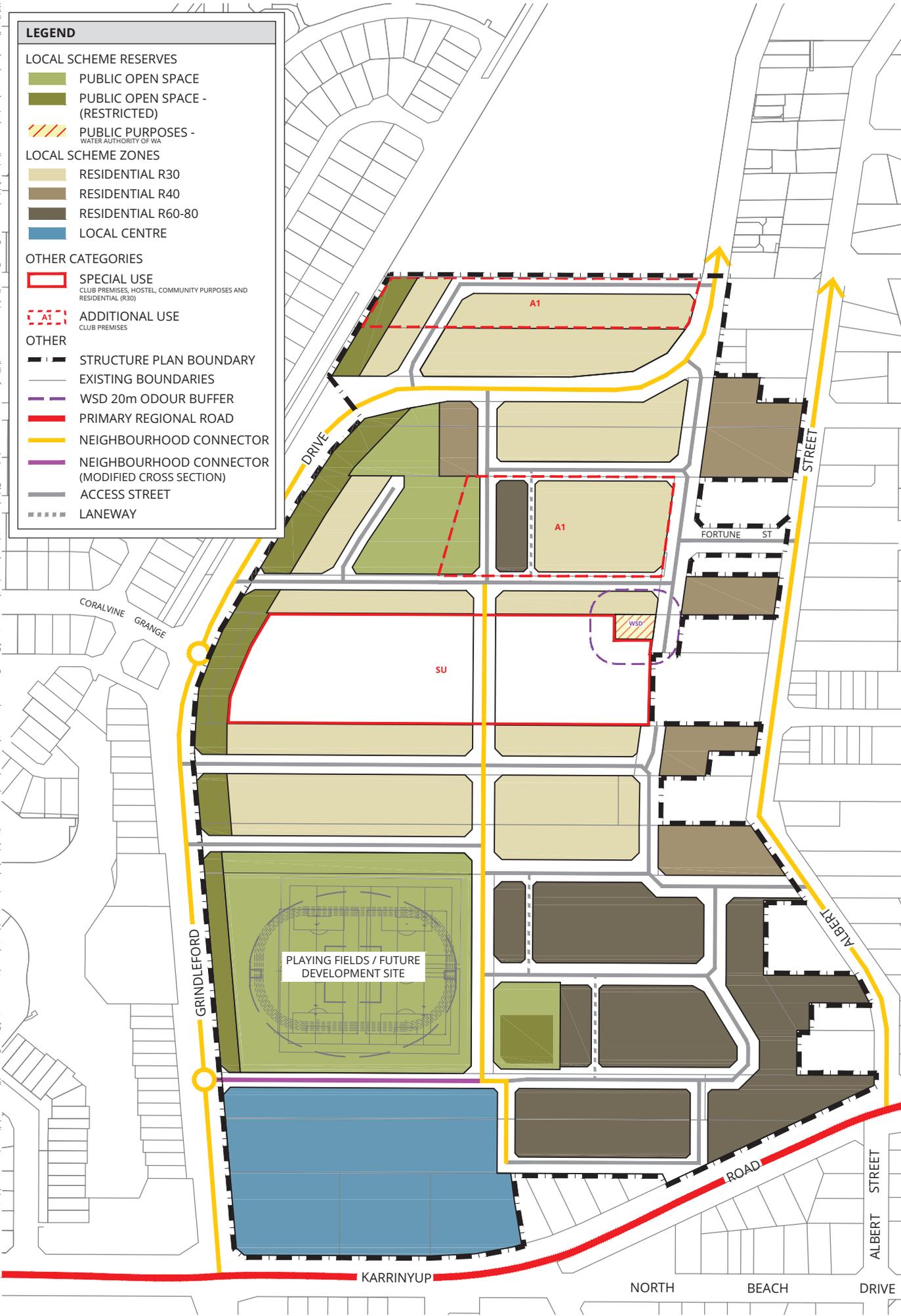
- RESIDENTIAL R30
- RESIDENTIAL R40
- RESIDENTIAL R60-80
- LOCAL CENTRE

**OTHER CATEGORIES**

- SPECIAL USE  
CLUB PREMISES, HOSTEL, COMMUNITY PURPOSES AND RESIDENTIAL (R30)
- ADDITIONAL USE  
CLUB PREMISES

**OTHER**

- STRUCTURE PLAN BOUNDARY
- EXISTING BOUNDARIES
- WSD 20m ODOUR BUFFER
- PRIMARY REGIONAL ROAD
- NEIGHBOURHOOD CONNECTOR
- NEIGHBOURHOOD CONNECTOR (MODIFIED CROSS SECTION)
- ACCESS STREET
- LANEWAY



**STRUCTURE PLAN - PLAN 1**  
**EAST ROSELEA**



# PART TWO

EXPLANATORY SECTION



**ROWE**  
GROUP  
DESIGN

# 1. PLANNING BACKGROUND

## 1.1. INTRODUCTION AND PURPOSE

The purpose of this Structure Plan is to facilitate the development of the Urban zoned land comprising Lots 50, 86, 88, 109, 114, 129, 400 and 801 Grindleford Drive, Lots 30, 49, 52, 66, 89, 108, 128, 141, 151 and 153 Albert Street, Lots 87, 139, 150, and 350 Karrinyup Road, Lot 51 Sicilia Place, and Lot 64 Radalj Place, Balcatta, herein referred to as the 'East Roselea Structure Plan' or the 'Structure Plan'.

The Structure Plan will guide future land use and development over the subject site and provide a framework for more detailed planning at subdivision. The following sections provide further detail and explanation for the Structure Plan Part 1 provisions.

### PROJECT TEAM

The following multi-disciplinary project team has been engaged by the proponent to progress the preparation of the Structure Plan:

DISCIPLINE	CONSULTANT
Acoustic	Herring Storer Acoustics
Civil Engineering	Pritchard Francis
Environmental	Galt Environmental
Geotechnical	Structerre
Hydrological	Emerge Associates
Landscape Architecture	LD Total
Retail	MacroPlan Dimasi
Town Planning and Design	Rowe Group
Traffic	Donald Veal Consultants

Table 1: Project Team

Rowe Group is the primary point of contact for all matters relating to the Structure Plan submission.

## 1.2. LAND DESCRIPTION

### 1.2.1. LOCATION

The Structure Plan area is located within the central metropolitan region, within the municipality of the City of Stirling, and approximately 7.5 kilometres north-west of the Perth Central Area.

The subject site is generally bound by Karrinyup Road to the south, Grindleford Drive to the west, Albert Street to the east, and an existing parks and recreation reserve to the north.

Refer to **Figure 1 – Regional Context** and **Figure 2 – Local Location**.

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8686\_FIG03E\_20201211 Balcatta (Regional) - DRAWN: ADAM GLASKIN - DATE CREATED: 2020.12.11 - PROJECTION: MGA50 GDA94 - CADASTRE: LANDGATE - N:\TOWN PLANNING\8700-8959\8686\DRAWING\GA-CAD - ADAM GLASKIN - 2020.12.21

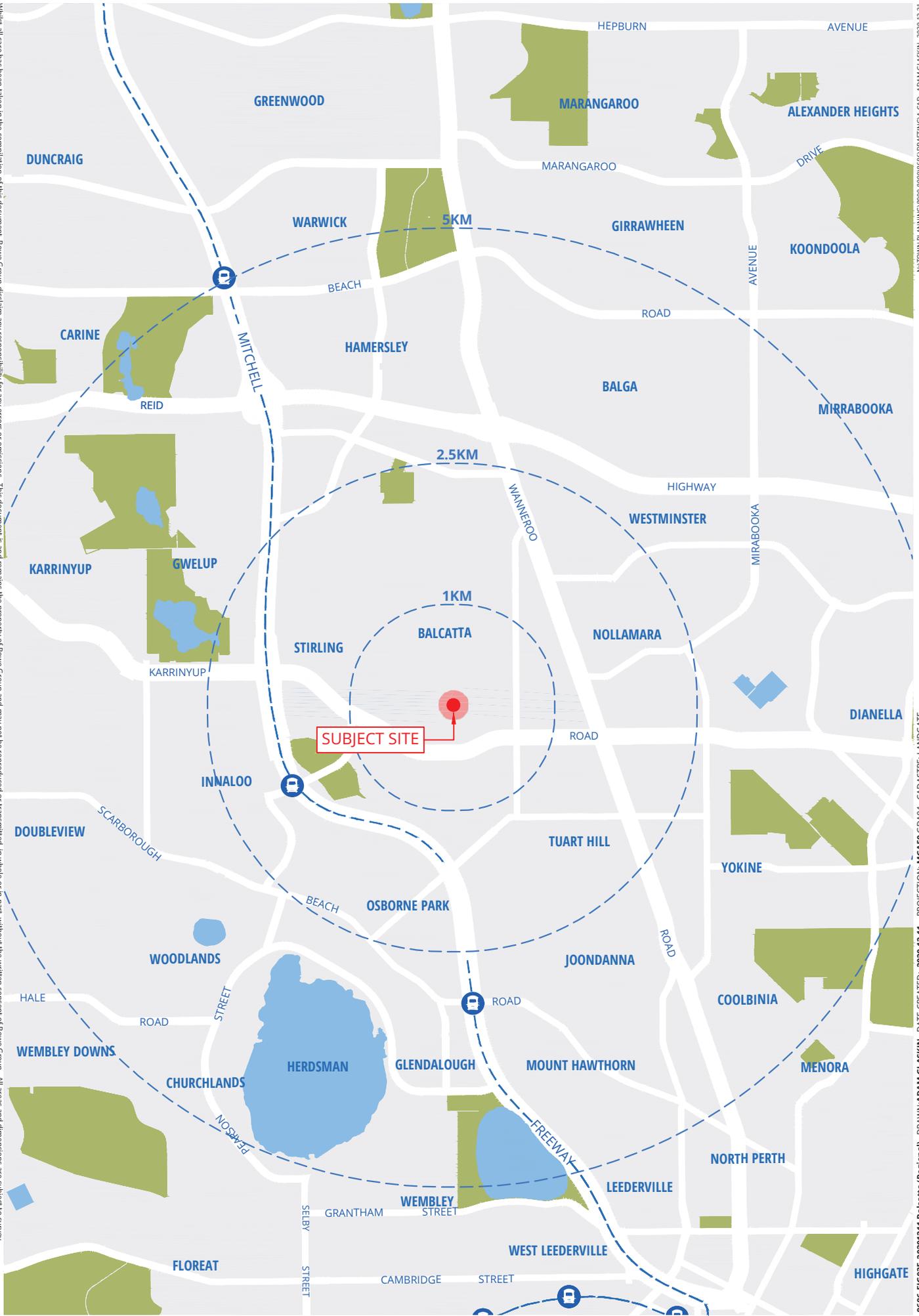
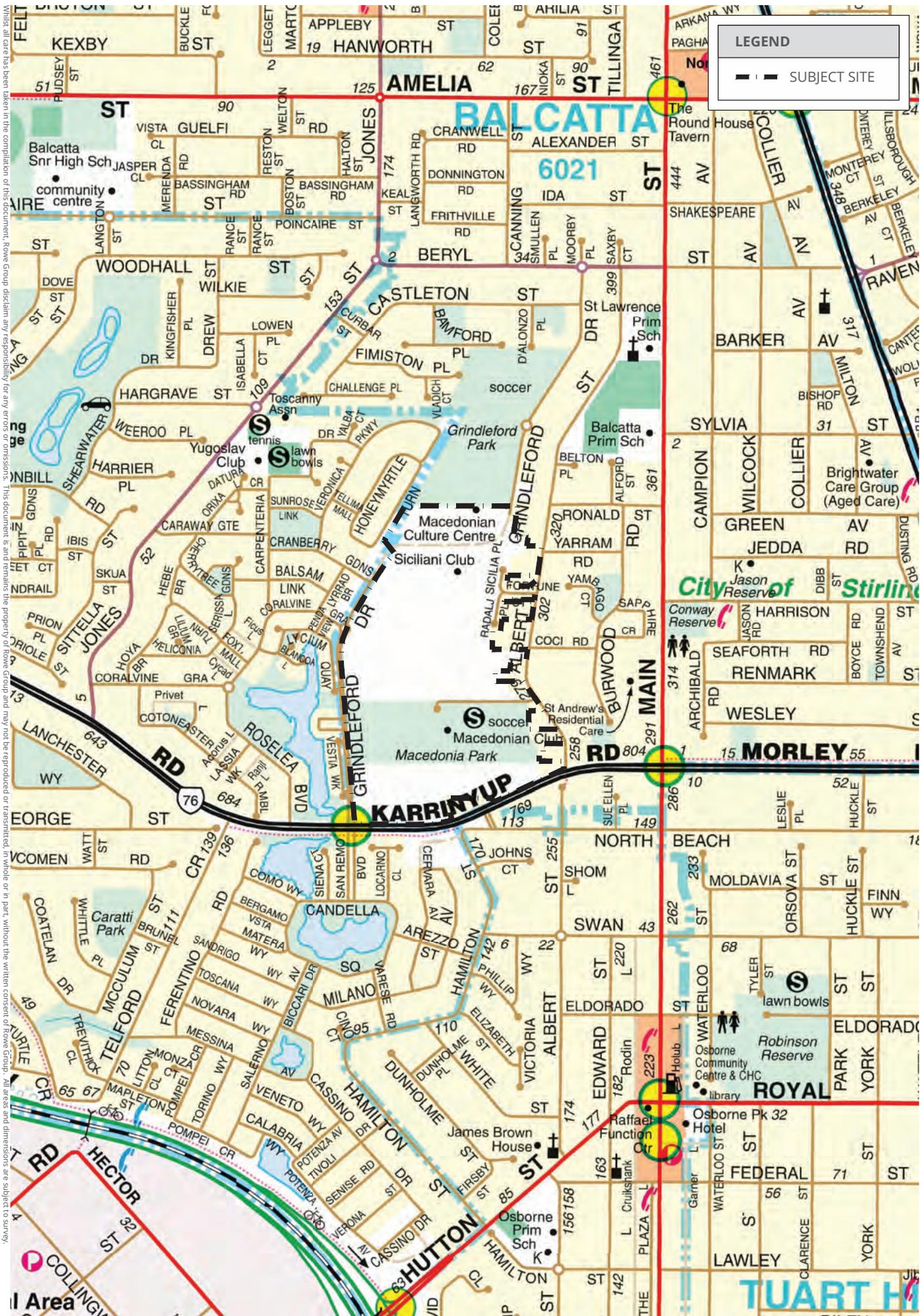


FIGURE 1  
REGIONAL CONTEXT



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N:\TOWN PLANNING\800-8959166\DRAWING\CAD - ADAM GLASKIN - 2020.12.21  
 8686\_FIG 04C\_20201211 Stirling (Local) - DRAWN\ADAM GLASKIN - DATE CREATED: 2020.12.11 - PROJECTION: MGA50 GDAS4

**LEGEND**

— — — SUBJECT SITE



**FIGURE 2**  
LOCAL LOCATION

## 1.2.2. AREA AND LAND USE

The Structure Plan comprises approximately 29.7 hectares of land situated in Balcatta. The site is currently primarily accessed via Grindleford Drive and Karrinyup Road, which connects to the Mitchell Freeway in the west. Secondary access is also provided via Albert Street which forms portions of the eastern structure plan boundary.

Historically, the subject site has primarily been used for market gardening purposes. It is noted that there is existing development over parts of the site, the majority of which is intended to remain in the medium to long term. The Structure Plan area therefore comprises a number of existing land uses, generally summarised as follows:

- ▲ The eastern boundary of the Structure Plan comprises existing residential development, generally located along the majority of the Albert Street frontage.
- ▲ Lot 63 Grindleford Drive is occupied by the Chung Wah Association. It is noted that the Chung Wah Association has expressed its intentions to remain at this location for the foreseeable future and in this regard, the Structure Plan accommodates this through identifying the land for 'Special Use' purposes as discussed further within this report.
- ▲ There is an existing facility (club rooms and sporting fields) situated on Lot 153, associated with the Macedonian Community. Whilst this facility is intended to be retained in the short term, the Macedonian Community are currently reviewing the need for their facilities at this site and may look to redevelop the land for residential purposes in the future. The Structure Plan therefore facilitates the future use of the site (in the long term) for residential purposes.
- ▲ There is an existing commercial centre situated in the south of the site fronting Karrinyup Road, which is intended to be retained and expanded as part of the development of the site. Existing facilities within the centre include a child care centre, physiotherapy clinic and hire equipment facility, with a new shopping centre having recently been developed at the corner of Karrinyup Road and Grindleford Drive.
- ▲ Lot 64 contains an existing Waste Water Pump Station which is intended to remain as part of the ultimate development of the site.
- ▲ Lot 141 comprises an existing area of recreational open space owned by the City of Stirling. Whilst this area of open space is currently under the management and ownership of the City of Stirling, the land is not currently reserved for public open space purposes. Notwithstanding, given its current and anticipated future function, the Structure Plan proposes to retain this area as public open space albeit in a slightly expanded form to accommodate the City of Stirling development aspirations for playing fields and associated facilities such as clubrooms, car parking and play areas.

It is anticipated that funds raised through cash-in-lieu contributions will be used to fund the redevelopment of the open space area.

It is noted that those parts of the site not comprising existing development typically contain some vegetation cover comprising winter grasses, shrubs and scattered trees.

Refer to **Figure 3 - Site Plan**.



### 1.2.3. LEGAL DESCRIPTION AND OWNERSHIP

The Structure Plan comprises 31 land parcels, legally described as follows.

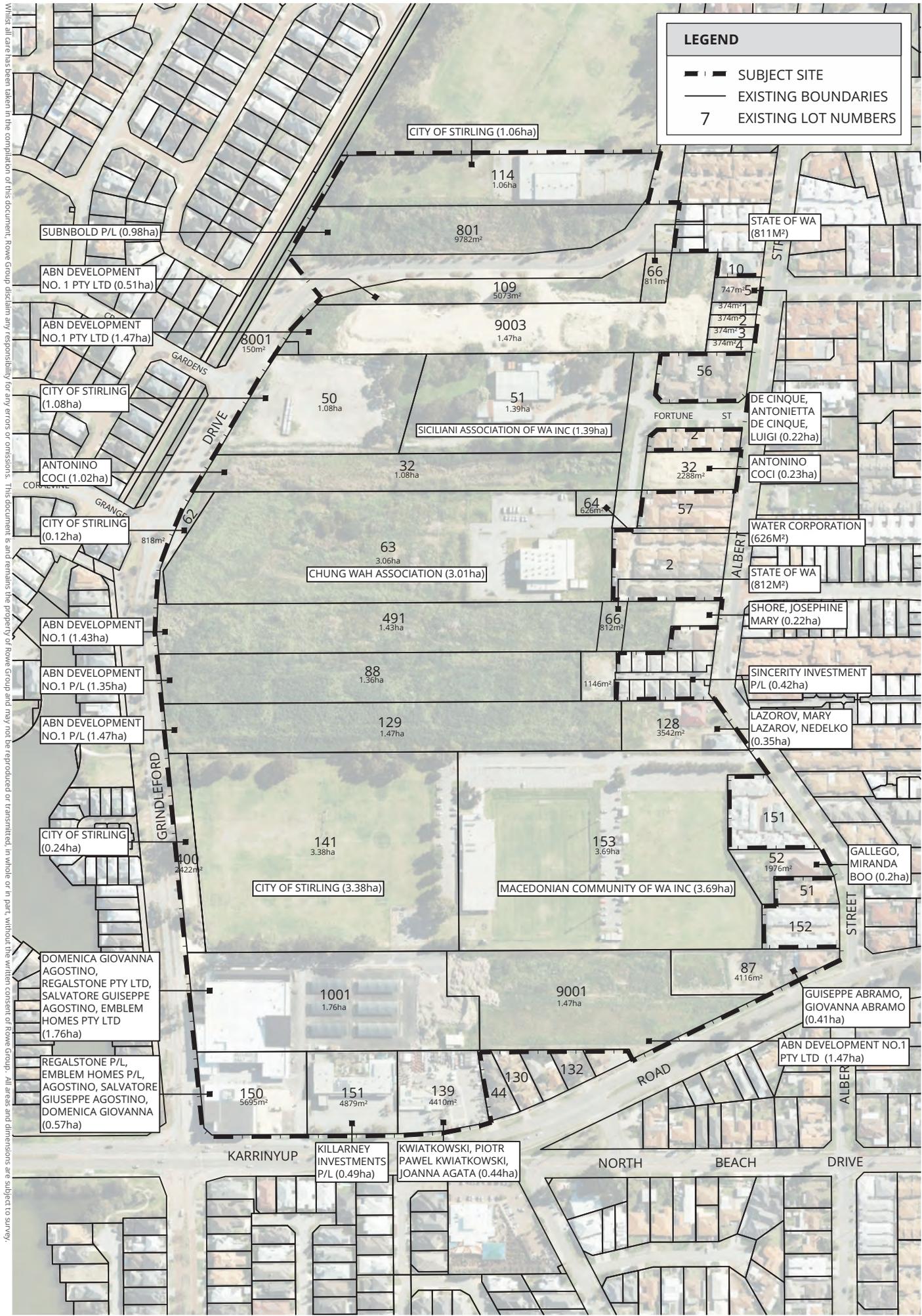
LOT NUMBER	STREET ADDRESS	PLAN/ DIAGRAM NO.	VOL./FOLIO	PROPRIETOR(S)
30 (Part Lot)	309 Albert St	D15403	1314 / 510	ABN Development No.1 Pty Ltd
49(W)	281a Albert St	D47083	1385 / 66	JM. Shore
49 (E)	281a Albert St	D47083	1385 / 66	JM. Shore
52	263 Albert St	D70756	1744 / 665	MB. Gallego
89	279 Albert St	P27769	2590 / 704	Sincerity Investment Pty Ltd
108	311 Albert St	D61726	1619 / 166	A & L De Cinque
128	275 Albert St	P27343	2222 / 470	M & N Lazorov
141	273a Albert St	D67731	1744 / 538	City of Stirling
153	273 Albert St	P37311	2545 / 171	Macedonian Community of WA Inc
32	299 Albert St	D18698	1194 / 816	Antonino Coci
30	309 Albert St	D15403	1314 / 510	ABN Development No. 1 Pty Ltd
50	90 Grindleford Dr	P13824	1702 / 417	City of Stirling
62	100 Grindleford Dr	D67317	1683 / 605	City of Stirling
86	120 Grindleford Dr	P27768	2222 / 468	ABN Development No. 1 Pty Ltd
88	104 Grindleford Dr	P27769	2590 / 703	ABN Development No. 1 Pty Ltd
109	80 Grindleford Dr	D61726	1619 / 167	City of Stirling
114	71 Grindleford Dr	D62707	1614 / 491	City of Stirling
129	108 Grindleford Dr	P27343	2222 / 471	ABN Development No. 1 Pty Ltd
400	114 Grindleford Dr	P37616	2225 / 770	City of Stirling
801	75 Grindleford Dr	P39999	2226 / 243	Sunbold Pty Ltd
87	774 Karrinyup Rd	P27768	2222 / 469	G & G Abramo
139	736 Karrinyup Rd	D61999	1713 / 923	JA & PP Kwiatkowski
150	732 Karrinyup Rd	D93196	2119 / 104	Regalstone Pty Ltd; Emblem Homes Pty Ltd; SG & DG Agostino

151	734 Karrinyup Rd	D93196 / S33238		Regalstone Pty Ltd; Emblem Homes Pty Ltd; SG & DG Agostino
350	764 Karrinyup Rd	D74913	2009 / 910	Regalstone Pty Ltd; Emblem Homes Pty Ltd; SG & DG Agostino
63	18 Radalj Pl	D67317	1683 / 606	Chung Wah Association Inc
64	12 Radalj Pl	D67317	1683 / 607	Water Corporation
51	1 Sicilia Pl	P13824	1854 / 918	Siciliani Association of WA Inc.
66	-	D61726	2748 / 63	State of WA
66	-	D47083	550 / 171	State of WA

*Table 2: Lot Details*

The Structure Plan area comprises a total of approximately 29.7 hectares of land.

Refer to **Figure 4 – Landownership Plan** and **Appendix 1 – Certificates of Title**.



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8686\_FIG02E\_20210114 Balcaitta (Land Ownership) · DRAWN: ADAM GLASKIN · DATE CREATED: 2021.01.14 · PROJECTION: MGA50 GDAS4 · CADASTRE: LANDGATE ·



**FIGURE 4**  
**LAND OWNERSHIP PLAN**

## 2. PLANNING FRAMEWORK

### 2.1. ZONING AND RESERVATIONS

#### 2.1.1. METROPOLITAN REGION SCHEME

The subject site is zoned 'Urban' in accordance with the provisions of the *Metropolitan Region Scheme* ('MRS').

Refer to **Figure 5 – Metropolitan Region Scheme Zoning.**

#### 2.1.2. CITY OF STIRLING LOCAL PLANNING SCHEME NO. 3

The land the subject of the Structure Plan is zoned 'Development' under the provisions of the *City of Stirling Local Planning Scheme No. 3* ('LPS 3'). There is also a small area of land (Lot 64) which is zoned for 'Public Purposes' as this portion of land contains an existing Waste Water Pump Station land use.

The objectives of the Development Zone, as stated in LPS 3, are:

- ▲ *To provide for coordinated development through the application of a comprehensive structure plan to guide subdivision and development.*
- ▲ *To avoid the development of land for purposes likely to compromise its future development for purposes, or in a manner likely to detract from the amenity or integrity of the area.*

The site is also within the 'East Roselea – Development (Structure Plan) Area', the purpose of which is:

*"To facilitate development within the East Roselea Balcatta Structure Plan Area of a variety of medium to high density residential lots, public open space and a Neighbourhood Centre in the south western corner of the Structure Plan Area."*

The Structure Plan has therefore been prepared in a manner which is consistent with these objectives and which provides a framework for further subdivision and development within the structure plan area.

Further, the zoning as depicted under the Structure Plan seeks to retain the existing 'Public Purpose' zoning of the site to ensure consistency with LPS 3.

Refer to **Figure 6 – City of Stirling Local Planning Scheme No. 3 Zoning.**

LEGEND

RESERVED LANDS

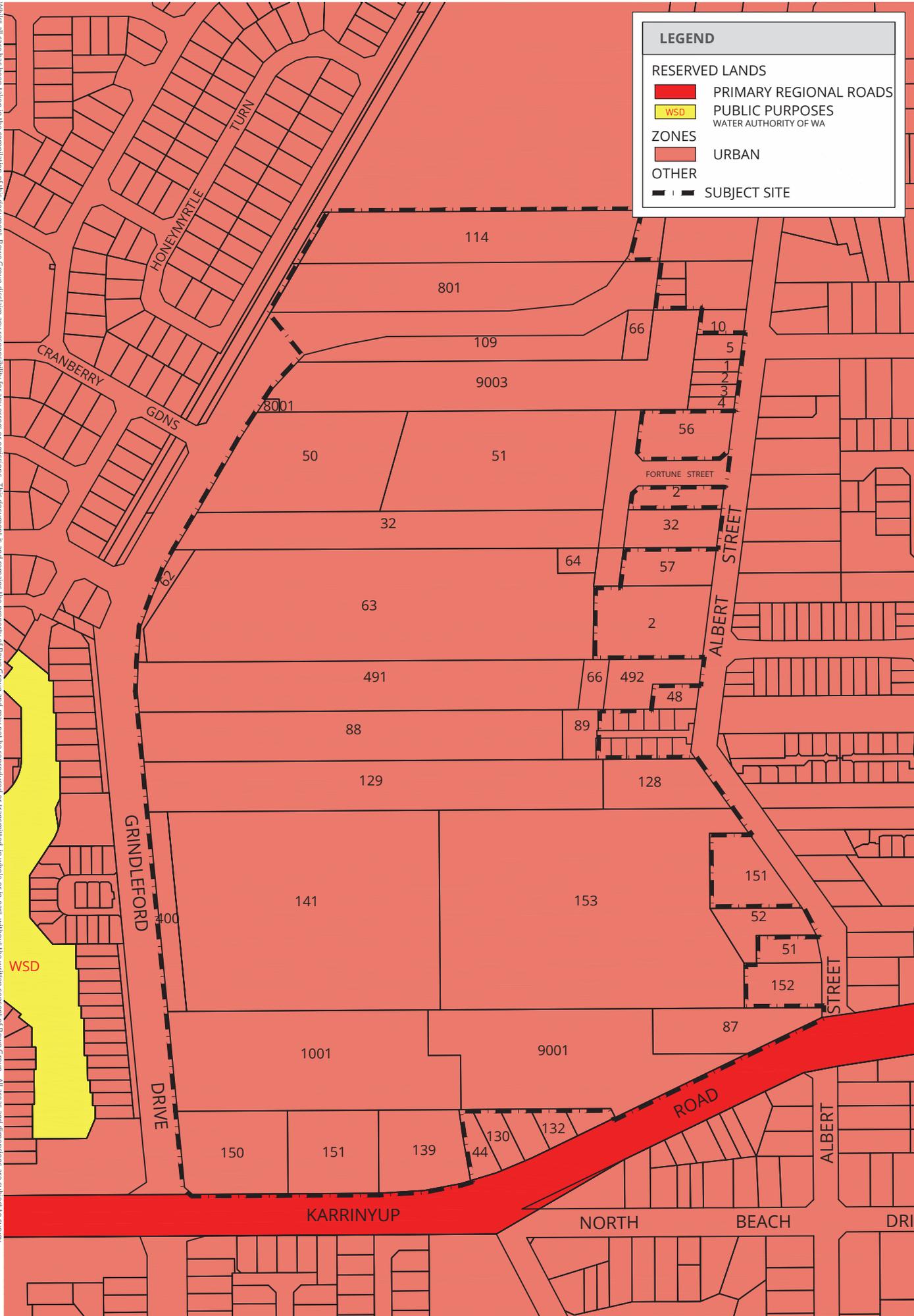
- PRIMARY REGIONAL ROADS
- WSD PUBLIC PURPOSES WATER AUTHORITY OF WA

ZONES

- URBAN

OTHER

- SUBJECT SITE



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8686\_FIG06D\_20201216 Strling (MRS) - DRAWN: ADAM GLASKIN - DATE CREATED: 2020.12.16 - PROJECTION: MGA50 GDA94 - CADASTRE: LANDGATE



FIGURE 5  
METROPOLITAN REGION SCHEME ZONING



## 2.2. SUB-REGIONAL STRUCTURE PLAN

### 2.2.1. PERTH AND PEEL @ 3.5 MILLION / CENTRAL SUB-REGIONAL PLANNING FRAMEWORK

The *Perth and Peel @ 3.5 Million* (March 2018) suite of documents provide a framework for the development of the Perth and Peel regions as the population reaches an estimated 3.5 million by 2050. The suite of documents also includes four draft sub-regional planning frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions. The four draft sub-regional planning frameworks detail where future homes and employment should be located, and where important environmental assets should be avoided and protected.

The subject site is situated within the Central Sub-Regional Planning Framework (the 'Framework'). The Urban infill target for the City of Stirling is 60,400 dwellings of which the Structure Plan will contribute towards reaching the specified urban infill targets.

The Framework aims for the majority of all new infill residential development, being approximately 75%, to occur within urban consolidation areas of activity centres, and broadly assumes that 25% of all new infill in the Central Sub-Region will occur as a result of incremental infill growth in existing built up areas within traditional suburban streets. The Structure Plan is not situated within an urban consolidation area and therefore will contribute to the latter 25% infill target. The Structure Plan is therefore considered to be consistent with the objectives of the Framework through facilitating a mix of medium to high density residential development within an existing infill area.

## 2.3. PLANNING STRATEGIES

### 2.3.1. BALCATT A AND STIRLING LOCAL AREA PLAN

The City of Stirling adopted a Local Area Plan for the Balcatta and Stirling areas in 2007 which identifies the community's visions for the area. The key objectives of the Local Area Plan are identified as:

- ▲ To review key planning issues, policies and forces acting on local areas within the City and develop a coordinated response to these;
- ▲ To identify specific 'opportunities' and 'constraints' within each local area and develop strategies to address these;
- ▲ To develop a commonly embraced 'vision' for each local area which recognises areas of local significance and key attributes contributing to each area's sense of place;
- ▲ To identify issues of priority to the local community and work with them to developing practical solutions to these, within the context of a regional framework;
- ▲ To foster open lines of communication between the City and the community;
- ▲ To create a sound and comprehensible statutory and strategic planning framework for each local area to allow delivery of the vision and plan; and
- ▲ To help ensure that each local area operates in a sustainable way and in balance with surrounding precincts and other areas of influence.

It is noted that the Balcatta Local Area references the “increased interest” of the community in developing the East Roselea area which is achieved by way of this Structure Plan. The Local Area Plan also makes reference to ensuring any development is “well designed and coordinated”. The Structure Plan provides for a well-designed and coordinated design response to the East Roselea area, therefore satisfying the requirements of the Local Area Plan.

## 2.4. POLICIES

### 2.4.1. LIVEABLE NEIGHBOURHOODS

*Liveable Neighbourhoods* represents the WAPC’s primary policy to guide the design and assessment of structure plans and subdivision for new urban development of residential communities in Western Australia. The underlying objective is to create quality neighbourhoods with site responsive identity supportive of local community that reduce dependency on private vehicles and are more energy and land efficient. As such, *Liveable Neighbourhoods* focuses on an urban structure based on walkable mixed-use neighbourhoods with interconnected street patterns. It functions by drawing together key policy aspects into a single ‘integrated planning and assessment policy’ to provide for a performance-based approach to planning assessment.

It does so according to a range of considerations including:

- ▲ Community;
- ▲ Movement;
- ▲ Lot Layout;
- ▲ Urban Water Management;
- ▲ Public Open Space; and
- ▲ Schools.

*Liveable Neighbourhoods* identifies a series of Objectives and Requirements for Structure Plans that, when met, demonstrate compliance with the overall outcomes sought by *Liveable Neighbourhoods*. These objectives and requirements relate to items such as road layout, relationship of housing to open space and schools, school location/distribution, POS layout and location and housing densities.

The Structure Plan has been prepared to satisfy the various objectives and requirements of *Liveable Neighbourhoods* to ensure that more detailed proposals at subdivision stage are also capable of satisfying the relevant criteria.

### 2.4.2. STATE PLANNING POLICY 5.4 – ROAD AND RAIL NOISE

The general objectives of *State Planning Policy 5.4 - Road and Rail Noise* (“SPP 5.4”) are to ensure people are protected from unreasonable levels of transport noise and to ensure new development is compatible with existing transport corridors and freight operations. As Karrinyup Road is identified as a ‘Primary Regional Road’ reserve under the *Metropolitan Region Scheme* and abuts the site’s southern boundary, the provisions of SPP 5.4 are to be taken into consideration as part of the development.

In this regard and in accordance with SPP 5.4, an acoustic assessment has been prepared to inform the Structure Plan. The acoustic assessment provided at Appendix 2 of this Structure Plan report.

The acoustic modelling and assessment considers the potential noise impacts from Karrinyup Road within a planning horizon to year 2031 and indicates that vehicle noise from Karrinyup Road is likely to cause noise impacts above the prescribed criteria under SPP 5.4 for residential lots within relatively close proximity to Karrinyup Road. On this basis, varying degrees of 'Quiet House Design' treatment options are required to achieve compliance with SPP 5.4, as specified under the Acoustic Assessment. The suggested mitigation measures apply to single storey dwellings.

Should multiple storey dwellings be proposed, further specialist acoustic advice will be required for the upper floors to determine the appropriate construction requirements for noise mitigation.

Refer **Appendix 2 - Acoustic Report**

### 2.4.3. DEVELOPMENT CONTROL POLICY 2.3 – PUBLIC OPEN SPACE IN RESIDENTIAL AREAS

The WAPC's *Development Control Policy 2.3 – Public Open Space in Residential Areas* ('DCP 2.3') seeks to ensure that all residential development in the State is complemented by adequate, well-located areas of public open space that will enhance the amenity of the development and provide for the recreational needs of local residents. The provisions of DCP 2.3 generally require a 10% public open space contribution to be made as part of the preparation of a Structure Plan, or application to subdivide land. In this regard, the provisions of DCP 2.3 are relevant to the Structure Plan which seeks to create more than five (5) residential lots.

As previously outlined within this report, the Structure Plan delivers in excess of 10% public open space, with those landowners with no public open space identified within their landholdings being required to pay a cash-in-lieu contribution to the City of Stirling. In this regard, DCP 2.3 identifies a number of situations where cash-in-lieu of public open space may be required or accepted by the local government and / or WAPC. Such situations include:

- ▲ The land is such that a 10% contribution would be too small to be of practical use.
- ▲ There may already be sufficient public open space in the locality.
- ▲ Public open space is planned in another location by way of a town planning scheme of local structure plan.

The abovementioned situations are applicable to the subject site, as follows:

- ▲ The Structure Plan area comprises highly fragmented landownership which would otherwise result in an inefficient and inappropriate use of land should each landowner be required to deliver 10% of their gross subdivisible area as public open space.
- ▲ There is already a substantial amount of public open space within the locality, with a total of 14 parks being identified within 800m of the site, as summarised in Section 4.2 of this report.
- ▲ The City of Stirling Lot 141 is currently used for local playing fields, however this land is privately owned by the City and is not a formal open space reserve.

#### 2.4.4. LOCAL PLANNING POLICIES

The following City of Stirling Local Planning Policies are to be addressed and considered through the subdivision and detailed design stages.

- ▲ LPP 3.13: Roselea Estate Design Guidelines – whilst this policy is applicable to the land on the western side of Grindleford Drive, it will likely have some relevance for implementation within the Structure Plan.
- ▲ LPP 4.1: Reserves and Other Zones Design Guidelines – applicable to the public open space and Civic uses on site.
- ▲ LPP 4.2: Mixed Use and Commercial Centre Design Guidelines – applicable to the Local Centre site.
- ▲ LPP 6.6: Landscaping – applicable to the Local Centre site and any grouped or multiple dwelling proposals involving 5 or more units.
- ▲ LPP 6.7: Parking and Access – applicable across the various land uses of the Structure Plan.
- ▲ LPP 6.11: Trees and Development – applicable across the Structure Plan.

# 3. SITE CONDITIONS & CONSTRAINTS

The following provides a summary of the environmental site conditions and constraints. For further information the Environmental Assessment Report is provided in **Appendix 3**.

## 3.1. BIODIVERSITY AND NATURAL AREA ASSETS

### 3.1.1. FLORA AND VEGETATION

Due to historic clearing activities which have been undertaken across the site, as well as the existing land uses on site, the Structure Plan does not contain any flora or vegetation of ecological significance. Given the lack of remnant vegetation, a flora and vegetation survey was not undertaken as part of the preparation of the Structure Plan.

A desktop assessment undertaken by Galt Environmental identified no Threatened Ecological Communities as being likely to occur on site, nor is there any species protected under the *Environment Protection and Biodiversity Conservation Act 1999* likely to occur.

There are also no Bush Forever sites identified within or within close proximity to the Structure Plan.

In accordance with Department of Biodiversity, Conservation and Attractions ('DBCAs') mapping, the site is not identified as an environmentally sensitive area ('ESA'). The nearest ESA is situated approximately two kilometres southwest of the Structure Plan and is therefore not impacted upon as part of this Structure Plan.

### 3.1.2. FAUNA

Given the lack of significant vegetation across the site, it is unlikely that any significant habitat exists for native fauna within the Structure Plan area. A fauna assessment has therefore not been undertaken as part of the preparation of the Structure Plan.

### 3.1.3. WETLANDS

There is a Multiple-Use ('MU') category wetland mapped over the majority of the Structure Plan area (UFI 8177). DoBC mapping indicates the wetland extends well beyond the Structure Plan boundary and is characterised as a sumpland. The Environmental Assessment Report prepared by Galt Environmental considers that wetland UFI 8177 is capable of development and is therefore not considered to be adversely impacted upon as a result of the proposed Structure Plan.

## 3.2. LANDFORM AND SOILS

The soil profiles of the Structure Plan vary across the site, primarily due to existing filling and historical remedial site works undertaken across the site.

The central portion of the site is typically characterised as:

- ▲ Fill (Sand) – some organics, typically dark brown with some fines and organic fines, approximately 4m thick in the west of the northern part of the site, becoming thinner to the east to approximately 1 metre in the central parts of the site, and not present on the east of the site. Very loose, typically dry and becoming moist at depth, overlying;

- ▲ Fill (Peaty sand) – fine to coarse grained, brown to black, very loose. Typically dry and becoming most, with varying proportions of fines and organics, typically to approximately 2.5m to 7m depths, including sand or limestone layers, overlying.
- ▲ Peat – typically black, stiff or firm to stiff, with varying proportions of sand, present in a layer typically 1-2 metres thick below Unit C, present to between 6 and 8 metre depths, overlying.
- ▲ Sand – fine to coarse grained, brown becoming grey, typically dense, wet, present to the maximum investigated depth of approximately 10 metres.
- ▲ The northern and southern portions of the site are typically characterised as:
- ▲ Fill (Peaty sand) – fine to coarse grained, brown to black, very loose. Typically, dry and becoming most, with varying proportions of fines and organics, typically to approximately 2.5m to 7m depths, including sand or limestone layers, overlying.
- ▲ Peat – typically black, stiff or firm to stiff, with varying proportions of sand, present in a layer typically 1-2 metres thick below Unit C, present to between 6 and 8 metre depths, overlying.
- ▲ Sand – fine to coarse grained, brown becoming grey, typically dense, wet, present to the maximum investigated depth of approximately 10 metres.

The northern and southern portions of the site are typically characterised as:

- ▲ Uncontrolled Fill (Sand) – with deleterious and inert inclusions. Typically, a mixture of concrete rubble, brick rubble, steel and general rubbish. Typically comprising between 10% and 60% of inert and deleterious fill, in a matrix of sand, fine to coarse grained, very loose, with some non-plastic fines, trace roots, rootlets and wood pieces. Very loose, present from the surface to depths varying between 1 metre and more than 3 metres, underlying.
- ▲ Peat – typically black, very soft to soft, generally 0.3 metres to approximately 2.5 metres thick. Present at depths of between 1.8 metres and 4.5 metres across most of the site, overlying.
- ▲ Sand – fine to coarse grained, typically dense, wet. Present to the maximum investigated depth of approximately 9 metres.

The underlying peaty soils situated within Lot 350 have been partially remediated (excavated and replaced) over majority of the lot.

### 3.2.1. ACID SULPHATE SOILS

The Department of Water and Environmental Regulation Acid Sulphate Soil Risk Mapping identifies the site as having ‘high to moderate risk of acid sulphate soils occurring within 3m of the natural surface’.

Given the high quantities of Peat on site, it is anticipated an Acid Sulphate Soils Management Plan will be required as a condition of subdivision approval.

### 3.2.2. CONTAMINATION

The Department of Water and Environmental Regulation Contaminated Sites Database does not list the site as being a known or suspected contaminated site.

Notwithstanding, the proponent recognises that further investigations with regard to contamination are required to be undertaken prior to development, particularly with regard to the potential presence of asbestos. This process will be appropriately dealt with at the subdivision stage, whereby Model Subdivision Condition EN9 would be imposed on any future approval, which states:

*Prior to commencement of subdivision works, investigation for soil and groundwater contamination is to be carried out to determine if remediation is required.*

*If required, remediation, including validation of remediation, of any contamination identified shall be completed prior to the issuing of titles to the satisfaction of the Western Australian Planning Commission on advice from the Department of Water and Environmental Regulation, to ensure that the lots created are suitable for the proposed use.*

*Investigations and remediation are to be carried out in compliance with the Contaminated Sites Act 2003 and current Department of Water and Environmental Regulation Contaminated Sites Guidelines.*

Clause 7 of Part 1 of the Structure Plan therefore includes a notation alerting to the requirement for further investigation with regard to contamination to be undertaken prior to subdivision works occurring on-site.

### 3.3. BUSHFIRE RISK

The Structure Plan is not situated within or adjacent to an area identified as bushfire prone by the Department of Fire and Emergency Services. A Bushfire Management Plan is therefore not required to support the submission of a Structure Plan.

In this regard, it should be noted that the nearest identified “bushfire prone area” is situated approximately 1.5 kilometres southwest of the site and is therefore not considered to present as a constraint to the proposed development of the Structure Plan.

### 3.4. GROUNDWATER AND SURFACE WATER

#### 3.4.1. GROUNDWATER

The *Perth Groundwater Atlas* (1997) shows the maximum historical groundwater levels at the subject site to be an approximate relative level (‘RL’) of 15 metres AHD along the eastern boundary, falling to approximately RL 11.5 metres AHD in the west. This is identified as being within 1-1.5 metres of the mapped ground surface.

Site investigations undertaken by Galt Environmental encountered groundwater at varying depths between the existing surface level up to greater than 2.5 metres below ground surface. Where groundwater is at, or near the surface, this is identified as being a perched groundwater level over peaty soils.

There are a number of existing registered bores located within and surrounding the subject site, however, none of these are currently used for irrigation purposes. Any dewatering occurring at the site will have potential to disrupt registered and unregistered bore users with the hydraulic influence of the site.

A groundwater quality assessment was undertaken by Strategen Environmental in 2015 which noted the following conditions:

- ▲ The pH values were generally above 6.5 across the site;
- ▲ Low levels of inherent acidity and high levels of alkalinity indicate that groundwater has high levels of buffering capacity;
- ▲ The concentrations of aluminium, iron and arsenic are consistent with groundwater conditions previously identified for peaty sites; and
- ▲ The pH and alkalinity values indicate groundwater has not been adversely impacted by the presence of actual and potential acid sulphate soils in the vicinity of the site.

### 3.4.2. SURFACE WATER

There are no surface water features within the site.

## 3.5. HERITAGE

A search of the Department of Aboriginal Affairs Aboriginal Heritage Inquiry System identified no registered sites within the Structure Plan area or immediate surrounds. The closest site of aboriginal significance is "Dog Swamp (ID 3738) about 2.5 kilometres south-east of the site.

A search of the Western Australian Register of Heritage Places identified no sites of State heritage significance within the Structure Plan area or immediate surrounds.

A search of the City of Stirling's Municipal Heritage Inventory identified no sites of local historic significance within the Structure Plan area or immediate surrounds.

## 3.6. NOISE MANAGEMENT

As noted in Section 2.4.2 of this report, Karrinyup Road abuts the Structure Plan on its southern boundary. In this regard, an acoustic assessment has been prepared to inform the Structure Plan, provided at Appendix 2 of this structure plan report. As summarised in the Acoustic Assessment, whilst some dwellings may be subject to vehicular noise as a result of traffic along Karrinyup Road, appropriate mitigation measures are able to be implemented to provide for suitable levels of amenity to residential land uses.

## 3.7. OTHER LAND USE CONSTRAINTS & OPPORTUNITIES

### 3.7.1. CHUNG WAH ASSOCIATION

The Chung Wah Association (the 'Association') occupies Lot 63 (No. 18) Radalj Place which is used as a community purpose building for various events, as well as providing for temporary accommodation for monks and other members of the Association travelling interstate. The Chung Wah Association was founded in 1909 and is the largest and most established Chinese organisation in Western Australia, with a total of 140,000 members.

The Executive of the Chung Wah Association have confirmed that they do not wish to be included within any future subdivision or development proposal for residential development. The Association intends on occupying the site for the long term and therefore does not wish to be restricted through land use allocation or movement networks. The Chung Wah Association has also engaged a local architect and is in the process of preparing an Application for Development Approval for the expansion of their existing facility, including the construction of Chinese gardens within the western portion of their landholding.

In this regard, the Chung Wah Association has been designated as 'Special Use – Club Premises, Hostel, Community Purposes and Residential (R30)' under the Structure Plan to allow for the continued use of the site by the Chung Wah Association, whilst also "futureproofing" the outcomes of the Structure Plan. The Chung Wah Association is recognised by the Federal, State and local governments as the spokesperson for the Chinese community in Western Australia. In this regard, it is considered that the land use is more appropriately defined as 'Community Purpose' rather than a private club, given the Association is registered as an "organisation" and provides for facilities and services for the Chinese community within Western Australia.

The use of the land by the Chung Wah Association is considered to be compliant with the objectives of the "Civic" zone given the facilities provided are compatible with the surrounding development (i.e. will not have an undue impact on the adjoining residential areas) and are of a scale which is consistent with that of the surrounding development.

A copy of the submission provided by the Association to the proponent is provided at **Appendix 4**.

An Indicative Residential Layout has also been prepared over the Chung Wah Association's landholding demonstrating how the property may be developed for residential purposes and how the land would integrate with the surrounding development. It is noted that the Structure Plan currently provides for a total of 13.93% public open space (not including Lot 141), with the Chung Wah landholding being identified as 'Special Use'. Should the Chung Wah landholding be developed for residential purposes a provision of 10% public open space will be required to be provided within the site as is required under *Liveable Neighbourhoods and Development Control Policy 2.3*.

Refer **Figure 7 - Indicative Subdivision Layout (Chung Wah Association Landholding)** and **Appendix 4 - Chung Wah Association Submission to Parcel Property**.

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**LEGEND**

**LOCAL SCHEME RESERVES**

- WASTE WATER PUMP STATION
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE RESTRICTED

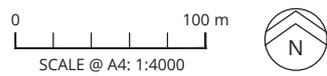
**LOCAL SCHEME ZONES**

- RESIDENTIAL - R30
- RESIDENTIAL - R40
- RESIDENTIAL - R60 - R80
- LOCAL CENTRE

**OTHER**

- STRUCTURE PLAN BOUNDARY
- EXISTING BOUNDARIES
- PROPOSED BOUNDARIES
- INDICATIVE LAYOUT

8686.FIG 18F.20210310 Balcatca (chun wah indicative layout) · DRAWN: WILLIAM CLEMENTS · DATE CREATED: 2021.03.10 · PROJECTION: MGA50 GDA94 · CADASTRE: LANDGATE ·



**FIGURE 7**  
**INDICATIVE RESIDENTIAL LAYOUT - CHUNG WAH**

### 3.7.2. MACEDONIA CLUB

The Macedonia Club owns and occupies Lot 153 (No. 273) Albert Street, Balcatta which comprises a sporting complex with associated licensed facilities. Whilst the Macedonia Club has no short – medium term development aspirations for its landholding, the Macedonia Community may, in the future, elect to develop the land for a mix of medium to high density residential land uses given its close proximity to public open space and the future local centre.

In this regard, the land use and zoning allocation of the Macedonia Club landholding under the Structure Plan has been undertaken in consultation with the Macedonian Club, which supports the design in its current form. The land use and zoning allocation of the Structure Plan allows the Macedonian Club to continue to operate its sporting complex as is, until such time as it chooses to redevelop the land.

Refer **Appendix 5 – Macedonian Club Submission to Parcel Property.**

### 3.7.3. SICILIAN CLUB

The Sicilian Association is the landowner and occupier of Lot 51 (No. 1) Sicilia Place which is currently used as a community facility to serve members of the Sicilian community and other interested participants in the associations’ activity. The centre is often used for events and cultural gatherings. The Sicilian Association has advised that whilst it welcomes the urban front, the current use of the property is not envisaged to change for a considerable period of time.

The Sicilian Association has indicated its general support for the Structure Plan proposal to the proponent. Notwithstanding, the Sicilian Association has provided its support with the following amendments to the Structure Plan, for consideration by the City of Stirling and Western Australian Planning Commission:

1. That no proposed use or approved change of use in the Structure Plan impacts on the current use or the value of the property owned and occupied by the Sicilian Association.
2. The Sicilian Association land be coded R60 – R80 to permit the use of the land in the future for multiple dwellings; and
3. The future use of the land to include the opportunity for retirement living and aged care.
4. The proposed road reserve at the rear of the Sicilian Association be relocated in the plan to sit on the boundary between associations Lot 51 and Lot 50 and the land allocated for the road reserve be equally shared with the City of Stirling.

Refer **Appendix 6 – Sicilian Club Submission.**

### 3.7.4. DRAINAGE SWALE / ROAD WIDENING

It is noted that portions of land adjacent to Grindleford Drive have historically been acquired by the City of Stirling for the intended future road widening of Grindleford Drive. This has occurred on Lot 141 and Lot 63 whereby between 10 – 15 metres of land has been ceded.

Notwithstanding, it is understood that the plans to widen Grindleford Drive are no longer current and therefore it is intended to utilise the “road widening” area for drainage purposes in the form of a vegetated drainage swale. This is discussed in further detail at **Sections 4.2.2 and 4.6** of this report.

### 3.7.5. EASEMENT

There is an existing Water Corporation sewerage easement which traverses through Lot 153 Albert Street (i.e. the Macedonian Club landholding) and Lot 9001 Karrinyup Road. It is understood that the landowner will be required to realign the existing sewer line at the time when the subject lots are developed for urban residential purposes.

# 4. LAND USE AND SUBDIVISION REQUIREMENTS

## 4.1. LAND USE

The Structure Plan sets out land use, residential densities, public open space, vehicle and pedestrian access and servicing requirements.

The Structure Plan is proposed to comprise residential development with densities ranging from R30 to R80, as well as areas comprising special and additional uses and the local centre. The Structure Plan also comprises public open space in accordance with the requirements of *Liveable Neighbourhoods*.

The following describes the design response proposed under the Structure Plan and addresses the relevant elements of *Liveable Neighbourhoods*. Please refer to the land use summary table provided within the Executive Summary on Page iii of this report.

Please also refer to **Plan 1 - Structure Plan**, and **Figure 8 - Indicative Zoning and Residential Density Code Plan**.

A land use area breakdown table has also been prepared detailing the area of land allocated to each lot within the structure plan area (i.e. extent of public open space, road reserves, etc) and the associated public open space requirement arising from each lot. A copy of this table has been included on Page 31 of this report.

Refer **Table 3 - Land Use Summary Table**.

Table 3 - Land Use Summary Table

**EAST ROSELEA STRUCTURE PLAN - LAND USE AREA SUMMARY TABLE**

LANDOWNER	LOT NUMBER	TOTAL LOT AREA (m <sup>2</sup> )	LOCAL CENTRE AREA (m <sup>2</sup> )	POS REQUIREMENT (m <sup>2</sup> )	TOTAL POS REQUIREMENT (m <sup>2</sup> )	POS PROVIDED (m <sup>2</sup> )	TOTAL POS PROVIDED (m <sup>2</sup> )	ROAD RESERVE AREA (m <sup>2</sup> )
ABN DEVELOPMENT NO. 1	109	5,073	-	507		787		348
	9003	14,706	-	1471		3340		3177
	Lots 1 - 4	1,496	-	150		150		-
	491	14,292	-	1429	7,822	621	9,759	5929
	88	13,540	-	1354		968		757
	129	14,702	-	1470		3893		5698
	9001	14,733	327	1441		0		5365
	114	10,551	-	1,055		900		3,191
	50	10,770	-	1,077		6,822		1,432
	141	33,823	-	0	1,078	0	10,145	2,900
CITY OF STIRLING	400	2,423	-	0		2,423		0
	51	13,886	-	1,389		1,676		2,562
	32 (Grouped Housing)	2,288	-	229		*		0
Coci	32	10,215	-	1,022	1,251	483*	483	4,337
	153	36,878	-	3,688	3,688	3,730	3,730	10,405
Macedonian Club of WA	801	9,787	-	979	979	859*	859	732
	52	1,796	-	180		*		0
	66 (North)	620	-	0		NII		620
	66 (South)	811	-	0		NII		811
	87	4,117	-	412		*		660
	89 (Strata Lot 13)	1,146	-	1,146		*		616
	5	748	-	74.8		*		0
	128	3,542	-	354		*		33
	492	2,244	-	224		*		0
	1001	17,597	13,406	47.23	47.23	*	*	3,717
ALBERT STREET GROUPED HOUSING	Kwiatkowski	4,411	3,248	NII		-		1,163
	Regalstone Pty Ltd	5,697	5,697	NII	NII - commercial zoned land.	-		0
	Killarney Investments	4,879	4,879	NII		-		0
	63	30,083	-	NII	NII	NII	NII	NII
LOCAL CENTRE	64	626	-	NII	NII	NII	NII	NII
	64	626	-	NII	NII	NII	NII	NII
WATER CORPORATION	64	626	-	NII	NII	NII	NII	NII
	64	626	-	NII	NII	NII	NII	NII

Notes: \* denotes cash-in-lieu contribution required.

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**LEGEND**

**LOCAL SCHEME RESERVES**

- WASTE WATER PUMP STATION
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE RESTRICTED

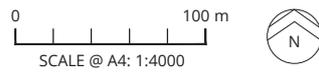
**LOCAL SCHEME ZONES**

- RESIDENTIAL - R30
- RESIDENTIAL - R40
- RESIDENTIAL - R60
- CIVIC
- LOCAL CENTRE

**OTHER**

- STRUCTURE PLAN BOUNDARY
- EXISTING BOUNDARIES
- PROPOSED BOUNDARIES
- INDICATIVE LAYOUT

8686-FIG08H\_20210310 Balcatta (Zoning) - DRAWN: W. CLEMENTS - DATE CREATED: 2021.03.10 - PROJECTION: MGA50 GDA94 - CLIENT: PARCEL PROPERTY - CADASTRE: LANDGATE - NATOWN PLANNING/800-8999/8686/DRAFTING/CAO - WILLIAM CLEMENTS - 2021.03.10



**FIGURE 8**  
INDICATIVE ZONING AND RESIDENTIAL DENSITY CODE PLAN

## 4.2. PUBLIC OPEN SPACE

There is an existing area of recreational open space situated within the Structure Plan, measuring approximately 3.38 hectares in area. Whilst this area is not currently reserved for parks and recreation under the *Metropolitan Region Scheme* or LPS 3, it is under the management and ownership of the City of Stirling and functions as public open space (specifically, playing fields). Given its existing function and use, the Structure Plan proposes to retain this land as public open space, however, with slightly extended boundaries to accommodate larger playing fields, as well as car parking and club rooms, in line with the City of Stirling's development aspirations. This area of public open space equates to approximately 11.4% of the Structure Plan gross subdivisible area, providing for in excess of the minimum 10% public open space requirement under *Liveable Neighbourhoods*.

Notwithstanding the above, preliminary discussions with the City of Stirling's Administration indicates that the City's aspiration for Lot 141 have not yet been formalised and therefore, Lot 141 has been treated as a deduction from the overall gross subdivisible area on the basis that the land may be more appropriately defined as District Open Space, subject to a formal determination on the desired use of the land.

The Structure Plan therefore proposes a total of seven (7) areas of public open space comprising a total of 12.57% public open space (comprising 7.58% unrestricted and 4.99% restricted), as follows:

- ▲ POS Area 1: comprises a total area of 1,752m<sup>2</sup> and form part of the linear drainage swale along the western boundary of the site.
- ▲ POS Area 2: comprises a total land area of 9,105m<sup>2</sup> and provides for a "Neighbourhood Park" for the northern portion of the Structure Plan area. The area of public open space is intended to accommodate passive and active recreational uses. A number of direct frontage lots are proposed along the north-eastern interface with the lots anticipated to be elevated above the finished level of the public open space to provide a clear delineated between the public and private realm which will improve privacy within residential courtyard spaces. Major openings and visually permeable fencing are also anticipated to be provided to the public open space interface to improve passive surveillance.
- ▲ POS Area 3: comprises a land area of 3,430m<sup>2</sup> and acts as a continuation to the potential District Playing Fields which may be developed on Lot 141 in accordance with the City's development aspirations. Should the City not proceed with the development of Lot 141 for playing fields purposes, it is anticipated that a linear area of public open space consistent with that provided within Lot 129 would be provided, creating an aesthetically pleasing entry statement into the Structure Plan area which may also serve active and passive recreation purposes (i.e. walking trails, small play equipment, etc).
- ▲ POS Area 4: comprises a land area of 3,730m<sup>2</sup> and has been designed to a "Neighbourhood Park" standard, located centrally within south-eastern precinct of the Structure Plan area. The area of public open space also incorporates a number of direct frontage rear-loaded laneway lots which are provided on the eastern boundary of the public open space which provide surveillance and activation of the open space. The public open space area will provide for a range of passive and active recreational type uses, providing for a range of amenity benefits to local residents. In addition, a portion of POS Area 4 is required for drainage purposes which will be integrated into the design and functionality of the public open space area.

- ▲ POS Areas 5 – 7: comprise a total combined area of 10,869m<sup>2</sup> and form the balance of the linear drainage swale along the western boundary of the site.

The Structure Plan has therefore been designed such that all of lots are situated within 400 metres public open space This is achieved through the location of the existing open space within the Structure Plan, which is further complemented by the surplus of existing open space reserves within the immediate walkable catchment of the subject site.

Given the site is situated within an established urban residential area, there is significant provision of existing areas of public open space within close proximity to the subject site, serving a range of functions including both passive and active recreation purposes. Such open space reserves within close proximity to the site include, but are not limited to:

- ▲ Grindleford Reserve (150m);
- ▲ Burswood South Reserve (150m);
- ▲ Como Reserve (150m);
- ▲ Roselea Reserve (175m);
- ▲ Carpenteria Cranberry Reserve (180m);
- ▲ Burswood Reserve (200m);
- ▲ Balcatta Primary School Playing Fields (300m);
- ▲ Cherrytree Gardens (350m);
- ▲ Cadella Biccari Reserve (400m);
- ▲ Conway Reserve (450m);
- ▲ Castleton Bamford Reserve (550m);
- ▲ Castleton D'Alorzo Reserve (600m);
- ▲ Keith Clarke Reserve (620m); and
- ▲ Salerno Reserve (800m).

Based on the provision of existing and proposed public open space, all of the proposed lots are situated within 300 metres of an existing area of public open space. The proposed Structure Plan is therefore consistent with the parkland requirements of *Liveable Neighbourhoods* with all of the proposed lots being within safe walking distance to public open space.

With regard to landscaping, opportunities for tree transplanting will be explored and implemented at the subdivision stage, where possible. More detailed investigations would be undertaken at the subdivision stage, as detailed design work progresses across the site.

Further, it should be noted that in accordance with the Landscape Masterplan, street trees will be planted by the developer at a rate of one tree per lot which will significantly increase tree density above that of the existing conditions.

Refer to **Figure 9 - Public Open Space Plan**, **Figure 10 - Public Open Space Schedule** and **Figure 11 - Community Amenity Catchment - Pedshed Analysis**.



## East Roselea Structure Plan (As Modified) – Public Open Space Schedule

08.03.21

Site Area (Structure Plan Boundary)

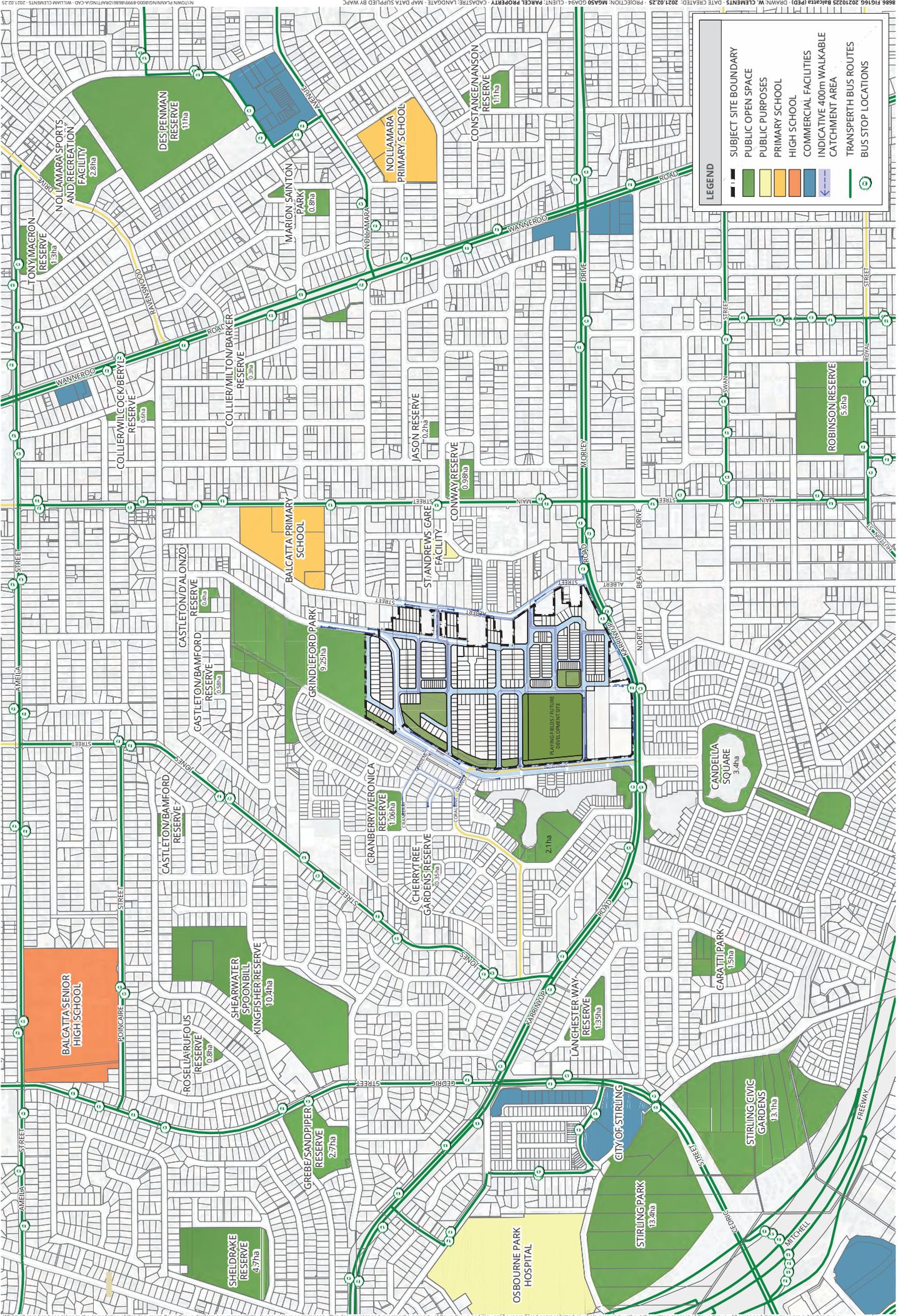
29.69

<b>Less</b>							
Waste Water Pump Station		0.06					
<b>Total</b>						0.06	
<b>Deductions</b>							
Community Purpose Site - Chung Wah Association			2.98				
City of Stirling Playing Fields (Lot 141)			3.38				
Local Centre			2.84				
Drainage (1:1 year) - refer below*			0.45				
<b>Total</b>						9.65	
<b>POS @10%</b>							<b>19.98</b>
<b>Public Open Space Contribution</b>							2.00
May comprise:							
Min 80% unrestricted POS						1.60	
Min 20% restricted use POS						0.40	
<b>Total Required POS</b>							<b>2.00</b>
<b>POS Reference Number</b>							
<i>(Catchment Boundary as per LWMS, October 2020)</i>							
	<b>Total POS Area (m<sup>2</sup>)</b>	<b>1:1 Year Drainage</b>	<b>Unrestricted Urban POS sites</b>	<b>Restricted Urban POS sites -</b>			
		<i>*Deduction from Net Area</i>	<b>(m<sup>2</sup>)</b>	<b>Dedicated Drainage (m<sup>2</sup>)</b>			
<b>1 - Swale CT-01</b>	1752	1750	0	2			
<b>2</b>	9105	0	9105	0			
<b>3</b>	3430	0	3430	0			
<b>4 - BRA CT-06</b>	3730	910	2173	647			
<b>5 - Swale CT-03, Swale CT-04 &amp; Swale CT-05 US</b>	7031	1440	0	5591			
<b>6 - Swale CT-05 DS</b>	1190	0	0	1190			
<b>7 - Swale CT-06a &amp; Swale CT-07</b>	2648	388	0	2260			
<b>Total</b>	<b>28886</b>	<b>4488</b>	<b>14708</b>	<b>9690</b>			
	<b>2.89</b>	<b>0.4</b>	<b>1.47</b>	<b>0.97</b>			
<b>Percentage of gross subdivisible area</b>	<b>14.46%</b>	<b>2.25%</b>	<b>7.36%</b>	<b>4.85%</b>			
			<b>Total Public Open Space</b>				<b>12.21%</b>
<b>Additional Deductions</b>							
Restricted Open Space Surplus		0.57					
<b>Revised Gross Subdivisible Area</b>							<b>19.41</b>
Revised POS @ 10%							1.94
<b>Revised Public Open Space Contribution</b>							
May comprise:							
Min 80% unrestricted POS			1.55				
Min 20% restricted use POS			0.39				
<b>Total Required POS</b>							<b>1.94</b>
<b>Total POS Provided</b>	<b>28886</b>	<b>4488</b>	<b>14708</b>	<b>9690</b>			
	<b>2.89</b>	<b>0.4</b>	<b>1.47</b>	<b>0.97</b>			
	<b>14.88%</b>	<b>2.31%</b>	<b>7.58%</b>	<b>4.99%</b>			
			<b>Total Public Open Space</b>	<b>12.57%</b>			
			<b>Total Unrestricted POS Shortfall</b>	<b>0.08</b>			

Notes:

1. This Public Open Space Schedule is based on the Local Structure Plan prepared by Rowe Group (Plan ID: 8686- LSP-02-L).

2. This Public Open Space Schedule is based on the December 2020 LWMS prepared by Emerge Associates



**LEGEND**

- SUBJECT SITE BOUNDARY
- PUBLIC OPEN SPACE
- PUBLIC PURPOSES
- PRIMARY SCHOOL
- HIGH SCHOOL
- COMMERCIAL FACILITIES
- INDICATIVE 400m WALKABLE CATCHMENT AREA
- TRANSPERTH BUS ROUTES
- BUS STOP LOCATIONS

**FIGURE 11**  
COMMUNITY AMENITY CATCHMENT - PEDSHED ANALYSIS

0m 250m  
SCALE: 1:10,000 @ A3

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8686\_FIG16\_20232025 Balclutha (PED) - CLIENT: PACEL PROPERTY - MAP DATA SUPPLIED BY WAPC - DATE CREATED: 2021.02.25 - PROJECT: MGA50 GDA4 - DRAWN: W. CLEMENTS - DATE: 2021.02.25

#### 4.2.1. CITY OF STIRLING PUBLIC OPEN SPACE STRATEGY

The future population is considered to be well serviced by the existing public open space network located within walking distance of the structure plan area, as demonstrated on Figure 11. The site has access to a range of public open space areas, including areas which can be used for both passive and active recreation purposes. It is considered that the creation of small “pocket parks” would not result in a good urban design outcome for the locality and rather, it is understood that the local community’s preference would be for any surplus funds to be spent on upgrading existing public open space areas within the Balcatta-Stirling locality, as noted within the City’s Public Open Space Strategy.

In this regard, the increased population proposed as a result of the new residential development will not have a negative impact on the totality of public open space within the vicinity of the site, on the basis that the site is well serviced by the existing open space network within the Balcatta-Stirling locality.

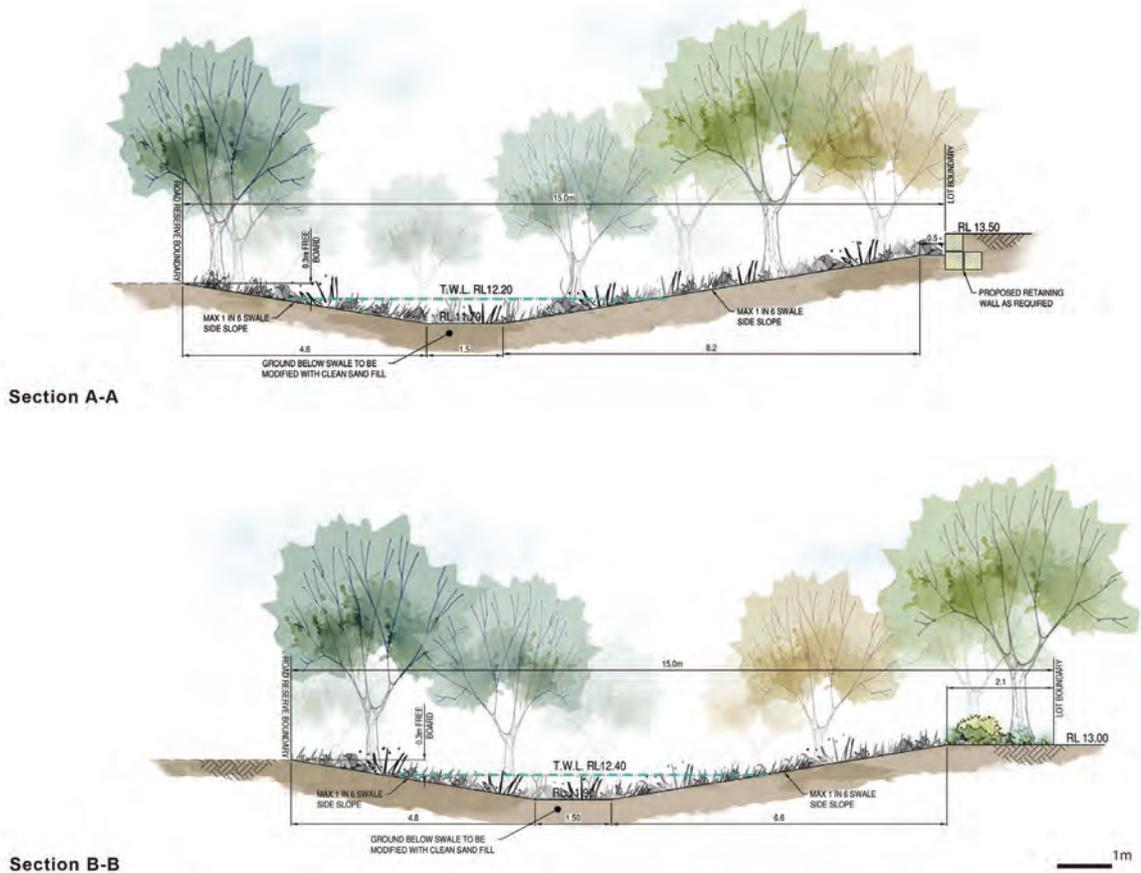
Should the City’s Lot 141 be developed for district playing fields purposes, the appropriate classification under the City’s Public Open Space Strategy as would be “District Open Space”, due to the intended use of the open space for formal sport and recreation activities. The linear area of open space which contains the drainage swale is more appropriately classified as “Local Open Space” under the strategy given it provides “green relief” from the built form whilst also serving a local drainage function.

It is also noted that the City’s Public Open Space Strategy states that at the conclusion of the community forums, the top priority or preference for the “Balcatta-Stirling” local area was “improving parks and reserves”, indicating that there is a preference to focus on the quality as opposed to the quantity of public open space in the area. Further, the Central locality which contains the “Balcatta-Stirling” community, indicated that 57% of residents would rather dispose of most small pocket parks, with the proceeds to be used to upgrade other local parks.

In this regard, it is considered that the proposed allocation of public open space and the cash-in-lieu methodology is consistent with the community’s aspirations to improve its current parks and reserves.

## 4.2.2. DRAINAGE SWALE

The Structure Plan identifies a linear vegetated drainage swale along the majority of the western interface with Grindleford Drive which comprises approximately 1.27 hectares or 4% of the site. In accordance with the Local Water Management Strategy, vegetated drainage swales will be utilised to treat and retain runoff within the western boundary of the site. The drainage swales are typically proposed at 25m in width (with the exception of Lot 400 adjacent to the City's Playing Fields). A number of indicative cross sections have been prepared and included within the Landscape Masterplan at **Appendix 7** of this report.



In terms of the interface to Grindleford Drive, the drainage swale will predominantly present as a vegetated area, to be landscaped as development progresses across the Structure Plan area. The drainage swale will be integrated into the landscape and civil design response to meet best practice urban design standards and will not be fenced to preclude access. The location of the drainage swale does not restrict or prevent vehicular access, with lots able to be accessed from the internal road network proposed under the Structure Plan.

Development of lots which abut the drainage swale will be guided by a Local Development Plan, to be imposed by way of a condition of subdivision approval. It is anticipated dwellings will be required to provide major openings and portions of visually permeable fencing adjacent to the drainage swale to provide for passive surveillance and an improved streetscape aesthetic along the western boundary of the site.

#### 4.2.2.1. CITY OF STIRLING OWNED LAND

Portions of the proposed linear drainage swale are provided on City of Stirling owned land, specifically Lot 50 and Lot 400 (located adjacent to the playing fields). The use of the City's land for drainage purposes was adopted by Council at its Ordinary Council Meeting dated 20 November 2018 as part of its resolution to recommend approval of the Structure Plan.

The proponent will seek further agreement from the City of Stirling at the implementation stage with regard to any construction / staging related matters (including access and undertaken works on the City's land). The agreement should ensure that the detailed design, construction and ongoing maintenance of the drainage swale are to the City of Stirling's satisfaction.

#### 4.2.2.2. COORDINATION OF PUBLIC OPEN SPACE WORKS

Where public open space is provided over two different landholdings, there will be a need for the landowners to enter into an agreement with regard to the coordination of landscape design and construction works.

The agreement between landowners should consider:

- ▲ Landscape design and treatment;
- ▲ Coordination of works;
- ▲ Timing for works; and
- ▲ Site access requirements (during construction).

Such agreements would be entered into as part of the implementation of any subdivision approvals of the respective landholdings.

#### 4.2.2.3. BUILT-FORM OUTCOMES

In accordance with Clause 5 of Part 1 of the Structure Plan report, Local Development Plans will be required to guide the development of those lots abutting public open space, inclusive of the vegetated drainage swale along Grindleford Drive.

It is envisioned that the Local Development Plans will address the following matters, to ensure an appropriate built-form outcome is provided:

- ▲ **Vehicular Access:** those lots abutting the proposed drainage swale shall take access from the internal road network, with access from Grindleford Drive generally not permitted.
- ▲ **Fencing:** those lots which back on to the drainage swale are to provide visually permeable fencing to the boundary of the drainage swale, with the exception of any areas of minor screening required to provide privacy to any outdoor living areas.
- ▲ **Dwelling Orientation:** dwellings shall generally be designed such that passive surveillance over the drainage swale can be achieved (i.e. dwellings should be designed such that major openings are provided fronting Grindleford Drive and the drainage swale).

The abovementioned requirements are subject to further detailed design at the subdivision stage to ascertain the most appropriate built-form response for the subject lots.

#### 4.2.2.4. MAINTENANCE

With regard to the maintenance of the drainage swale, the appointed Landscape Architect LD Total has confirmed that the drainage swales will not require more than the normal amount of maintenance of public open space. Maintenance of the drainage swale will include the standard public open space rubbish removal, replacement or removal of vegetation and top up of mulch (organic mulch or stone mulch) as required throughout the drainage swales and public open space.

Construction of the drainage swale will be undertaken by each of the applicable landowners however the proponent is prepared to fund the construction of the drainage swale, which occurs on land either owned by the proponent or the City of Stirling (which achieves 75% of the total storage basin required). The land and infrastructure required for the drainage swale will be delivered as part of the proponent's application to subdivide their land.

The construction per square meter rate of the drainage swale anticipated to be consistent with the of standard areas of public open space. The linear drainage swale will also cater for the City's existing upstream drainage catchment which currently discharges within the Structure Plan area. The provision of the drainage swale within the City's landholdings is therefore considered to address a pre-existing issue for the City of Stirling and therefore should be supported.

Refer **Appendix 7 - Landscape Masterplan.**

#### 4.2.3. COMMUNITY PURPOSE SITE

Lot 63 is currently under the ownership of Chung Wah Association, which is used as a community purpose building for various events, as well as providing for temporary accommodation for monks and other members of the Association travelling interstate.

In accordance with the submission received from the Chung Wah Association, this parcel of land is to be used for community purposes and therefore, the land has been identified within the "Civic" zone to reflect the current and future intentions for the site.

Given the current and future intentions for the site and at the request of the Chung Wah Association, no road connections are proposed through Lot 63. It is understood that the Chung Wah Association has development aspirations for Lot 63, which include the construction of Chinese gardens and the expansion of the existing facility.

This landholding has therefore been included as a deduction under the Public Open Space Schedule.

#### 4.2.4. CASH IN LIEU ARRANGEMENTS

Given the fragmented ownership across the site, it is considered an inefficient and inappropriate use of land to require each subdividing landowner to deliver 10% of their gross subdivisible area as public open space. The provision of a higher functioning and consolidated parcel of open space to serve the community, as opposed to fragmented smaller areas of open space dispersed across the site, is considered to be more in keeping with the interests of orderly and proper planning, as well as providing for a more efficient public open space network for the locality.

Therefore, upon subdivision of land by individual land owners, a cash-in-lieu payment for public open space equivalent to 10% of their gross subdivisible area will be required to be paid to the City of Stirling.

Given there is no existing development contribution scheme in place for the Structure Plan, nor is one intended to be prepared, this will be required to be implemented through conditions of subdivision approval.

Cash-in-lieu funds collected by the City through the process outlined under the *Planning and Development Act 2005* should be used to formally acquire Lot 50 from the City and transfer the land to the Crown as a formal public open space reserve (noting Lot 50 is currently denoted as public open space on the structure plan map). Ultimately, how the City chooses to expend the funds collected through the cash-in-lieu arrangements will be determined by the City and guided by the WAPC's *Development Control Policy 2.3 and Planning Bulletin 21 – Cash-in-lieu of Public Open Space*.

The responsibility and funding for the development of Public Open Space would occur through the cash-in-lieu process, as detailed in Development Control Policy 2.3. Similarly, the on-going maintenance of the drainage swale would be undertaken by the local authority (i.e. the City of Stirling), as per the standard subdivision process as detailed under the *Planning and Development Act 2005*.

### 4.3. RESIDENTIAL

An indicative subdivision layout has been prepared for the site, identifying a yield of approximately 528 dwellings, comprising a mix of freehold and grouped housing lots. It should be noted that indicative dwelling calculations have assumed the construction of freehold and grouped housing lots only. Should portions of the site be developed for multiple dwellings (i.e. in proximity to the local centre), the total dwelling yield calculation would be expected to increase.

Based on applying the “gross dwellings per urban hectare” calculation of the WAPC’s *Directions 2031*, the site is anticipated to deliver approximately 500 lots, based on a calculation of 15 dwellings per gross urban hectare multiplied by the site area (i.e. 29.7 hectares). As noted above, however, the number of freehold lots may be less than the estimated value, on the presumption that portions of the land are more conducive to grouped housing and multiple dwelling type developments.

In this regard, and based on an indicative dwelling yield of 528, the site achieves a density of approximately 35 dwellings per residential site hectare, and 17 dwellings per gross urban hectare. This is consistent with *Liveable Neighbourhoods* targets for a minimum average residential density of 22 dwellings per residential site hectare new subdivision areas.

For reference, an Indicative Plan of Subdivision is provided at Figure 10. Indicative dwelling yields as provided on Figure 10 have been based on the relevant average lot size requirements of the *Residential Design Codes of WA* (the ‘R-Codes’). It should be noted that this figure has been provided for explanatory purposes only, and is subject to further review and detailed design at the subdivision stage.

Residential density codes have been allocated across the site and have been used in the preparation of indicative subdivision layouts and density calculations. The Structure Plan allocates a base density of R30, with areas of R40 adjacent to Albert Street consistent with current LPS 3 mapping. The Structure Plan also proposes density codes between R60 and R80 within proximity to the local centre, public open space and Karrinyup Road.

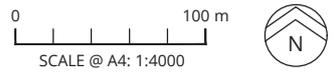
The density code range also facilitates a diversity of lot product across the site, providing for a range of dwelling types. The preparation of Local Development Plans will also assist in facilitating the delivery of diversity in lot product, as well as seeking to achieve built form outcomes consistent with the development intent of the site.

Refer to **Figure 12 – Indicative Subdivision Layout**.



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8686-FIG12F-20210310 Stirling (Indicative Subdivision) · DRAWN: WILLIAM CLEMENTS · DATE CREATED: 2021.03.10 · PROJECTION: MGA50 GDA94 · CADASTRE: LANDGATE · NATION: AUSTRALIA · PROJECT: MGA50 GDA94 · CADASTRE: LANDGATE · WILLIAM CLEMENTS · 2021.03.10



**FIGURE 12**  
INDICATIVE SUBDIVISION LAYOUT

### 4.3.1. LOCAL DEVELOPMENT PLANS

A Local Development Plan is required in the following circumstances:

- ▲ Lot 63 (Chung-Wah Association owned land) is substantially redeveloped, to ensure that development occurs in a coordinated manner and preserves the potential extension of the north-south spine road through the site in the future;
- ▲ Lots abutting POS;
- ▲ Lots abutting the drainage swale; and
- ▲ Lots subject to quiet house design requirements.

Local Development Plans are to address, as a minimum, the following:

- ▲ Dwelling orientation;
- ▲ Type of fencing;
- ▲ Location of carports/ garages and vehicular access;
- ▲ Surveillance;
- ▲ Setback variations;
- ▲ Solar Orientation; and
- ▲ Requirements for dwelling construction compliant with an approved Noise Management Plan.

It is anticipated that where a Local Development Plan is required in accordance with the abovementioned criteria, a condition of approval will be imposed by the WAPC requiring the preparation and approval of a Local Development Plan.

## 4.4. MOVEMENT NETWORKS

The following provides a summary of the proposed movement network. For further information, refer to the Transport Impact Assessment included at **Appendix 8**.

### 4.4.1. EXISTING ROAD NETWORK

#### 4.4.1.1. KARRINYUP ROAD

Karrinyup Road adjoins the Structure Plan on its southern boundary and provides a connection to the Mitchell Freeway via Cedric Street, as well to the Stirling railway station. Karrinyup Road is reserved as a “Primary Regional Road” under the MRS and classified as a “Primary Distributor Road” under the Main Roads WA Functional Road Hierarchy.

It is noted that Karrinyup Road is currently constructed as a 4-lane dual carriageway where it adjoins the site.

Daily traffic volumes for Karrinyup Road in the vicinity of the Structure Plan indicate approximately 23,772 vehicle movements per day.

#### 4.4.1.2. GRINDLEFORD DRIVE

Grindleford Drive adjoins the Structure Plan on its western boundary and connects with Karrinyup Road in the south and Beryl Street in the north. Grindleford Drive is classified as a “Local Distributor Road” under the Main Roads WA Functional Road Hierarchy.

Grindleford Drive is currently constructed to a 2-lane dual carriageway, with a 4.5 metre pavement width in each direction, south of Coralvine Grange. North of Coralvine Grange, Grindleford Drive is constructed to a single carriageway with a 7.5 metre pavement width.

Existing traffic volumes along Grindleford Drive vary from 1,864 vpd in the south to 1,027 vpd in the north, and 834 vpd generally centrally to the site.

#### 4.4.1.3. ALBERT STREET

Albert Street adjoins the Structure Plan on its eastern boundary and connects with Karrinyup Road in the south and Beryl Street in the north. Albert Street is classified as an “Access Road” under the Main Roads WA Functional Road Hierarchy.

Albert Street is currently constructed to a 2-lane access road, with a 7-metre pavement width and traffic calming devices.

Existing traffic volumes along Albert Street are indicated at approximately 1,610 vehicle movements per day.

#### 4.4.2. PROPOSED ROAD NETWORK

The proposed road hierarchy for the Structure Plan (refer **Figure 13 - Indicative Movement Network**) has been determined from modelling based on the indicative subdivision layout and provides for simple and efficient vehicle movements through the site.

The location of the road reserves has generally been designed to ensure that each lot can be developed independently of one another (i.e. to prevent lots becoming “land locked”. In the event that minor road realignments are required in order to facilitate access, it is considered that these variations may be dealt with as an “inconsequential” variation at the subdivision stage. Should any such road realignment be major in nature, an amendment to the Structure Plan may be required, at the discretion of the WAPC.

The movement network reflects an east-west and north-south modified grid configuration, with a number of direct connections to the existing surrounding road network. The street block lengths are consistent with the requirements of *Liveable Neighbourhoods*, providing for connectivity and permeability through the site, for both pedestrians and vehicles.

The indicative road network is proposed to comprise of the following road classifications:

ROAD CLASSIFICATION	INDICATIVE UPPER TRAFFIC VOLUME	INDICATIVE ROAD RESERVE WIDTH
Neighbourhood Connector A	>3,000 vpd	25 metres
Neighbourhood Connector B	<3,000 vpd	18 metres
Access Road B	<3,000 vpd	18 metres
Access Street C	<3,000 vpd	15 metres
Access Street D	<1,000 vpd	15 metres

Table 4: Road Classifications

The proposed road hierarchy primarily consists of access streets, with higher order roads surrounding the local centre and providing a north-south spine road through the site, terminating at the community purposes site.

The access streets are proposed to primarily consist of Access Street type D roads, designed to a 15 metre cross-section. Where services are only required to one side of the road, such as adjacent to public open space or backing on to commercial development, a reduced Access Street D cross-section of 12 to 13.2 metres is proposed.

Access Street type B roads are provided within the higher density areas (i.e. areas with a density code of between R60 – R80) in proximity to the local centre to provide for additional on-street embayment car parking. The widened Access Streets will provide for improved vehicular access and egress within proximity to the local centre and support a pedestrian friendly environment.

Traffic volumes along the access roads are typically estimated to be in the order of 1,000 to 3,000 vehicle movements per day, which is consistent with the road hierarchy classification under *Liveable Neighbourhoods*.

Traffic modelling for the Structure Plan area estimates the completed development will generate in the order of approximately 13,000 vehicle movements per day, with approximately 66% of those generated by the local centre.

Refer **Figure 13 - Indicative Movement Network**.



**LEGEND**

**LOCAL SCHEME RESERVES**

- PUBLIC OPEN SPACE
- PUBLIC PURPOSES - WATER AUTHORITY OF WA

**LOCAL SCHEME ZONES**

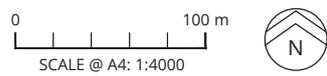
- RESIDENTIAL R30
- RESIDENTIAL R40
- RESIDENTIAL R60-80
- CIVIC
- LOCAL CENTRE

**OTHER**

- STRUCTURE PLAN BOUNDARY
- PRIMARY REGIONAL ROAD
- NEIGHBOURHOOD CONNECTOR A
- NEIGHBOURHOOD CONNECTOR B
- NEIGHBOURHOOD CONNECTOR (MODIFIED CROSS SECTION)
- ACCESS STREET B
- ACCESS STREET C
- ACCESS STREET D

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8686-FIG13F-20210310 Balcata (Modified Movement Network) - DRAWN: WILLIAM CLEMENTS - DATE CREATED: 2021.03.10 - PROJECTION: MGA50 GDA94 - CADASTRE: LANDGATE - NATOWN PLANNING/8004-8999/8686/DRAFTING/CAO - WILLIAM CLEMENTS - 2021.03.10



**FIGURE 13**  
INDICATIVE MOVEMENT NETWORK

#### 4.4.2.1. PEDESTRIAN AND CYCLE NETWORK

In accordance with the requirements of *Liveable Neighbourhoods*, footpaths will be provided on at least one side of every street, with a number of roads proposed to have footpaths on both sides.

Given the relatively low traffic volumes anticipated, no designated cycle paths are proposed within the Structure Plan. It is, however, recommended that on-street cycle lanes are provided along the Neighbourhood Connector, as well as cycle facilities (by way of a 2.5m shared path) along the north south spine road, providing connections from the local centre to Grindleford Drive and Karrinyup Road.

The Department of Transport's Bike Map for Stirling identifies Albert Street, running along the eastern boundary of the site, as being part of the Perth Bicycle Network (NE2). In addition, the western end of Karrinyup Road adjacent to the Structure Plan is also shown as a shared path.

#### 4.4.3. PUBLIC TRANSPORT

The Structure Plan area is currently serviced by bus routes 402, 998 and 999 along Karrinyup Road, adjoining the site's southern boundary. Bus route 402 services the Stirling railway station and connects to the Perth Bus Depot on Wellington Street. Routes 998 and 999 are circle routes that also service the Stirling railway station. There are also a number of other bus routes servicing the local roads within relatively close proximity to the site, primarily the 414 east of Albert Street.

Given that the neighbourhood centre and the majority of the residents in Roselea East have good access to bus routes on Karrinyup Road, it is considered unlikely that any new routes would be introduced through the site.

It is also noted that the Stirling Station is situated approximately 2 kilometres to the south-west of the Structure Plan.

## 4.5. WATER MANAGEMENT

### 4.5.1. LOCAL WATER MANAGEMENT STRATEGY

A Local Water Management Strategy ('LWMS') has been prepared in support of this Structure Plan and is provided as **Appendix 9**.

The LWMS addresses the Structure Plan area, and provides a refinement of flood modelling, the surface water management strategy and the groundwater management strategy to a local scale. The LWMS has been prepared in accordance with the water sensitive urban design practices as described in the *Stormwater Management Manual* of WA and the WAPC's *Better Urban Water Management (2008)*.

In accordance with the processes defined under *Better Urban Water Management*, an Urban Water Management Plan ('UWMP') will be required to be prepared and implemented at the time of subdivision. The UWMP will refine and implement the proposed drainage network/system, as defined under the LWMS.

### 4.5.2. PROPOSED STORMWATER MANAGEMENT STRATEGY

The stormwater management strategy for the site is to retain, treat and infiltrate stormwater runoff as close to source as possible. The strategy for the site requires residential lots up to the R60 density classification to retain the small event (first 15 mm) on site. Residential lots of density R60 and above will retain the major (1% AEP) event onsite.

The proposed stormwater management approach is outlined in further detail below.

#### 4.5.2.1. LOT STORAGE

Rainfall on lots will either infiltrate directly at-source (i.e. garden areas) or will be directed to soakwells from roofs and paved surfaces where it will infiltrate into the underlying soil and ultimately to groundwater. Infiltration of runoff through the underlying soils will provide treatment through adsorption of nutrients to sand particles.

Residential lots of density up to R60 will utilise soakwells sized to retain runoff from the small event (i.e. first 15 mm) from lot. Residential lots of density R60 and above will use a combination of strategies to retain up to the major event onsite, which will be detailed in future Urban Water Management Plans ('UWMPs').

Additionally, soakwells will have the ability to overflow to a lot connection for discharge to either of the proposed subsoil or stormwater networks, with the intent of ensuring that the lot-scale detention measures continue to function as intended.

#### 4.5.2.2. VEGETATED SWALES

As described in **Section 5.2.2**, vegetated swales will be utilised to treat and retain runoff within the western boundary of the site. These will be located within a 25 m wide drainage reserve immediately adjacent to Grindleford Drive.

Vegetated swales are designed to treat runoff received from the small event or first flush (i.e. first 15 mm), and to retain up to the major (1% AEP) storm event from the road network plus discharge from lots in excess of the small event.

The swales will have a maximum top width of 25 m and typically have 1:6 side slopes (with the exception to swales Ct-01 and Ct-05 DS where vertical sidewalls are proposed). Swale inverts will be set 300 mm above the 50% AEP predicted groundwater level to facilitate infiltration and prevent prolonged wet conditions. The swales are designed to have a top water level ('TWL') in the major event that will be below the level of Grindleford Drive.

Wherever practical individual swales shall be interconnected by culverts across proposed roads to enable water levels to balance throughout the system and optimise storage and infiltration. Where invert levels vary between adjacent swales a high level overflow outlet structure may be incorporated at the swale having the higher invert level.

Infiltration of runoff through the underlying soils of the swales will provide treatment through adsorption of nutrients to sand particles. The swales can potentially be lined with high Phosphorus Retention Index (PRI > 10) media to improve phosphorus uptake. Nutrient stripping vegetation will be planted densely in the swales to assist in the uptake of nutrients.

#### 4.5.2.3. BIO-RETENTION AREAS

Runoff generated by the small event on road reserves will be captured and retained in a vegetated bio-retention area ('BRA'), located in the public open space within catchment Ct-06 (POS Area 4).

The BRA will be designed with side slopes no greater than 1:3 and a maximum depth of 300 mm. BRAs will be densely vegetated with species known to uptake nutrients, potentially controlling access to these areas. BRA inverts will maintain a minimum 300 mm clearance from MGL.

The BRA is sized to cover an area of ~4.6 % of the total connected impervious area, thus exceeding the 2% of connected impervious area requirement.

#### 4.5.2.4. FLOOD STORAGE AREAS

A flood storage area ('FSA') will be utilised in catchment Ct-06 to detain and infiltrate major event flows, supporting the pre-development hydrological regime. Collocated with the BRA, surface runoff above the small event, up to and including the major event, will be detained within the FSA located within the Ct-06 POS area. During the major event the FSA will discharge via a high level overflow to the swale in catchment Ct-06A, however no off-site discharge will result. The City of Stirling's requirements will be incorporated into the final detailed design at future design stages.

The FSA will be designed with side slopes no greater than 1:6 and an overall maximum depth of 1.2 m (inclusive of the BRA depth). The FSA invert will maintain a minimum 300 mm clearance from MGL to ensure they are able to adequately drain following a rainfall event. The FSA will also be designed to maintain a 300 mm clearance from finished floor levels ('FFLs') to the major event TWL. Clearance from MGL and FFLs will be demonstrated upon lodgement of civil engineering drawings.

#### 4.5.2.5. DISCHARGE TO EXTERNAL STORMWATER NETWORKS

Stormwater discharged onto site from the external upstream stormwater networks, including runoff generated from the mostly developed catchment Ct-02, will continue to be collected via the existing stormwater network and will be conveyed through the site via extended pipework for final discharge to the Albert Street Branch Drain. The Structure Plan therefore does not need to make any spatial provision for the management of runoff from the upstream catchments.

Water Corporation has provided approval in principle for the extension of the existing DN900. Water Corporation has also advised that no additional connections from the structure plan area will be permitted, including no additional connections to the proposed DN900 pipe drain extension.

Rainfall on the 'Local Centre' is assumed to be retained up to the major (1% AEP) event in accordance with City of Stirling's Development Services requirements.

#### 4.5.3. GROUNDWATER MANAGEMENT

The primary objective for groundwater level management is to ensure the final lot levels are at least 1.2 m above the 50% AEP predicted 'wet' scenario.

The historical Maximum Groundwater Level ('MGL') for the site ranges between 11.6 mAHD and 15.5 mAHD lifting to the east. This is generally reflected in the 2021 predicted groundwater levels along the western boundary, with groundwater predicted to be at 11 mAHD - 12.5 mAHD in this part of the site. Concept earthwork levels for the residential lots are designed between 13.5 mAHD and 17.8 mAHD, giving a minimum clearance to the 50% AEP of 1.2 m

The inverts of the swales, BRAs and FSAs will provide a minimum clearance to the 50% AEP of 300 mm.

Free draining sands will be provided to an appropriate depth below lots, typically a minimum of 2.3 m. The earthworks currently proposed indicates that in some locations these sands will be underlain by a limestone raft that will provide a geotechnically stable platform over the underlying peaty soils.

The base of the swales will also be excavated to remove the peat, and these areas will be backfilled with free draining sand. This will assist in ensuring that groundwater levels are maintained to an acceptable level.

Subsoil drains are proposed beneath some road reserves to protect road pavement. These do not seek to control the existing groundwater levels, however, will control rise of locally infiltrated stormwater beneath lots to mitigate against potential waterlogging, and will protect road pavement integrity in the post-development environment. Subsoil inverts will discharge to the swales along Grindledford Drive at least 150 mm above the swale inverts, which would still be above post-development groundwater if this were to rise.

A connection will be provided so that private residences can install subsoil drains at either side or rear boundaries of properties.

#### 4.5.4. URBAN WATER MANAGEMENT PLAN

Consistent with the requirements of the LWMS and the Better Urban Water Management framework, an UWMP will be required as a condition of subdivision approval. The UWMP will refine and implement the proposed drainage network/system, as defined under the LWMS.

While strategies have been provided within this LWMS that address planning for water management within the site, it is a logical progression that future subdivision designs and the supportive UWMP will clarify details not provided within the LWMS. The main areas that will require further clarification within future UWMPs include:

- ▲ Drainage calculations
- ▲ WSUD configuration
- ▲ Staging considerations
- ▲ Irrigation Schedule
- ▲ Water Balance
- ▲ Water Conservation Strategy
- ▲ Subdivision earthworks
- ▲ Groundwater licensing
- ▲ Acid sulphate soil investigations
- ▲ Non-structural water quality improvement measures
- ▲ Management and maintenance requirements
- ▲ Construction management strategy.

## 4.6. EDUCATION FACILITIES

Given the infill nature of the proposed development, the site is well catered for with existing public education facilities within the surrounding areas. The Structure Plan therefore does not propose any primary, secondary or tertiary education facilities. Preliminary discussions with the Department of Education indicate that there is sufficient capacity within the existing schools within the vicinity of the site, which will be formally confirmed during the Structure Plan advertising process.

The site currently falls within the intake area for Balcatta Primary School (0.9km from the site), however is also within relatively close proximity to the following other public schools.

- ▲ Osborne Primary School (1.4km);
- ▲ Nollamara Primary School (1.7km);
- ▲ West Balcatta Primary School (2km);
- ▲ Balcatta Senior High School (1.6km);
- ▲ Dianella Secondary College (3.3km);
- ▲ Churchlands Senior High School (4.5km); and
- ▲ Balga Senior High School (4.6km).

There are also a number of private education facilities accessible from the subject site.

In accordance with *Liveable Neighbourhoods* criteria, the anticipated lot yield does not trigger the need for provision of any additional primary or high school facilities within the subject site.

## 4.7. ACTIVITY CENTRES AND EMPLOYMENT

### 4.7.1. SECONDARY CENTRES

Consistent with *State Planning Policy 4.2: Activity Centres for Perth and Peel* ('SPP 4.2'), the closest secondary centres to the Structure Plan area are Karrinyup (approximately 3.8 kilometres to the north-west) and the Mirrabooka Centre (approximately 4.0 kilometres to the north-east).

Beside the Stirling and Perth City Strategic Metropolitan Centres, these centres comprise the main regional activity centres within relatively close proximity to the site. They provide a diversity of uses, providing for a range of economic and community services required to service the existing and future population.

### 4.7.2. DISTRICT CENTRES

Northlands and Main Street (Osborne Park) are the two closest district centres to the subject site.

These centres provide for a mix of smaller scale every day uses, including food and beverage outlets, retail shops, offices and other complementary uses including warehouse / showroom type uses. These centres support the larger scale secondary centre and provide further economic and employment opportunities for future residents.

### 4.7.3. NEIGHBOURHOOD / LOCAL CENTRE

There is an existing local centre situated in the south-west corner of the site, at the intersection of Grindleford Drive and Karrinyup Road. It is proposed to retain the local centre and expand its facilities and offerings as part of the Structure Plan. The existing centre includes a medical centre ('Stirling Lakes Medical Centre'), a child care centre ('Stirling Child Care Centre') and a tool hire shop ('The Hire Guys'). The local centre has recently been redeveloped, which now also comprises a Woolworth supermarket of approximately 3,600m<sup>2</sup> in size, approximately 220 car parking bays and other commercial retail, food and beverage outlets.

There is also an existing garden centre and cafe ('Waldecks') located on the opposite side of Karrinyup Road, outside the Structure Plan boundary.

A Retail Sustainability Assessment was prepared in support of the proposed expansion of the centre and delivery of a supermarket at the site. A copy of the Retail Sustainability Assessment is provided at **Appendix 10**. The assessment concludes there is a clear need and demand for a supermarket of this size in this locality, as well as identifying the economic and social benefits to the local community.

Subject to detailed design and sizing of the site, there may also be an opportunity to include additional uses within the local centre.

Refer **Appendix 10 - Retail Sustainability Assessment**.

### 4.7.4. COMMUNITY FACILITIES

The subject site is located in an existing and well-developed urban area which is serviced by a broad range of existing community facilities. In this regard, the population increase proposed as a result of the Structure Plan is not considered to result in a requirement to provide additional community services and facilities. By way of example, the following community facilities are located in close proximity to the site:

- ▲ Stirling Community Centre – WK Moir – Balcatta;
- ▲ The Stirling Community Centre;
- ▲ Colin Moore Community Resource Centre;
- ▲ Osborne Park Community Centre;
- ▲ Stirling Leisure Centres – Karrinyup;
- ▲ Stirling Community Centres – Karrinyup;
- ▲ Stirling Community Men's Shed;
- ▲ Tuart Hill Community Centre;
- ▲ Osborne Library – City of Stirling; and
- ▲ Karrinyup Library.

The site is also well serviced from an aged care perspective with the following facilities being located in close proximity to the site:

- ▲ Juniper Saint Andrew's;
- ▲ St Andrew's Care Facility;
- ▲ Bethanie Geneff;
- ▲ MYVISTA; and
- ▲ Mount La Verna Retirement Village.

In this regard, the Structure Plan area is considered to be well serviced in terms of existing community facilities and therefore, does not require the provision of additional facilities as a result of the proposed population increase.

An assessment against the key criteria of the Community Facilities Guidelines published by Parks and Leisure Australia has been included in Table 5 on Page 59 of this report.

Refer **Table 5 - Assessment of Public Open Space and Community Facilities.**

Table 5 - Assessment of Public Open Space and Community Facilities

USE	POPULATION CATCHMENT	STRUCTURE PLAN RESPONSE
(Organised Sport) – Sports Space	1 : 4,000 – 5,000	<p>The structure plan will provide for a population of approximately 1,150 people, representing 20% over the overall “demand” for an organised sports space. It is noted that Balcatta currently comprises a total population of 10,382 people, with the proposed structure plan providing for approximately a 10% increase in the overall total population.</p> <p>The structure plan is not considered to warrant the need for any additional organised sports spaces for reasons as follows:</p> <ul style="list-style-type: none"> <li>• It is understood that the City of Stirling is exploring a number of development options for Lot 141, including a concept for District Playing Fields which will provide a multi-functional area of open space capable of accommodating rectangular sports field (such as hockey, rugby and soccer) and also a full sized Australian Football League (‘AFL’) oval.</li> <li>• Further, there are existing rectangular playing fields located to the north of the structure plan area, within Grindleford Park, which abuts the northernmost edge of the structure plan area.</li> <li>• With regard to AFL and cricket facilities, Jones Paskin Reserve is located approximately 1 kilometre north of the structure plan area, which caters for these facilities, with Richard Guelfi Reserve being located approximately 2 kilometres from the subject site.</li> </ul> <p>On the basis of a total forecast population of approximately 11,500 people for the suburb of Balcatta (inclusive of the structure plan area), a total of two (2) organised sports spaces are required. As summarised above, there is in excess of two (2) existing organised sports spaces within the suburb of Balcatta and therefore, the existing facilities within the locality are sufficient for the forecast population growth.</p>
Child’s Play) – Play Space	<p>Neighbourhood: 1 : 2,000</p> <p>District: 1 : 8,000 – 10,000</p> <p>Regional: 1 : 50,000</p>	<p><b>Neighbourhood:</b></p> <p>Opportunities for children’s play spaces to be incorporated within the structure plan area will be reviewed at the detailed design stage, once further information regarding the treatment of the internal areas of public open space is known. Notwithstanding, it should also be noted that there are at least five (5) existing reserves within 200 to 500 metres of the structure plan area which provide for children’s play equipment, including:</p> <ul style="list-style-type: none"> <li>• Carpentenia Cranberry Reserve (200 metres);</li> <li>• Burwood Reserve (250 metres);</li> <li>• Roselea Reserve (300 metres);</li> <li>• Cherrytree Gardens (350 metres); and</li> <li>• Conway Reserve (500 metres).</li> </ul> <p><b>District:</b></p> <p>It is understood that the City of Stirling is exploring a number of potential development scenarios over Lot 141, one of which would include the redevelopment of the land for District Playing Fields, which would incorporate children’s play equipment of a “regional” standard.</p> <p>Taking the City’s development aspirations into consideration and further, given the proposed population increase arising as a result of the structure plan represents only 10% of the overall need for district level facilities, it is not considered that further district facilities need to be provided for as a result of the East Roselea Structure Plan.</p> <p><b>Regional:</b></p> <p>Given Balcatta comprises a population which is significantly less than 50,000 people and further, given the proposed structure plan population represents 2.3% of the overall requirement for a regional play space for children, the requirement for regional facilities is not triggered by this structure plan application.</p>

USE	COMMUNITY BUILDING	POPULATION CATCHMENT	STRUCTURE PLAN RESPONSE
Playgroup	Community Centre	1 : 4,000 – 6,000	<p>The “Balcatta Playgroup” located at Jones Paskin Reserve is located approximately 1.0 kilometre north of the structure plan area. The proposed population increase (as a result of the Structure Plan) represents between approximately 20 – 25% of the overall demand for a “playgroup” facility which therefore, is not considered to warrant the provision of any additional playgroup facilities.</p> <p>Further, in accordance with ABS Census data, of the 10,382 people residing in Balcatta, there are 2,684 families. The ratio of families to total people therefore equates to approximately 25% of the overall total population. Assuming the ratio of families to total population remains consistent and factoring in the proposed increase in population arising as a result of the structure plan, the total number of families would equate to 2,883 families, being an increase of approximately 200 families.</p> <p>Based on the above assumptions and following a review of the 2016 Census data, it is considered that existing community facilities with regard to playgroups within the Balcatta locality is sufficient to accommodate the current for future forecast population and therefore, no additional community facilities in this regard are required.</p>
Seniors Space	Community Centre	1 : 20,000 – 30,000 for a District level facility.	<p>The proposed population increase of 1,150 as a result of the Structure Plan represents approximately 4 – 6% of the overall population catchment for a “Seniors Space” community centre building. In this regard, the resultant population increase as a result of this structure plan does not trigger the need for a “Seniors Space”.</p>
Sports Clubs	Sports Pavilion	1 : District Sporting Space	<p>There are a number of existing district sporting spaces within Balcatta (which include sports pavilions), including the Richard Guelfi Reserve which is home to the Balcatta Baseball Club as is also capable of accommodating most senior sporting activities.</p> <p>Further, it is understood that the City of Stirling is exploring the potential to develop Lot 141 for District Playing Fields which will provide a multi-functional area of open space capable of accommodating rectangular sports field (such as hockey, rugby and soccer) and also a full sized Australian Football League oval and include clubrooms and spectator facilities.</p> <p>In this regard, as there are already a number of district sporting spaces within Balcatta (which include sports pavilions) and further, given the City's development aspirations for Lot 141, the provision of further sports clubs and sports pavilions as a result of this structure plan application is not required.</p>

USE	COMMUNITY BUILDING	POPULATION CATCHMENT	STRUCTURE PLAN RESPONSE
*Outside School Hours Care	Community Centre	1 : 4,000 – 6,000	<p>There are three (3) after school care facilities already existing within Balcatta, including:</p> <ul style="list-style-type: none"> <li>• A Club for Kids (386 Albert Street);</li> <li>• Balcatta Kids Clubs (5 Rickman Street); and</li> <li>• Maragon Early Learning Centre (219 Cedric Street).</li> </ul> <p>The existing after school care / child care facilities within Balcatta equate to a ratio of 1 : 3,844 (inclusive of the forecast structure plan population) which is in excess of the minimum requirements for these facilities. In this regard, there is no demand / need for the structure plan to provide any additional facilities to cater for the population.</p>
*Maternal & Child Health Service	Community Centre	1 : 30,000 – 50,000	<p>The proposed population increase of 1,150 as a result of the Structure Plan represents approximately 2.5 – 4% of the overall population catchment for a “Maternal and Child Health Service” community centre building and is therefore, on a standalone basis not considered to trigger the requirement for the provision of such a service.</p> <p>Further, when viewed in context of the total population of Balcatta, it is noted that the current and forecast population of the suburb only generate approximate one third of the requirement for a maternal and child health service.</p> <p>On the basis of the above, it is therefore considered appropriate to consider that such a service would be provided across a number of adjoining suburbs, and in this regard, it is noted that the Tuart Hill Child Care Centre is located approximately 950m southeast of the structure plan area. The Australian Bureau of Statistics QuickStats identifies a total population of 11,895 people for the Tuart Hill – Joondana locality. The combined population of Tuart Hill – Joondana and Balcatta (inclusive of the forecast population for the structure plan area) equates to approximately 23,650 people, meaning that the ratio of 1 Maternal and Child Health Service per 30,000 – 50,000 people is achieved across the suburbs of Balcatta and Tuart Hill - Joondana.</p> <p>In this regard, the structure plan does not require the provision of additional community services to cater for material and child health services.</p>

*Note: The above-mentioned ratio are as per Parks & Leisure Australia Community Facilities Guidelines.*

## 4.8. INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

The following provides a summary of the infrastructure and servicing for the Structure Plan area. Further information is contained within the Engineering Services Report provided at **Appendix 11**.

### 4.8.1. WATER SUPPLY

There are existing 150mm diameter water reticulation mains along Grindleford Drive, which are considered adequate to service the proposed development of the subject site.

### 4.8.2. SEWERAGE

There is an existing waste water pump station situated within the Structure Plan on Lot 64 (No. 12) Radalj Place. This site is currently operated by the Water Corporation and is reserved for such purposes under LPS 3. The Water Corporation have confirmed the pump station services the Structure Plan area.

There are existing 225mm diameter gravity sewers running along the east of the site, which are of sufficient depth to accommodate the proposed development and the anticipated finished levels.

### 4.8.3. NATURAL GAS

There are existing gas mains situated on the western side of Grindleford Drive, currently servicing the adjacent subdivision. The existing mains are 63mm diameter HP and may require upgrading to service the future development of the Structure Plan. Atco Gas has advised the main pressure line has capacity to service 700 standard domestic customers at the subject site via a mains extension of DN150PVC in Karrinyup Road.

### 4.8.4. ELECTRICITY

The subject site is currently serviced by two separate zone substations, being Balcatta to the north-west and Yokine to the south-east, both of which are located approximately 3 - 4 kilometres from the site. Both substations have greater than 10MVA of spare capacity and therefore sufficient capacity to service the proposed development.

There are existing HV and LV network cables, both underground and aerial, surrounding the subject site from which multiple connection points may be obtained.

### 4.8.5. TELECOMMUNICATIONS

There are existing telecommunications services within the Structure Plan area, serviced from the Telstra Tuart Hill Exchange. There is an existing P100 conduit running from Tuart Hill to the eastern boundary of the site. This conduit has some capacity and may be able to support hauling of additional optic cable. Limited copper cable exists to the east and west of the site.

The Structure Plan is situated within the National Broadband Company's ('NBN Co') fixed line footprint, in which NBN Co deliver FTTP technology. NBN Co plan to convert connections within Balcatta (comprising the subject site) to broadband in the first half of 2018 and will likely provide FTTN to existing dwellings. Beyond March 2018, NBN Co is required to accept the development of the subject site should application be made by the developer to that effect.

#### 4.8.6. EARTHWORKS

Earthworks for this site would be completed in accordance with standards AS3798 – 2007- “Earthworks for Residential and Commercial Developments” and specific Geotechnical Investigations and recommendations provided by Registered Geotechnical Engineers.

There have been a number of geotechnical investigations completed on various portions of the site to date, where it is clearly noted that there are challenging conditions pertaining to silts and peat areas across most of the site, along with several areas of uncontrolled fill, whose extent is not clearly defined or quantified. Advice from Geotechnical Engineers is that the site is suitable for residential development, provided that any site preparation and earthworks is completed to alleviate any risk posed by natural conditions.

The Geotechnical recommendation for remedial earthworks for the site as prepared by Structerre Consulting Engineers – Geotechnical, is provided within the Engineering services report and describes general earthworks practices that are likely to be employed across the development.

Given the variable nature of the site, and different stockpiles present, it is expected that earthworks will be highly dynamic. For this reason, it is proposed that any construction works will be accompanied by thorough and ongoing geotechnical assessment and sign off, where each successive phase of earthworks shall not proceed until preceding works are deemed to be geotechnical compliant. In this manner, development lots are proposed to achieve a classification suitable for residential development, and as verified by the registered Geotechnical Engineer.

Due to existing conditions, it is anticipated there will be certain quantities of uncontrolled fill and peat to be removed from site, where these quantities would be subject to further detailed design and assessment, and confirmation on site during construction. At this stage, the earthworks aims to minimise any disturbance or removal of in-situ underlying peat material by employing a limestone raft and geogrid methodology overlain by considerable free draining sand fill as described further in Structerre’s remedial earthworks summary. Indicative finished lot development levels are also provided within the Engineering Services report, which will guide overall earthworks and fill quantities. Additional surcharge material is expected to be allowed to achieve any consolidation of the peat material under the limestone raft and free draining fill prior to building construction. Settlement monitoring pegs are expected to be implemented to assist with assessing this process and timeframes for removal of any surcharge material. As indicated, earthworks will be subject to confirmation on site and detailed design, where some areas will not contain underlying peat and therefore will not be subject to the same remedial methodology, and a more traditional approach can be adopted.

Earthworks will also be completed to assist with stormwater management for the site with levels generally grading from east to west. Subsoil drainage shall be employed to assist in managing groundwater.

## 4.8.7. STAGING

A staging plan for drainage infrastructure cannot be reasonably completed at this stage of the structure planning process, as infrastructure construction will be largely guided by proposed development staging and areas, and particularly follow earthworks progress. The proposed drainage strategy would be in accordance with the Local Water Management Strategy as prepared by Emerge Associates and to the requirements of the City of Stirling and the Water Corporation.

The general drainage concept is shown in Engineering Plans, Proposed Swale Details Sheets 1 and 2. As shown in the Local Water Management Strategy, it would be proposed to

- ▲ Retain the first 15mm of rainfall on site as close to source as practicably possible for all lots.
- ▲ Convey the 20% Annual Exceedance Probability (AEP) storm within the piped road network
- ▲ Contain the 1% AEP within the road reserve.
- ▲ Ensure properties are 500mm above the 1% AEP flood level within adjacent stormwater detention systems
- ▲ Detention of the 20% to 1% AEP events so that the post development peak discharge is comparable to the predevelopment peak discharge.

As shown in the Local Water Management Strategy drainage concept plans, the site generally consists of east-west drainage catchments. These generally also correlate with the building development cells for the site. From this, it would be assumed that construction staging will likely occur in a similar manner, where east-west cells may occur independently. Should this be the case, it would be expected that associated infrastructure for each stage would be constructed, including road pavements and piped drainage. The road drainage system would be designed to accommodate the 20% AEP short duration storm, and convey this, as shown in concept plans, to vegetate swales to the west of the site along Grindelford Drive, which will aim to detain stormwater to control peak discharge from the site to predevelopment conditions for the 20% to 1% AEP events.

Should greater areas of development occur, then it would be intended to construct more of this system and additional vegetated detention swales to allow for correct detention for the areas being developed to limit discharge to predevelopment conditions.

Due to the fragmented land ownership and the uncertainty regarding development staging, temporary drainage storage/infiltration basins may be necessary at certain locations to allow staged development to proceed. Where temporary basins are required they shall be constructed and fenced to the satisfaction of the City of Stirling and shall be protected by easements granted in favour of the City of Stirling. Costs associated with the basin construction, legal issues including creation of easements, and ultimate removal of the basin and associated infrastructure shall be the responsibility of the developer upon whose land the temporary basin is located.

## 4.9. DEVELOPER CONTRIBUTION ARRANGEMENTS

The Structure Plan is not subject to a development contribution scheme under LPS 3. Given the nature of the proposed development, no shared infrastructure and facilities of regional or district significance are proposed, and therefore it is not anticipated a development contribution scheme will be required to be prepared for the Structure Plan. The Structure Plan design has been carefully considered in context of the fragmented landownership to ensure each respective landowner can develop their land independent of one another, with none of the landowners being “land locked”.

The provision of any local infrastructure and public open space cash-in-lieu arrangements can be appropriately dealt with through standard conditions of subdivision approval.

Furthermore, there are no road reserves proposed over and above that of a standard subdivision road. The proponent is prepared to fund the construction of the drainage swale, which occurs on land either owned by the proponent or the City of Stirling (which achieves 75% of the total storage basin required). The land and infrastructure required for the drainage swale will be delivered as part of the proponent’s application to subdivide their land.

With regard to the small portion of the drainage swale which is located in privately owned land, it is noted that the drainage swale has been designed in a manner which does not rely on this portion of land for drainage purposes. By way of example, the private landowner cannot develop his landholding first, as there is not enough storage within the portion of drainage swale to accommodate residential development in isolation of the remaining swale basin. As the proponent has committed to delivering the remainder of the basin, it is considered that sufficient measures have been implemented through the LWMS to support the Structure Plan, with further details to follow at the detailed design stage.