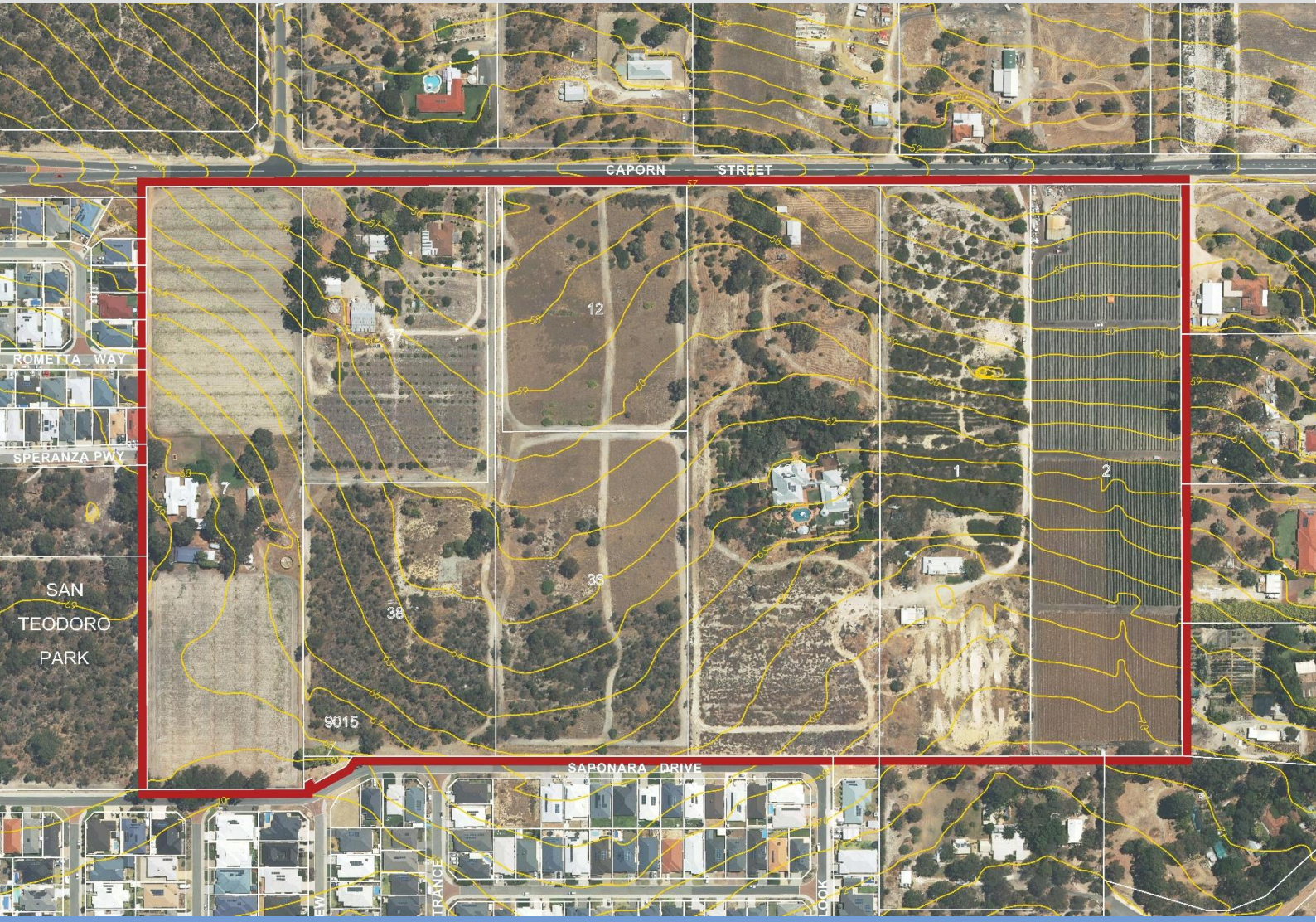
Caporn Street, Wanneroo Local Structure Plan
No. 105



Prepared for Acumen Development Solutions on behalf of Vincent Road Developments Pty Ltd
Prepared by Taylor Burrell Barnett
August 2020

Taylor Burrell Barnett

Document History & Status

Local Structure Plan

Caporn Street, Wanneroo

Taylor Burrell Barnett
Town Planning and Design

Level 7, 160 St Georges Tce
Perth WA 6000
Phone: 9226 4276
admin@tbbplanning.com.au

Revision	Reviewer	Date Issued
19/023 (Rev0)	BDM	25 August 2020

Endorsement

This Structure Plan is prepared under the provision of the **City of Wanneroo District Planning Scheme No. 2**.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE

WESTERN AUSTRALIAN PLANNING COMMISSION ON:

_____ Date

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

_____ Date

_____ Date of Expiry

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date Approved by WAPC

Executive Summary

This Structure Plan has been prepared for Lots 1-38 Caporn Street and Lot 9015 Saponara Drive, Wanneroo (subject land), situated in the East Wanneroo emerging urban area in the City of Wanneroo. Pursuant to recent amendments to the zoning of the land under the Metropolitan Region Scheme and City of Wanneroo District Planning Scheme No. 2, the land is identified as being appropriate for urban development, ahead of the broader East Wanneroo urban area.

The Structure Plan is intended to guide the subdivision of the land for residential purposes, which will ultimately tie into the urban development of the surrounding area.

The following table provides a summary of the key statistics of the Structure Plan.

Item	Detail	Structure Plan Ref. (Section No.)
Total area covered by the Structure Plan	26.5993ha	1.2.3
Area of each land use proposed: Residential	Hectares **Approx. Lot Yield** 16.0502ha 500	3.3
Total Estimated Lot Yield	Approx. 500	3.3
Estimated No. of Dwellings	Approx. 500	3.3
Estimated Residential Site Density • Urban Site Density (dwellings per gross hectare of urban zoned land) • Residential Site Density (dwellings per residential site hectare – excludes non-residential uses and roads)	18.8 dwellings per ha 31 dwellings per ha	3.3
Estimated Population	1,400 people (based on 2016 ABS avg 2.8 people per household in Wanneroo)	3.3
Estimated area and percentage of Public Open Space given over to: • Pocket Parks • Local Parks • Neighbourhood/Nature Parks • Total	 1.4767 ha 4 Parks 0.6336 ha 1 Park 1.2174 ha 1 Park **3.3278ha** **6 Parks**	3.4

Table of Contents

Endorsement III
Table of Amendments IV
Executive Summary V
1.0 Part One: Implementation 3
1.1 Structure Plan Area 3
1.2 Operation 3
1.3 Staging 3
1.4 Subdivision and Development Requirements 3
1.5 Local Development Plans 3
1.6 Other Requirements 4
1.7 Additional information 4
2.0 Part Two: Explanatory Report 6
1.0 Planning Background 7
1.1 Introduction and Purpose 7
1.2 Land Description 7
1.3 Strategic Planning Framework 9
1.4 Statutory Planning Framework 10
1.5 Planning Policies 14
1.6 Other Approvals and Decisions 15
1.7 Pre-Lodgement Consultation 16
2.0 Site Conditions and Constraints 19
2.1 Environmental Considerations 19
2.2 Landform and Soils 19
2.3 Groundwater and Surface Water 19
2.4 Bushfire Hazard 20
2.5 Heritage 20
3.0 Structure Plan 21
3.1 Design Principles 21
3.2 Development Concept Plan 23
3.3 Land Use 25
3.4 Open Space 25
3.5 Water Management 28
3.6 Movement Network 28
3.7 Infrastructure Coordination, Servicing & Staging 30
4.0 Technical Appendices 32

Technical Appendices
APPENDIX A Bushfire Management Plan
APPENDIX B Environmental Assessment Report
APPENDIX C Local Water Management Strategy
APPENDIX D Transport Impact Assessment
APPENDIX E Engineering Infrastructure Report

Part

1.0

Implementation

1.0 Part One: Implementation

1.1 Structure Plan Area

This Structure Plan shall apply to Lots 1, 2, 7, 12, 13, 36, 37 & 38 Caporn Street and Lot 9015 Saponara Drive, Wanneroo, being the land contained within the inner edge of the broken black line shown on the Structure Plan Map (**Plan 1**).

1.2 Operation

This Structure Plan comes into operation when it is endorsed by the Western Australian Planning Commission (WAPC).

1.3 Staging

Initial development is likely to be within the northern portion of the Structure Plan area where access is available from Caporn Street. It is anticipated that Lots 1 and 13 will proceed as the first stage of subdivision, creating the eastern entry road from Caporn Street which will facilitate access to and subdivision of the surrounding landholdings.

1.4 Subdivision and Development Requirements

1.4.1 Land Use Zones and Reserves

Plan 1 designates the zones and reserves applicable to the Structure Plan area.

Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zone or reserve under the City of Wanneroo District Planning Scheme No. 2 (DPS2).

1.4.2 Development Requirements

The City of Wanneroo's Local Planning Policy 4.19 (LPP4.19) – Medium-Density Housing Standards (R-MD Codes) sets out acceptable variations to the deemed-to-comply provisions of the R-Codes for lots coded R25-R60. Except in a situation where an approved LDP imposing R-Code variations for lots applies, the standards set out in the R-MD Codes LPP4.19 apply to this Structure Plan.

1.4.3 Bushfire Hazard

The Council shall recommend to the WAPC that a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate of Title for lots with a bushfire attack level (BAL) rating of 12.5 or higher, in accordance with an approved Bushfire Management Plan.

1.4.4 Interface to Adjoining Land

The Structure Plan provides two north-south access streets to enable access to the subject land from Caporn Street.

Along the western boundary, Rometta Way and Speranza Parkway are intended to be extended into the Structure Plan area, with Public Open Space (POS 1) forming a connection to the adjoining San Teodoro Park. To the south, local road connections are intended to intersect with the existing and future extension of Saponara Drive.

The eastern boundary of the Structure Plan is designed to integrate with future residential development on the adjoining properties.

1.4.5 Density Targets

Strategy/Policy Document	Density Target	Provided (based on 500 lots)
Directions 2031 and Beyond	15 dwellings per gross hectare	18.8 dwellings per gross hectare
Draft East Wanneroo District Structure Plan		
Perth and Peel @ 3.5 million	26 dwellings per residential site hectare	31 dwellings per residential site hectare

1.5 Local Development Plans

Local Development Plans (LDPs) are to be prepared and implemented by the City of Wanneroo pursuant to Schedule 2 (deemed provisions) Part 6, clause 47 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, prior to development of:

- Irregularly configured lots;
- Lots with direct boundary frontage to an area of POS; and
- Lots with rear-loaded vehicular access.

1.6 Other Requirements

1.6.1 Infrastructure Upgrades

The Structure Plan area is capable of being serviced through the extension of services in the vicinity of the land.

A new sewer pumping station is required to service the majority of future lots, to be located in the Jandabup Sewer District to the north-east of the Structure Plan area, and servicing approximately 2,500 lots.

Unless otherwise agreed by Water Corporation, the initial developer within the Structure Plan area is likely to pre-fund the new sewer pumping station, on the basis that Water Corporation agree to refund the works on completion.

1.6.2 Public Open Space Provision

Public open space (POS) is to be provided generally in accordance with **Plan 1**, with a minimum of 10% of the net subdivisible area to be provided. POS shall be vested in the Crown and managed by the local government. A private agreement between landowners will facilitate the equitable sharing of POS across the Structure Plan area.

1.6.3 Road Widening

The Structure Plan (**Plan 1**) depicts road widening for Caporn Street (7.1m) to provide for its future Neighbourhood Connector designation as identified under the draft East Wanneroo District Structure Plan. At the subdivision stage, landowners will be required to contribute to the required upgrades to Caporn Street, and adjacent landowners will set aside the land required for road widening. This will be imposed as a condition of subdivision approval. Where landowners are impacted by road widening, this will be taken into consideration when determining contribution requirements.

Other roads within the Structure Plan area that are shared between landholdings may be subject to future contributions under section 159 of the *Planning and Development Act 2005*, depending on the staging of subdivision.

1.7 Additional information

The following additional information is required to be submitted at the subdivision or development stage.

Additional information	Approval stage	Consultation required
Urban Water Management Plan	Subdivision (condition)	City of Wanneroo
Preliminary Site Investigation	Subdivision	Department of Water and Environmental Regulation
Bushfire Management Plan	Subdivision	City of Wanneroo

LEGEND

LOCAL SCHEME RESERVES

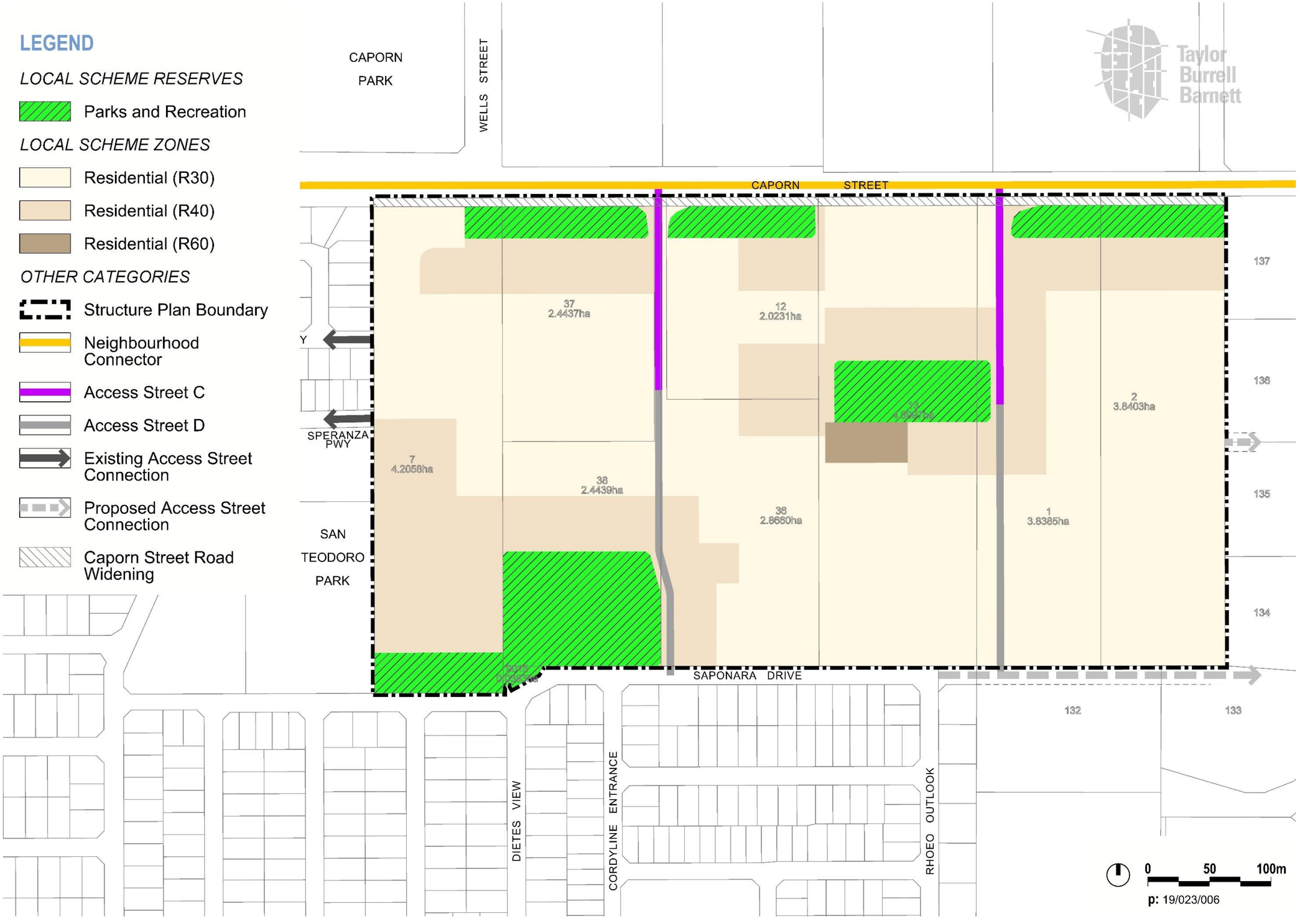
- Parks and Recreation

LOCAL SCHEME ZONES

- Residential (R30)
- Residential (R40)
- Residential (R60)

OTHER CATEGORIES

- Structure Plan Boundary
- Neighbourhood Connector
- Access Street C
- Access Street D
- Existing Access Street Connection
- Proposed Access Street Connection
- Caporn Street Road Widening



Plan 1 Structure Plan

Part

2.0

Explanatory Report

1.0 Part Two: Planning Background

1.1 Introduction and Purpose

This Structure Plan has been prepared to provide a basis for zoning (including residential density) and subdivision of land.

1.2 Land Description

1.2.1 Location

The Structure Plan area is located within the metropolitan north-west corridor, in the City of Wanneroo local government area. The land is approximately 500m east of the Ashby Town Centre, 1.5km north of the Wanneroo Town Centre and 25km north of the Perth CBD.

The Structure Plan area comprises eight contiguous lots along Caporn Street and a small parcel on Saponara Drive, bordered by existing residential estates to the south and west, and undeveloped rural-residential land to the north and east.

Figure 1 outlines the subject land and **Figure 2** depicts the regional context of the land.

1.2.2 Area and Land Use

The Structure Plan comprises 26.561ha, and is currently utilised for rural-residential and market gardening purposes. Existing dwellings are located within the Structure Plan area, with associated outbuildings, fences and other structures. The majority of existing improvements will ultimately be demolished and removed upon future development of the land.

The land is surrounded by a mix of uses, with existing low to medium density residential estates abutting the site to the west and south, and rural-residential properties located to the north, east and south-east. A range of local and regional park reserves are also located in close proximity to the subject land.

Figure 1 Location Plan

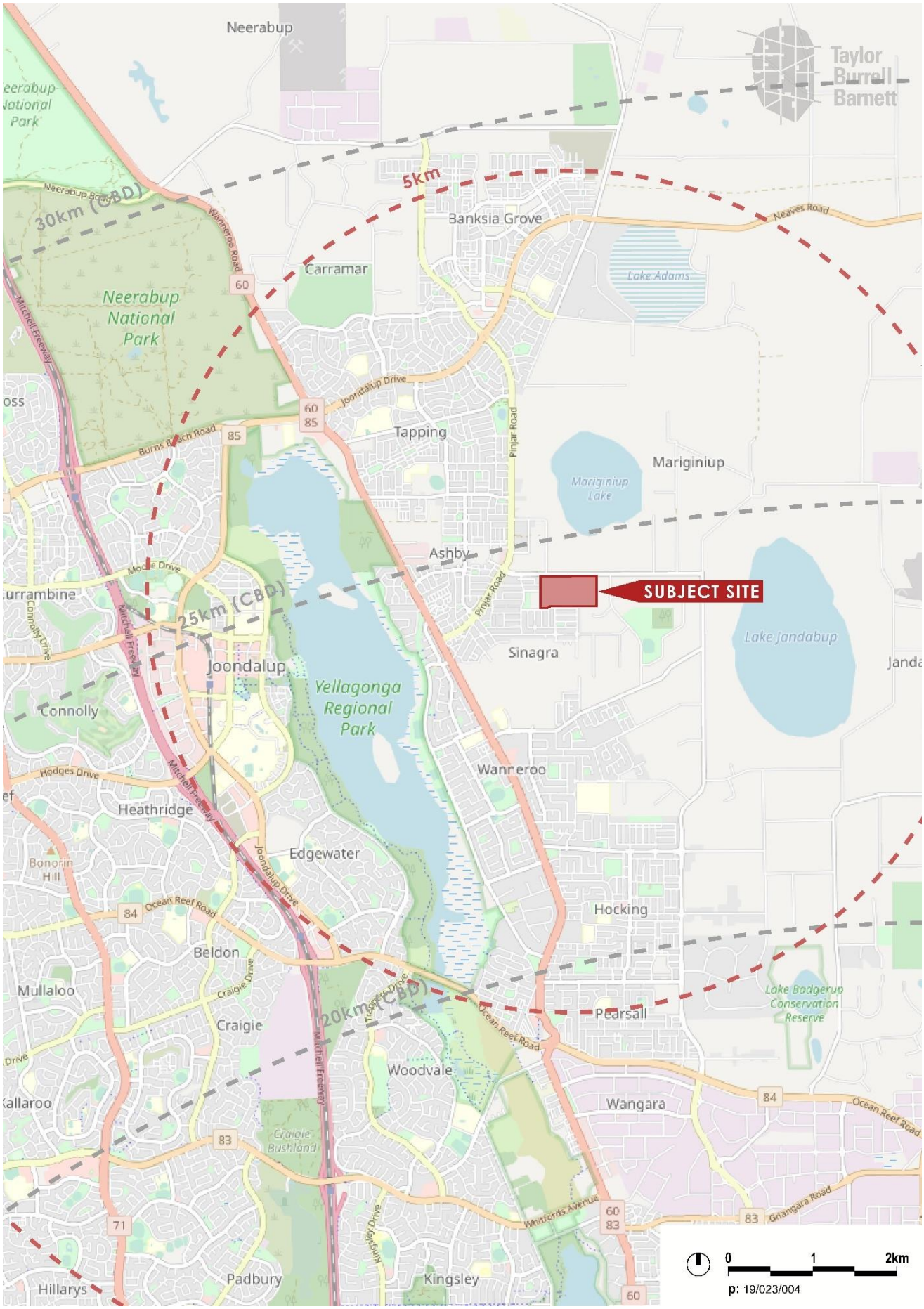


Figure 2 Regional Context

1.2.3 Legal Description and Ownership

The land subject to this Structure Plan comprises eight separate lots with an overall area of 26.5993ha. The land and ownership details for the lots comprising the Structure Plan area are described in **Table 1**.

This Structure Plan has been prepared for Acumen Development Solutions on behalf of the owners of Lots 1 and 13 Caporn Street. All other landowners have also been consulted and engaged with through the preparation of this Structure Plan.

Table 1 Legal Description and Ownership

Address	Lot	Plan/ Diagram	Vol/Folio	Area (ha)	Landowner
48 Caporn Street	7	21467	1296/240	4.2058	Cosentino, Anthony Michael
60 Caporn Street	37	74522	1824/99	2.4437	Crisafulli, Marilyn Ding, Jillian Maree Lunder, Nancy Lavinia
68 Caporn Street	38	74522	1824/100	2.4439	Perron Developments Pty Ltd
70 Caporn Street	36	51488	1452/892	2.8660	Perron Developments Pty Ltd
76 Caporn Street	12	27581	1458/975	2.0231	Perron Developments Pty Ltd
88 Caporn Street	13	27581	1262/941	4.8997	James, Ian Russell
100 Caporn Street	1	41651	522/3A	3.8385	Quito Pty Ltd
110 Caporn Street	2	41651	1748/934	3.8403	Del Borrello, Antonio Del Borrello, Michael
33 Saponara Drive	9015	416137	2985/405	0.0383	James, Garry Paul James, Ian Russell

1.3 Strategic Planning Framework

1.3.1 Directions 2031 and Beyond

Directions 2031 and Beyond (Directions 2031) is Western Australia's high-level spatial framework and strategic plan. The document provides a vision for future growth of the metropolitan Perth and Peel region, with the aim of achieving a pattern of growth which promotes a better balance between greenfield and infill development. A medium density 'Connected City' model is put forward as the preferred means to achieve a liveable, prosperous, accessible, sustainable and responsible city.

The subject land is located within the north-west sub-region as identified by Directions 2031, which is expected to supply 167,400 dwellings under the adopted 'Connected City' scenario, with the City of Wanneroo contributing 141,700 dwellings through the development of greenfield sites. Development of the subject land for residential purposes will contribute towards meeting the City's dwelling target.

Directions 2031 promotes a diversity of dwelling types and increases in choice for residential areas, which the Structure Plan responds to by enabling subdivision and development at a range of densities, suitable to accommodate a mix of dwelling typologies. The anticipated yield resulting from the mix of densities identified under the Structure Plan will achieve and exceed the Directions 2031 target of 15 dwellings per gross urban zoned hectare of land in new development areas.

1.3.2 Perth and Peel @ 3.5 million

To accommodate the expected population of 3.5 million within the Perth and Peel regions by 2050, the *Perth and Peel @ 3.5million* land use planning and infrastructure frameworks have been released by the State Government. This strategic suite of documents is comprised of four detailed land use planning and infrastructure frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions.

Relevant to the proposed Structure Plan is the North-West sub-regional planning framework (as detailed further below).

The frameworks build upon the principles of *Directions 2031 and Beyond: Metropolitan Planning Beyond the Horizon* and are key instruments for achieving a more consolidated urban form that will reduce dependence upon new urban greenfields developments to accommodate the anticipated population growth by increasing residential density and urban infill targets.

To achieve a more consolidated city, the documents set an average residential density target of 15 dwellings per gross urban zoned hectare and an urban infill target of 47 percent within the Perth and Peel regions. Development targets are set for each sub-region, with a total infill target (at 2050) of 48,590 dwellings set for the North-West sub-region.

1.3.3 North-West Sub-Regional Planning Framework

The North-West sub-region comprises the cities of Joondalup and Wanneroo. The sub-regional planning framework sets out proposals to achieve the range of objectives set out in the overarching *Perth and Peel @ 3.5 million* document, establishing a long-term, integrated planning framework for land use and infrastructure to guide future growth across the sub-region.

To accommodate the projected population growth and to protect lifestyle values into the future, new approaches to planning and development will be required, focussed on creating a connected city, which is liveable, prosperous and collaborative, linking metropolitan hubs with priority transport proposals. The frameworks provide guidance for the preparation of amendments to local planning schemes, and the staging and sequencing of urban development to inform public investment in regional community, social and service infrastructure. For the City of Wanneroo specifically, an urban infill dwelling target of 27,920 is set, with an estimated population of 61,430.

The framework identifies the subject land as 'Urban Deferred Undeveloped', differing from the broader East Wanneroo cell which is identified as 'Urban Expansion', requiring further detailed planning to be undertaken before future urban development can occur. Staging for the urban development of the broader East Wanneroo cell (inclusive of the subject land) is expected to occur in the medium-term between 2022-2031.

The Structure Plan for the subject land will allow for development to occur in a sequential manner as a logical extension to the existing development front, ensuring an adequate supply of land is continuously available. This will allow for the commencement of development to occur in the timeframe anticipated by the sub-regional framework. The proposed Structure Plan is therefore entirely consistent with the North-West sub-regional planning framework.

1.4 Statutory Planning Framework

1.4.1 Zoning and Reservations

1.4.1.1 Metropolitan Region Scheme

The Structure Plan area is zoned Urban under the Metropolitan Region Scheme (MRS).

The land was subject to MRS Amendment No. 1338/27 (gazetted 20 March 2018) which transferred the land from the Urban Deferred zone to the Urban zone under Clause 27 of the MRS. This provided for the land to form an extension to the Urban zoned land immediately abutting the site to the west and south-west. The land to the north, east and south-east within the broader East Wanneroo cell remains within the Urban Deferred zone.

The Structure Plan area is surrounded by pockets of land reserved Parks and Recreation and identified as Bush Forever areas under the MRS, including the more significant areas containing Mariginiup Lake and Jandabup Lake.

Refer **Figure 3** for an extract of the Metropolitan Region Scheme map.

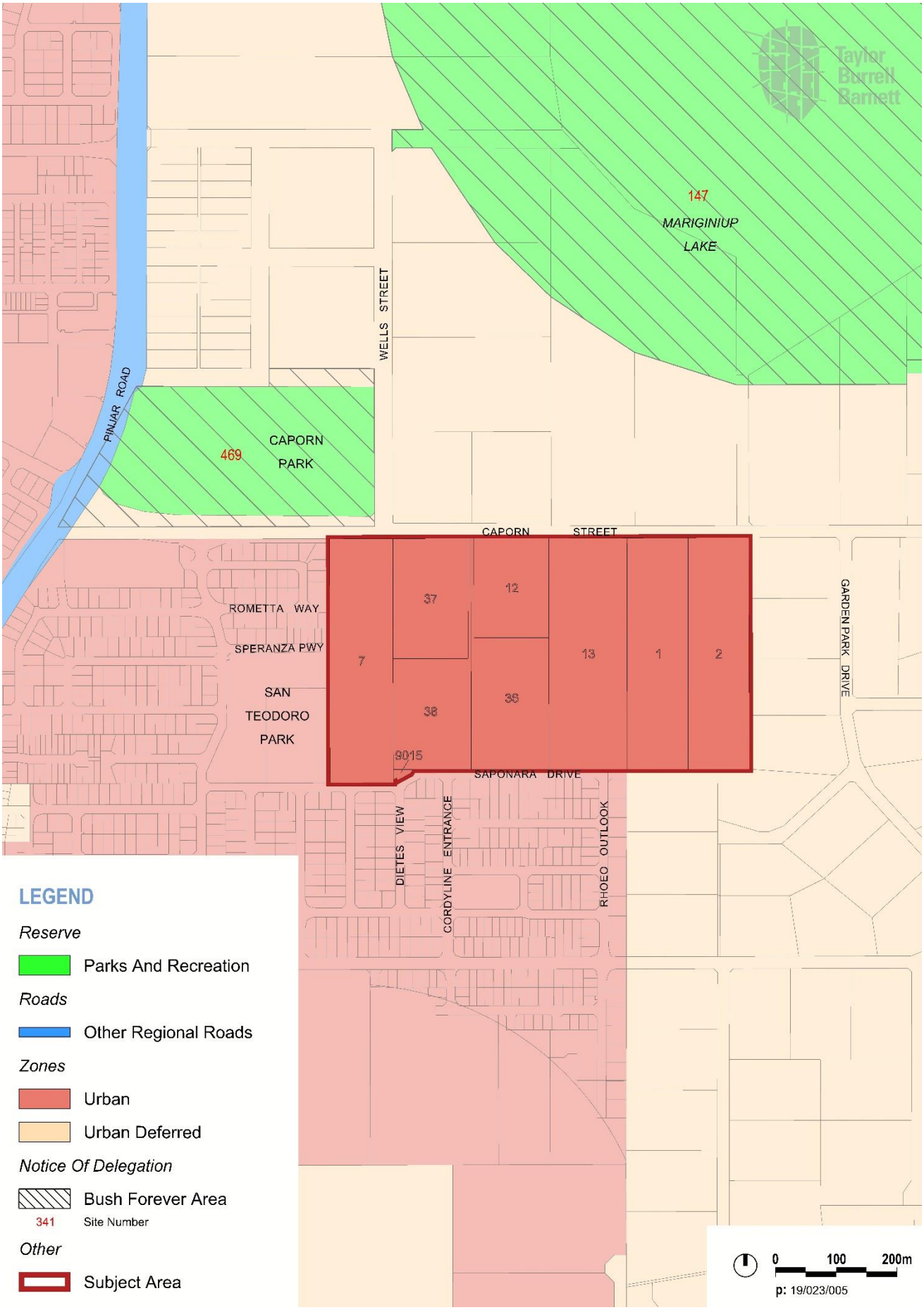


Figure 3 MRS Zoning

1.4.1.2 City of Wanneroo District Planning Scheme No. 2

The subject land is currently zoned Rural Resource under the City's DPS2. The Structure Plan area is subject to Scheme Amendment No. 179 to DPS2, which seeks to rezone the land to Urban Development, consistent with its Urban zoning under the MRS. Amendment No. 179 is currently being assessed by the WAPC, after being considered by Council and recommended for support.

Refer **Figure 4** depicting the existing zoning of the land, and proposed zoning under Amendment No. 179. Pursuant to clause 3.14.3 of DPS2, a Structure Plan is required to be adopted prior to the subdivision and development of land within the Urban Development zone.

This Structure Plan provides further detail regarding the zoning, residential densities and development control provisions applicable to the subject land. It is anticipated that the Structure Plan will be processed and assessed concurrently with the corresponding Scheme Amendment to provide the relevant agencies with guidance on the ultimate development outcome intended to occur following the proposed rezoning.

1.4.2 Draft East Wanneroo District Structure Plan

The Draft East Wanneroo District Structure Plan (DSP) was released by the WAPC for comment in September 2019. The DSP will give effect to the strategic land use direction established in the North-west Sub-regional Planning Framework.

The draft DSP identifies the subject land as Suburban Neighbourhood, with Caporn Street as a Neighbourhood Connector. Suburban neighbourhoods are to achieve an average density of 15 dwellings per hectare, with single houses being the predominant built form. The land forms part of Precinct 6 – Edgar Griffiths Park, with a dwelling target of 3,500 and described as "*a suburban neighbourhood, the focal point of which is the character area surrounding Edgar Griffiths Park*". The western edge of the precinct (including the subject land), is to respond to the planning outcomes identified for the Sinagra and Wanneroo Town Centre Structure Plans.

It is identified that a number of changes to the existing planning framework need to be put in place before land within the DSP area may be subdivided and developed, with the status of planning for the subject land summarised in **Table 2**.

Table 2 East Wanneroo Planning Process

Process	Status
District Level Processes	
District Structure Plan	Complete
MRS Amendments	Complete
District Development Contributions Scheme	To be prepared
Precinct Level Processes	
Lifting of Urban Deferment	Complete
Local Structure Plan	In progress
Local Scheme Amendment (zoning)	In progress
Local Development Contributions Scheme	To be addressed through landowner agreements, where required
Subdivision and Development	To be progressed following Structure Plan approval

The draft DSP requires all district level process be completed prior to the formal commencement of any precinct level process, and encourages processes to be undertaken in parallel or concurrently where possible, in line with the principles of orderly and proper planning.

This Structure Plan seeks to progress the planning for the subject land in line with the draft DSP.

It is noted that the DPLH is currently progressing a district-level DCP, which is unlikely to be in place prior to the commencement of subdivision within the Structure Plan area, but would ultimately apply to any land to be subdivided after finalisation of the DCP.

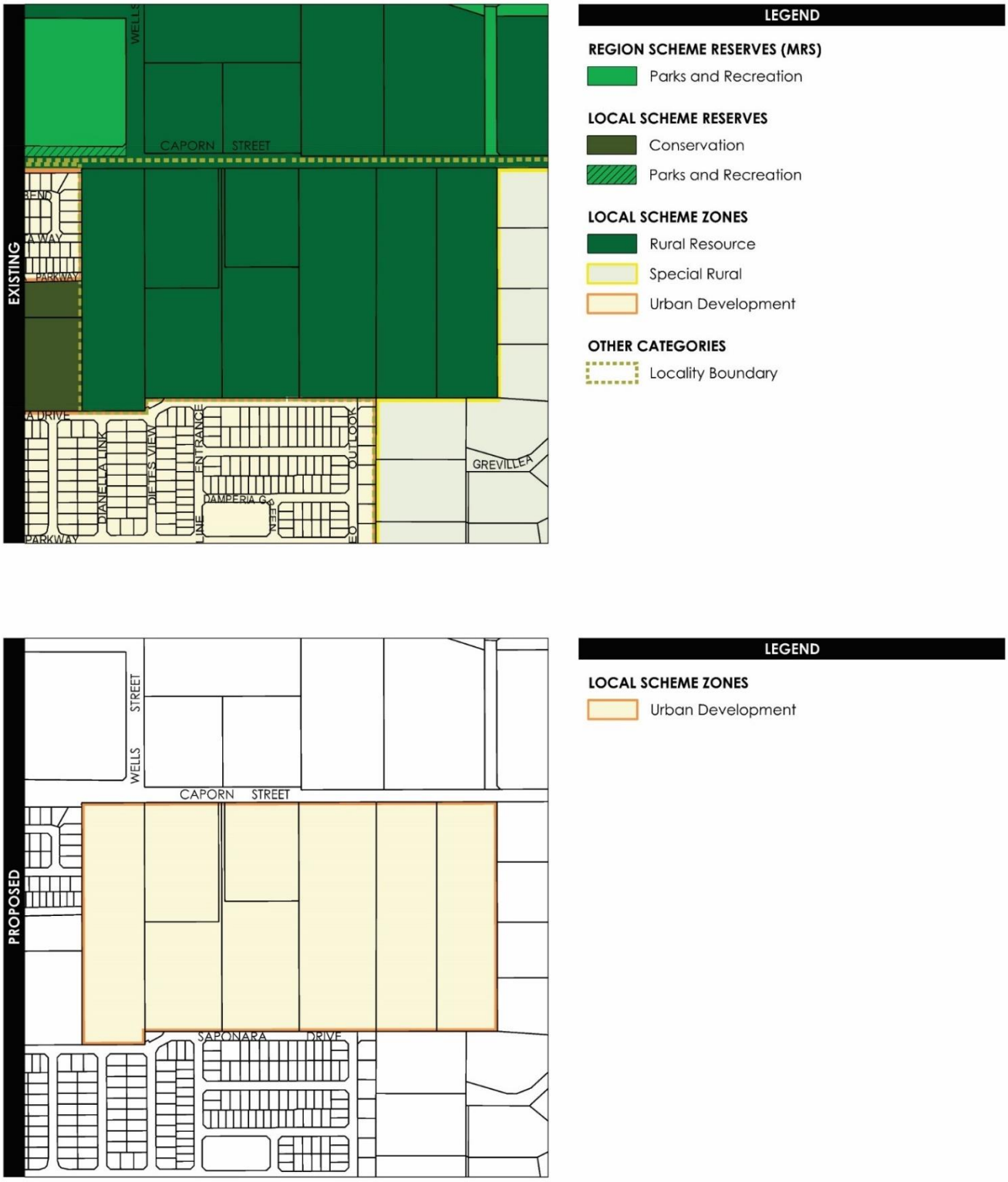


Figure 4 LPS Rezoning Map (Amendment 179)

1.5 Planning Policies

1.5.1 State Planning Policies

1.5.1.1 State Planning Policy 3 Urban Growth and Settlement

SPP3 applies to all development throughout Western Australia, and acknowledges that the orderly planning of urban growth and settlement should be facilitated by structure plans, which should take into account the strategic and physical context of the locality, provide for the development of safe, convenient and attractive neighbourhoods which meet the diverse needs of the community, and facilitate logical and timely provision of infrastructure and services. This Structure Plan has been prepared in accordance with SPP3, addressing the policy's stated objectives to ensure the future subdivision and development of the subject land occurs in a logical and coordinated manner.

1.5.1.2 State Planning Policy 3.7 Planning in Bushfire Prone Areas

The intent of SPP3.7 is to implement effective, risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. The accompanying Guidelines for Planning in Bushfire Prone Areas provide advice on how bushfire risk is to be addressed when planning, designing or assessing a planning proposal within a designated bushfire prone area.

The entirety of the subject site is mapped as being bushfire prone on the Department of Fire and Emergency Services Map of Bushfire Prone Areas (2019), and is therefore subject to the provisions of SPP3.7. As discussed further in **section 2.4** (and included as **Appendix A**), a Bushfire Management Plan (BMP) has been prepared by Eco Logical Australia to inform the preparation of this Structure Plan and future subdivision of the land, in accordance with SPP3.7.

1.5.2 Local Planning Policies

1.5.2.1 Local Planning Policy 3.1 – Local Housing Strategy Implementation

LPP3.1 provides a framework to guide the planning and development of increased housing density in existing suburbs in the City of Wanneroo. The policy is separated into two parts, addressing areas identified under the City's Local Housing Strategy (2005) for increased residential density, and other precincts

1.5.2.2 Local Planning Policy 4.3 – Public Open Space

LPP4.3 sets out the City's position on the planning, provision, location, design, development and interim maintenance of POS and applies to the design, assessment and determination of Structure Plans.

In accordance with Liveable Neighbourhoods, LPP4.3 requires a minimum 10% of the gross subdivisible area be ceded as POS. This is to be made up of a minimum 8% unrestricted POS, and a maximum 2% restricted POS.

The provision of a variety of POS is encouraged, with a balance of sizes, types, functions and locations within a community.

The proposed POS is located to form part of an interconnected network of spaces within a convenient walking distance to all future properties within the Structure Plan area. Where possible, POS has been located to retain clusters of existing trees, particularly within POS areas 3 and 5.

1.5.2.3 Local Planning Policy 4.4 – Urban Water Management

LPP4.4 sets out the water related documentation required by the City at east stage in the planning and development process. Section 2 deals with local Structure Plans, and requires a Local Water Management Strategy (LWMS) be prepared to support any Structure Plan.

Accordance with LPP4.4 requirements, the LWMS contained in **Appendix C** is consistent with the requirements of the WAPC's *Better Urban Water Management* guidance. Due to the depth to groundwater, no monitoring has been undertaken, consistent with DWER requirements.

The Structure Plan (and LWMS) sets out the requirement for an Urban Water Management Plan to be prepared at the subdivision stage, consistent with the LWMS, in accordance with the requirements of LPP4.4.

1.5.2.4 Local Planning Policy 4.8 – Tree Preservation Policy

LPP4.8 provides a mechanism to protect significant trees of the City within vacant land and bushland which will be subject to future development, and existing and proposed POS reserves. The policy encourages subdivision design to carefully locate future POS areas to accommodate

significant groups of trees, and wherever possible and practicable, significant individual trees shall be preserved on private lots and retained appropriately within proposed road reserves and POS reserves.

Notwithstanding a large proportion of the subject land has been previously cleared, the Structure Plan has been designed to retain significant vegetation where possible, with POS areas specifically located to maximise tree retention. In particular, POS 3 provides for vegetation retention in accordance with a previous agreement between the landowner and the City, and further opportunity for tree retention is identified with POS areas 1 and 5.

1.5.2.5 Local Planning Policy 4.19 – Medium Density Housing Standards (R-MD)

LPP4.19 replaces the R-Code provisions for Medium Density Housing within Development zones, and applies where an approved Structure Plan identifies that the R-MD standards apply.

As outlined in clause 1.4.2 of Part One of this Structure Plan, it is intended that the R-MD Standards set out in LPP4.19 will apply to all lots within the Structure Plan area, except where an approved LDP varies these requirements.

1.5.2.6 Local Planning Policy 5.3 – East Wanneroo

LPP5.3 provides guidance on the consideration of planning proposals for urban or similar development within the East Wanneroo area. The policy was updated in April 2019 to take into account the decisions made by the State government in respect to how the planning of the East Wanneroo area should be progressed.

LPP5.3 sets out a range of pre-requisite requirements to support planning proposals in East Wanneroo. With respect to the City's consideration of a local Structure Plan, LPP5.3 requires the land be appropriately zoned under DPS2 to require a Structure Plan. As outlined, Amendment No. 179 to DPS2, which has been supported by Council, seeks to rezone the land to Urban Development, thus requiring the preparation of a Structure Plan to guide the future subdivision and development of the land.

1.6 Other Approvals and Decisions

1.6.1.1 Lifting of Urban Deferment

The subject land was subject to MRS Amendment No. 1338/27 (gazetted 20 March 2018) which transferred the land from the Urban Deferred zone to the Urban zone under Clause 27 of the MRS. This provided for the land to form an extension to the Urban zoned land immediately abutting the site to the west and south-west. The land to the north, east and south-east within the broader East Wanneroo cell remains within the Urban Deferred zone.

1.6.1.2 Surrounding Structure Planning

The subject land lies to the north-east of the East Wanneroo Cell 2 (Sinagra) – Agreed Structure Plan No. 4 (ASP4). ASP 4 was originally approved in June 2004, and has guided the subdivision and development of the area for predominantly residential purposes.

As outlined previously, the Structure Plan area and surrounding land to the north and east is subject to the draft DSP, which will guide the progressive urbanisation of East Wanneroo in response to the proposals set out in the *North-West Sub-regional Planning Framework 2018*. The DSP will ultimately provide for a population of around 150,000 residents in approximately 50,000 homes, supported by up to 20,000 new jobs. The draft DSP area covers 8,300ha of land and includes a small portion of Pinjar, most of Mariginiup and Jandabup, and the eastern part of Wanneroo, Gnangara and south-west Lexia.

1.7 Pre-Lodgement Consultation

Table 3 summarises the outcomes of pre-lodgement consultation with the City of Wanneroo, Department of Planning, Lands and Heritage, and Water Corporation during the preparation of the Structure Plan.

Landowners within the Structure Plan area have been engaged with through the process, with the Concept Plan having been refined (where requested and appropriate) to accommodate the future development intentions of individual landowners. The Structure Plan has been designed to allow individual landowners to proceed with subdivision/development as and when desired, without relying on the extension of roads or services from adjoining landholdings.

Table 3 Pre-lodgement Consultation

Agency	Date of Consultation	Consultation Method & Attendees	Summary of Outcomes
City of Wanneroo	3 July 2020	**Meeting** **Attendees:** Greg Bowering (CoW) Timothy Dawson (CoW) Sheila Nolan (CoW) Mitch Dodson (Acumen) Rachel Chapman (TBB) Jesse Dunbar (TBB)	• Preliminary meeting to present the proposed Concept Plan to inform the proposed Structure Plan. • TBB and Acumen provided rationale for the Concept Plan design, including the configuration of drainage and POS, road network and intersections, residential cells and densities. • City advised it was generally satisfied with the proposed Concept Plan and did not request any specific changes. • It was noted that any areas of POS would need to be functional/contribute to an overall POS hierarchy. • City requested further consideration be given to how the Structure Plan will integrated with the future development of the adjoining land to the east. An east-west connecting road has been added to respond to this.
Water Corporation	9 July 2020	**Meeting** **Attendees:** Brett Coombes (WC) Russell Nelson (WC) Jon Burgess (Burgess Design Group) Chris Bitmead (TABEC)	• As a precursor to the meeting, TABEC had reviewed the long-term sewer planning for the area with a view to providing an interim servicing arrangement to service short- and medium-term demand. The review resulted in the planned location of a sewer pumping station on Lot 11 Caporn Street which is in an area that Burgess Design have prepared a concept structure plan for the purpose of discussing development options with landowners. The pump station has a potential gravity flow catchment of up to 5,000 residential lots. • Key outcomes of meeting: • WC acknowledged that the proposed pump station location represented a viable solution.

Agency	Date of Consultation	Consultation Method & Attendees	Summary of Outcomes
			• WC advised that there are capacity constraints in the existing sewer system that a proposed sewer pumping station would discharge to. This constraint would limit the discharge from a new pump station to the equivalent of around 2,500 lots. • Discharge location from the proposed pump station would be in Joondalup Drive, near Keanefield Drive. Similar sized sewers that are upstream of this location have had their capacity reduced by their flat gradient. • WC sewer planning team were still reviewing sewer development scenarios to endeavour to achieve a viable location and sizing of the sewer pressure main, the key constraint being the topography along the pressure main route. • WC to advice Burgess Design and TABEC once the planning team review is complete. • Proposed pump station is not presently on the 5-year funded works program. • Temporary discharge location at Monet Drive, Ashby is no longer an option as excess capacity has been taken by other projects.
City of Wanneroo	15 July 2020	**Preliminary feedback via email**	Preliminary feedback provided by the City's Land Development and Traffic Services departments, summarised as follows: • Queried the intention for connection of Roads 21, 26 and 27 to the future Saponara Drive extension, given timing for this is currently unknown. • Requirement to submit a Traffic & Transport Report, which also addresses matters such as possible school sites or bus routes. • Comment that the proposal could have possible connectivity issues. • Request for roundabouts to be installed at all four-way intersections, as has been done at the Vincent Road/Griffiths Road/Rhoeo Outlook intersection. Roundabouts are favoured due to their lower crash rates and overall improved safety when designed in accordance with current standards. • The proposed staggered intersection of Road 20 at Saponara Drive and Rhoeo Outlook would not be supported due to

Agency	Date of Consultation	Consultation Method & Attendees	Summary of Outcomes
			potential overlapping right turns issues on local roads.
Department of Planning, Lands and Heritage	20 July 2020	**Meeting Attendees:** Robert Hodges (DPLH) Elisabeth Tamouridou (DPLH) Mitch Dodson (Acumen) Rachel Chapman (TBB) Jesse Dunbar (TBB)	• Structure Plan should detail any infrastructure contribution agreements with the City. This will assist in streamlining DPLH's assessment of the structure plan and future subdivision applications/conditions. • A broader solution to wastewater for the precinct is preferred as opposed to a temporary or isolated solution for the subject land only. Further discussion with Water Corporation was encouraged. • Structure Plan should provide an indication of staging to guide implementation. • Consideration should be given to the usability of POS 3 where vegetation is intended to be retained (e.g. pathways, seating areas, etc.). • Structure Plan map should balance the amount of detail provided, noting that some level of detail would be beneficial given the fragmented ownership of the land. • Consideration should be given to the connectivity of the broader precinct – suggestion that an east-west neighbourhood connector might be warranted to improve connectivity of adjoining landholdings.

2.0 Site Conditions and Constraints

2.1 Environmental Considerations

2.1.1 Environmental Assets and Constraints

There are no recorded Environmentally Sensitive Area's (ESA) or wetlands within the site. The nearest ESA's occur 0.3 km northeast, 0.3 km north and 0.7 km west of the subject land.

Two Ecological Linkages run through the northwest and north-eastern corners of the site, as depicted in Figure 5 of the Environmental Assessment Report (EAR) in **Appendix B**. There are no conservation sites recorded within the site.

The Structure Plan layout has considered the findings of the environmental surveys conducted on the subject land. While the land has been largely cleared of native vegetation, and no Declared Rare Flora, Priority flora or EPBC-listed species were found during the spring flora and vegetation surveys there remains the opportunity to retain native vegetation within the development.

The 1.2ha area within the southern part of Lot 38 has been identified as a suitable location for POS 3, which allows vegetation of 'Good' condition to be retained. POS 5 has also been located where remnants of the Marri Open Forest remain, and where possible this will result in the retention of trees.

Further detail regarding flora, vegetation and fauna is contained in the EAR (**Appendix B**).

2.2 Landform and Soils

2.2.1 Landscape and Topography

The surrounding landholdings north of Caporn Street consist of rural residential, cleared pasture and patches of native vegetation including Bush Forever Site 469. Market gardens and nurseries to the east and southeast of the subject land, and standard residential development exists to the south and west. Within and surrounding the subject land are current market gardens and nursery land uses, which are expect to be removed to facilitate future subdivision and development.

The subject land slopes upwards from the northeast to the south. The gradient ranges from 52m in the north, to just over 71m Australia Height Datum (AHD) at several locations along the southern boundary.

2.2.2 Geology and Soils

The subject land is located within the Spearwood soil system and is described as 'sand dunes and plains with yellow deep sands and yellow/brown shallow sands'. The Soil Subsystems mapping indicates the site is within one soil subsystem; the Karrakatta Sand Yellow Phase.

Hyd2o conducted permeability testing at the site in July 2020 as part of the preparation the LWMS to support the Structure Plan. This testing provides estimates of the field saturated hydraulic conductivity of the soils and assess their suitability for stormwater infiltration. It was concluded that the site has favourable conditions for stormwater retention and infiltration on-site given its sandy soils, and good separation to groundwater.

2.2.3 Acid Sulfate Soils

Acid Sulfate Soil (ASS) risk mapping for the subject land indicates that the site is classified as having no known risk of ASS occurring within 3m of natural surface.

2.2.4 Contamination

A search of the Contaminated Sites Database identified no registered contaminated sites within a 1 km radius.

The site does contain two active market gardens (Lots 2 and 7) and a small orchard (Lot 37). Intensive agriculture is a potentially contaminating land use and therefore the market gardens result in a requirement for a Preliminary Site Investigation (PSI). A PSI includes a desktop study, site inspection and interviews with relevant personnel to identify the potential for contamination and thus the need for further detailed site investigation.

2.3 Groundwater and Surface Water

2.3.1 Groundwater

The Perth Groundwater Map provides groundwater contours at the site ranging from approximately 39m AHD to 42m AHD, with flow to the west. These contours typically reflect a summer minimum condition.

Groundwater mapping was undertaken as part of the Integrated Water Management Framework for the draft East Wanneroo DSP. The historic maximum groundwater levels (MGL) and average annual maximum groundwater levels (AAMGL) were produced from long-term Department of Water and Environmental Regulation (DWER) monitoring data and mapped over the entire DSP area. For the subject land, the historic MGL ranges from 37m AHD to 41m AHD and the AAMGL slightly lower ranging from 37m AHD to 40m AHD. The natural surface clearance above these contours ranges from 12m to 32m. Typically, predevelopment monitoring and mapping at the local scale is only required by DWER where groundwater is within 4 m of natural surface.

The combination of sandy soils and good separation to groundwater indicate the site as having favourable conditions for stormwater retention and infiltration on-site.

2.3.2 Surface Water

There are no natural watercourses or drains within the subject land. All surface runoff is infiltrated through the sandy soils underlying the site. No surface runoff is expected from the site.

2.4 Bushfire Hazard

As outlined previously, the Structure Plan area is identified as being within a designated bushfire prone area. As detailed in the BMP prepared by Eco Logical Australia (**Appendix A**), a bushfire assessment has been undertaken based on the vegetation classification, topography and slope of the subject land, as well as the post-development scenario taking into consideration the expected vegetation within POS areas and management agreements with adjoining landowners.

The bushfire hazard level (BHL) assessment identifies that the subject land is subject to Low, Moderate and Extreme bushfire hazard post-development. This is based on the assumption that existing on-site vegetation is proposed to be cleared to enable development of a significant urban built footprint amongst areas of landscaped/managed POS and various easements.

Therefore, for the purposes of strategic level planning, the current on-site vegetation extent is not considered to be a bushfire hazard issue post-development, since these hazards can be managed through a staged clearing process, adequate separation of future built assets from classified vegetation (both external and internal [e.g. retained vegetation] to the subject land), and ongoing fuel management that can be undertaken in and around individual development stages.

On this basis, it is considered that the bushfire hazards within and adjacent to the subject land and the associated bushfire risk is readily manageable through standard management responses and compliance with acceptable solutions outlined in the SPP3.7 Guidelines. These management measures will need to be factored into the development design as early as possible to ensure a suitable, compliant and effective bushfire management outcome is achieved to ensure protection of future life and property assets.

Demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959-2018 at future planning stages will also depend on the developer's ability to coordinate the timing and staging of clearing and development works within the subject site with the aim of avoiding bushfire impacts from temporary, retained vegetation.

2.5 Heritage

2.5.1 Aboriginal

A search of the Department of Planning, Lands and Heritage Aboriginal Heritage Inquiry System provides an understanding of the archaeological and ethnographic sites in a given area as well as providing information about previous surveys. The subject land has formed part of previous heritage surveys, however does not contain any registered aboriginal sites.

2.5.2 European

The subject land does not contain any European heritage sites listed in the State Register of Heritage Places, local government inventory or other lists.

3.0 Structure Plan

3.1 Design Principles

3.1.1 Site Analysis

An opportunities and constraints analysis was undertaken to inform the design considerations over the site. **Figure 5** summarises the key opportunities and constraints.

Figure 5 Opportunities and Constraints Analysis

3.2 Development Concept Plan

The Development Concept Plan in **Figure 6** has been prepared to provide an illustration of the development intent for the subject land. While this is graphical representation is indicative only, it indicates the integration of landscaping and open space within the Structure Plan area and how the road layout, streetscapes and development will occur.

The Development Concept Plan has been prepared based on the following key design considerations:

Public Open Space – POS has been designed and distributed to ensure all future residents have convenient access to open space areas. Whilst the subject land is predominantly cleared, some areas of higher quality vegetation exist, which has guided the location of POS to maximise potential for retention of trees.

Road Structure – the Development Concept provides two key road connections into the Structure Plan area from Caporn Street. Intersections are appropriately designed and spaced, and take into consideration the planned upgrade of Caporn Street.

Residential Development – the Development Concept provides for a variety of housing choices through the proposed density codings of R30, R40 and R60. The range of lot sizes and housing types is achieved based on the proposed arrangements appropriate to the current market.

Integration – the Development Concept demonstrates an appropriate integration with the existing development south and west of the subject land. Consideration is given to the integration with the land parcels east of the subject land that will be subject to separate Structure Plan approvals. The Development Plan also takes into consideration the planned upgrade of Caporn Street.

Existing Approvals – An existing agreement with the City of Wanneroo requires the retention of existing 1.2ha area of 'Good' vegetation within the southern portion of Lot 38. POS 3 has been located to provide for this vegetation to be retained.

Figure 6 Development Concept Plan

3.3 Land Use

The Structure Plan proposes a mix of residential densities across the subject land, allowing for a range of lot types and dwelling products to be achieved. A total of 3.6ha of POS is provided across the site, distributed to be within a convenient walking distance to all proposed lots. The proposed land uses are summarised in **Table 4**.

Table 4 Land Use Summary

Land Use	Area (ha)	Yield (lots)
Residential R30	11.6773	311
Residential R40	4.2178	187
Residential R60	0.1551	10
Total	**16.0502**	**509**
POS & Drainage	**3.3278**	**N/A**

3.3.1 Residential

The proposed Development Concept suggests a potential yield of approximately 500 residential lots. Residential densities of R30, R40 and R60 are proposed, providing for a mix of lot sizes and dwelling types to occur, and reflecting current market demand.

The Structure Plan achieves an average residential density of 18.8 dwellings per gross urban zoned land, and 31 per residential zoned land. This achieves and exceeds the density targets set out under higher order planning frameworks, including *Directions 2031 and Beyond*, Perth and Peel @ 3.5 million, Liveable Neighbourhoods and the draft East Wanneroo DSP.

3.4 Open Space

3.4.1 Public Open Space

A POS calculation has been prepared in accordance with Liveable Neighbourhoods, as detailed in **Table 5** and accompanied by the Public Open Space plan in **Figure 7**. A total of 3.1499 hectares (11.9%) of credited POS is provided within the Structure Plan area. The proposed POS provides for a variety of purposes and sizing including neighbourhood/nature parks, local parks and pocket parks.

The POS will be provided in accordance with the Structure Plan and POS Schedule and will be landscaped by the developer to a standard commensurate to, or above Liveable Neighbourhoods requirements and to the satisfaction of the City of Wanneroo.

Table 5 Public Open Space Schedule

PUBLIC OPEN SPACE SCHEDULE Caporn Street, Wanneroo July 2020 (19/023/002G)		
Site Area (ha)		**26.5993**
Deductions		
Drainage (1:1yr storm event)	0.18	
Net Subdivisible Area		26.42
Required Public Open Space (10%)		**2.64**
Public Open Space Requirements		
Unrestricted POS – min. 80%	2.11	
Restricted POS – max. 20%	0.53	
Total		**2.64**
Unrestricted Public Open Space		
Pocket Park	0.3370	
Pocket Park (2A & 2B)	0.2492	
Neighbourhood/Nature Park (incl. Lot 9015)	1.2174	
Pocket Park	0.0479	
Local Park	0.5448	
Pocket Park (6A & 6B)	0.2507	
Total Unrestricted POS		**2.6470**
Restricted Public Open Space		
Drainage Basins (1:5yr storm event)	0.5029	
Total Restricted POS		0.5029
Total Credited Restricted POS (i.e. 20%)		**0.5029**
Total POS		**3.1499**
Percentage POS Provision		**11.9%**

Figure 7 Public Open Space Plan

3.4.1.1 POS Hierarchy & Functionality

The Structure Plan proposes a range of POS areas with varying functionality. The POS distribution has focussed on the best quality vegetation across the subject land and connectivity with the existing areas of POS in the surrounding area.

In accordance with the City's LPP4.3, a mix of Pocket Parks, Local Parks and Neighbourhood/Nature Parks are proposed. It is noted that the acceptable size requirements under LPP4.3 are substantially larger than those identified under Liveable Neighbourhoods (LN). A summary of the POS classification (under both LPP4.3 and LN for comparison), and the intended function of each POS area is summarised in **Table 6** below.

Table 6 POS Hierarchy & Functionality

POS area	Park Type	Function
POS 1 (3,438m2)	• Pocket Park (LPP4.3) • Neighbourhood Park (LN)	POS 1 will form an extension/link from the existing San Teodoro Park to the west, through to the proposed Neighbourhood/Nature Park (POS 3) within the Structure Plan area. Existing significant trees along the southern boundary will be retained where possible, and the area will otherwise be managed to serve an amenity and recreation function. The POS will incorporate drainage infrastructure.
POS 2A + 2B (3,830m2) POS 4 (3,018ha) POS 6A + 6B (4,481m2)	• Pocket Park (LPP4.3) • Neighbourhood Park (LN)	These POS areas will provide an attractive entrance into the estate from the key entrance roads from Caporn Street. They will also provide an enhanced outlook to nearby residential properties by providing physical separation to Caporn Street, which is expected to increase in traffic volumes over time as the East Wanneroo area is progressively developed. These areas are capable of serving an amenity and recreation function, as a community meeting place, or places for relaxation. As the lowest points of the Structure Plan area, these POS areas will incorporate drainage infrastructure.
POS 3 (1.2174ha; includes Lot 9015)	• Neighbourhood/Nature Park (LPP4.3) • Neighbourhood Park (LN)	Main function is to retain existing vegetation as per previous agreement with the City. The area will be accessible by the community for recreational use, and may include walking trails.
POS 5 (6,336m2)	• Local Park (LPP4.3) • Neighbourhood Park (LN)	POS will provide a dual function of retaining existing significant trees where possible, whilst incorporating a managed/turfed area for recreation activities (such as dog walking, children's play). The POS will incorporate drainage infrastructure.

3.5 Water Management

In support of the proposed Structure Plan, a Local Water Management Strategy (LWMS) (refer **Appendix C**) has been prepared by Hyd2o in accordance with the principles and objectives of the WAPC's *Better Urban Water Management* guideline document. Implementation of the strategy will be undertaken through the development and implementation of Urban Water Management Plans (UWMP) for individual stages of development within the Structure Plan area.

3.5.1 Stormwater Management Strategy

Stormwater management post-development has been designed consistent with DWER water sensitive design practices and overarching water management strategy documentation. The system will consist of a series of lot soakwells, road drainage pits, piped drainage, overland flows paths, and bioretention and flood storages areas within POS for water quality treatment. At lot scale, all runoff from the first 15mm event will be retained on-site via soakwells.

Stormwater modelling was undertaken for the proposed stormwater management areas, with catchments based on pre-development catchments, flow paths, proposed earthworks and the location of proposed POS areas. Modelling results for the POS storage are contained in the LWMS, and it is assumed that all stormwater is retained on-site for all catchments in all events.

It is noted that Catchment C also provides flood storage for an external catchment south of the site. A previous arrangement between landowners resulted in the drainage from the existing residential development south of the site to convey drainage for infiltration towards Catchment C.

Stormwater storage is proposed as follows:

- All Catchments will infiltrate the 1% AEP storm with no discharge externally to the site.
- The minimum habitable building floor levels will comply with requirements for a 0.5m clearance above estimated 1 % AEP flood levels.

Runoff from roads in minor events will be directed to the biofiltration area in the POS for treatment. A total biofiltration storage volume of 576m^3 is required to manage minor event runoff. The storages have been designed with various side slopes and to a depth of 0.3m. A total area of 1778 m2 is required for this purpose.

Biofiltration areas will be lined with suitable soil amendment material and planted with a range of littoral plants to assist with nutrient stripping. Where possible the use of landscaped median swales, verge swales, tree pits and at source infiltration will be promoted and reported in future UWMPs.

3.5.2 Groundwater Management Strategy

Development levels in the site will be largely dominated by cut and fill to achieve required grades and level lots. Subsoil drainage will not be required within the subject land.

Finished lot levels and fill requirements are a detailed design issue to be addressed during the preparation of detailed engineering design drawings and preparation of the UWMP and will be ultimately submitted for council approval at that stage.

RPS (2019) provides groundwater modelling projection for the East Wanneroo DSP area which suggest that regional groundwater levels may rise 3m-4m by 2030. The excess recharge is expected largely through the progressive clearing of pine plantations and decline in abstraction for public drinking water. It should be noted that should this groundwater rise occur, the site and its associated drainage will not be impacted given the minimum separation between groundwater levels and the site would still be 8m-9m.

3.6 Movement Network

A Transport Impact Assessment (TIA) prepared by Transcore to support the proposed Structure Plan (refer **Appendix D**) concludes that the proposed Structure Plan will have an acceptable impact on the surrounding roads and intersections with no major network changes required to the external transport network over and above what is already planned (particularly for Caporn Street).

The capacity assessments undertaken for the adjacent roads and intersections includes that the proposed Structure Plan will not have an adverse impact on the traffic operations of the surrounding road network, which has more than sufficient capacity to accommodate the anticipated Structure Plan generated traffic, considering the anticipated upgrading of Caporn Street.

3.6.1 External Road Network

The Structure Plan area is accessed via number of major and local access roads.

Pinjar Road, in the vicinity of Caporn Street, is a four-lane dual-carriageway arterial road with a wide landscaped median. It operates under a sign-posted speed limit of 60km/h south just north of Caporn Street and 70km/h north of Edward Street. According to the Main Roads WA *Metropolitan Functional Road Hierarchy*, Pinjar Road is

classified as a Distributor A road. It is also reserved Other Regional Roads under the MRS. Based on the latest available traffic count data supplied by Main Roads WA, Pinjar Road (east of Wanneroo Road) carried approximately 13,240vpd on a regular weekday in 2018/19. The morning peak of 1,082vph and the afternoon peak of 1,147vph were recorded at the time.

Caporn Street is a 7.6m wide single-carriageway wide, single-carriageway, east-west distributor road that widens to a four-lane, dual-carriageway standard on its approach to Pinjar Road intersection. Caporn Street is classified as a Local Distributor and presently operates under a 70km/h speed limit regime. Based on June 2017 traffic counts provided by the City, Caporn Street, west of Franklin Road, carried about 11,380vpd on a regular weekday with AM and PM peaks recording 915vph and 1,306vph, respectively. According to the count data the heavy vehicle participation of 7.8% was recorded in the traffic mix.

Rometta Way, Speranza Parkway and Saponara Drive form part of the existing local road system and are all typical 6m wide single-carriageway residential roads with a pedestrian path on one side of the road. All three roads are classified as Access Roads. There are no traffic counts available for either of the roads; however, based on the layout of the local road network and the size of residential areas that these roads serve, it is estimated that all three roads presently carry very low level of traffic. All three roads operate under a default built-up area speed limit of 50km/h.

3.6.2 Internal Road Network

The Structure Plan area will be served by an internal network of access roads, which will integrate with the surrounding road system through several connections at the norther, western and southern sides, with principal external access from Caporn Street.

The proposed movement network facilitates internal distribution of vehicular, pedestrian and cyclist traffic. The internal Structure Plan road system connects to perimeter roads via several access/egress intersections. The proposed access/egress system was designed to achieve the following key outcomes:

- Provide balanced internal traffic flows;
- Distribute the traffic from the Structure Plan area to three sides so to minimise the traffic load onto Caporn Street;
- Allow for the potential future road widening of Caporn Street along the southern side of the road; and
- Ensure alternative access/egress options are available for safety reasons.

Based on the road design principles contained in Liveable Neighbourhoods and the estimated total traffic generation by the Structure Plan area, the majority of proposed internal roads are classified as Access Street D, with the northern portions of Roads 11 and 21 which intersect with Caporn Street being classified as Access Street C. A single laneway is proposed to service the lots directly abutting POS 5.

Access Street C is a typical residential street projected to carry up to 3,000vpd and common to areas with densities of R30/35. It is not intended to carry buses or accommodate any dedicated bike lanes. Due to the relatively short length of the Access Street C portions of Roads 11 and 21, no on-street parking is proposed in order to avoid any impact on traffic operation and potential safety implications. A typical road reserve of 15.4m with a trafficable carriageway width of 7.2m is recommended by Liveable Neighbourhoods.

The typical road reserve for Access Street D (narrow yield) under Liveable Neighbourhoods entails a road reserve width of 14.2m with 6.0m wide trafficable carriageway pavement and 4.1m wide verges on both sides. Verge widths may be reduced where adjacent to POS. Maximum desirable daily traffic volume for this type of road is 1,000vpd.

The typical road reserve for Laneways entails a 6m wide trafficable pavement sufficient to allow two-way movements, rubbish collection and vehicle access into garages located on the rear of properties. Maximum desirable traffic volumes for a laneway is 300vpd.

3.6.3 Traffic Assessment

The traffic volume expected to be generated by the proposed Structure Plan has been estimated using trip generation rates recommended in the WAPC *Transport Impact Assessment Guidelines Volume 2* (August 2016).

Accordingly, it is estimated that the proposed Structure Plan would generate approximately 3,750 total weekday trips (both inbound and outbound) with approximately 375 trips both inbound and outbound (approximately 10% of total daily trip production), during the morning and afternoon peak hour periods. As the proposed land uses for the subject site are exclusively residential it is anticipated that the vast majority of trips would be external to the structure plan area. The assumed distribution of trips from the Structure Plan area is based on the layout of the adjacent local and district-level road network as well as major education, retail, recreational, employment and social attractors.

The daily traffic forecast indicates that most of the traffic generated by the Structure Plan would utilise Caporn Street as the main access/egress route (about 76% of total daily trip production) whilst traffic using (combined) southern (Saponara Drive) and western (Rometta Way and Speranza Parkway) routes would be in order of 900vpd. This traffic would be distributed over six routes/roads thereby reducing any impact from the subdivision traffic on adjacent residential areas.

Based on the desirable daily volume thresholds for the Access Streets C and D within the Structure Plan area, it is expected that the anticipated road hierarchy would have more than sufficient capacity to accommodate the forecast daily traffic flows.

The expected additional traffic as a result of the proposed Structure Plan on surrounding residential roads is low and would not have a practical impact on their current operations.

Based on the detailed intersection capacity assessment undertaken by Transcore, it is confirmed that uninterrupted traffic flow conditions can be expected at all key internal intersections. All internal intersections (except one) are designed as priority-controlled T-intersections. Roads 12, 13 and 15 intersect forming a four-way priority-controlled intersection. Due to anticipated traffic flows involved (well below 2,000vpd), good geometry and likely available sightlines, it is recommended that threshold treatments and give-way signs on both Road 12 and Road 15 approaches be implemented to ensure appropriate traffic control at this location.

3.6.4 Walking and Cycling Network

In accordance with Liveable Neighbourhoods principles, pedestrian paths would be required on at least one side of all lower order access streets. Accordingly, it is proposed that 2m footpaths be provided on one side off all internal roads (excluding the Laneway). A 2m wide footpath standard is selected to mirror the footpath standard already in place on lower order residential access streets to the immediate west of the subject land.

Shared paths on internal subdivision roads would not be mandatory as daily traffic forecast would be such that cyclists can safely share the carriageways with cars.

As part of the proposed subdivision it is anticipated that a shared path on the southern side of Caporn Street may ultimately be constructed to tie in with the existing section of a shared path already in place between Pinjar Road and San Teodoro Avenue some 300m west of the subject land. This path would ensure important pedestrian and cyclist connection to the nearby Ashby Neighbourhood Centre which located some 500m west of the subject land.

3.6.5 Public Transport Routes

The Structure Plan area, including the existing residential areas to the immediate south have no direct or practical/convenient access to the public transport network at present. The nearest pair of bus stops is located on Carosa Way, approximately 1km to the west of the subject land.

At this stage, no new public transport options in the form of bus services are planned. Under the draft East Wanneroo DSP, neighbourhood connectors are envisaged as accommodating local bus services, and it is therefore anticipated Caporn Street may accommodate a bus service in the future as development of the surrounding area progresses.

3.7 Infrastructure Coordination, Servicing & Staging

An Engineering Infrastructure Report has been prepared by TABEC Civil Engineering Consultants to support the proposed Structure Plan (refer **Appendix E**). The report concludes that all required utilities are available and can be extended to service the proposed development, as detailed below.

3.7.1 Wastewater

The proposed development is within the Water Corporation license area and all lots created will be connected to the Water Corporation sewer.

The abutting residential developments to the west and south of the Structure Plan area are connected into Water Corporation's gravity sewer network, however as the subject land slopes away from these existing areas, there is little, if any capacity to extend the gravity system into the Structure Plan area. The exception to this may be future residential lots that have direct frontage to Saponara Drive which, subject to future detailed design, should be able to connect into the existing gravity sewer.

The majority of future lots within the Structure Plan area will need to connect to a new sewer pumping station located in the Jandabup Sewer District to the north-east of the site, likely near reserve R46711 between Lots 1 and 11 Caporn Street. At the time of writing, Water Corporation are conducting a review of sewer planning in the immediate area in order to provide for short to medium term development requirements in and around Caporn Street. This review is expected to result in revised sewer planning that provides for servicing of the Structure Plan

area in addition to other areas to the immediate north and north-east.

It is understood that a proposed new sewer pumping station would discharge effluent to Water Corporation's existing 375mm diameter network in Joondalup Drive, near Keanefield Drive as the sewer network east of this location has limited capacity to receive additional flows.

From a development perspective, providing the area with a reticulated sewer system will be achieved through the orderly development of the site. Wastewater infrastructure will be designed and constructed in accordance with Water Corporation standards and requirements. Standard Water Corporation wastewater headworks are applicable in this area.

3.7.2 Water Supply

The site is within the Water Corporation license area and is at the interface of two different reticulation systems. The two systems are the result of undulating topography in the area and the effect this has on water pressure in the system. Ultimately, Water Corporation planners will determine where the interface between the two systems is located, however it is expected that only a small portion of the Structure Plan area will be serviced from the high-level system that exists in Saponara Drive.

The majority of the water supply system will be connected to the existing 375/450mm diameter system in Pinjar Road and this will be facilitated via an extension along Caporn Street, from Pinjar Road to the site. Subject to future detailed design, there is approximately 220m of 200mm diameter main in Caporn Street that could be used for at least a portion of this link.

In the northern verge of Caporn Street, east of Wells Street, a 1000mm diameter steel water distribution main exists which acts as conveyance between Wanneroo Reservoir on Belgrade Road and 500mm diameter steel water mains crossing Pinjar Road, just south of Yandella Promenade.

While there is detail to be worked through as part of the future detailed design, Water Corporation have advised that the site can be adequately serviced with water supply.

3.7.3 Power Supply

There is currently capacity within Western Power's broader network to service the development with their network mapping tool indicating that there 10-15MVa capacity in the area which is serviced from Wanneroo substation WP-012.

Fronting the site along Caporn Street is overhead High Voltage (HV) and Low Voltage (LV) lines. As part of development that has occurred to the west of the site, the overhead lines in Caporn Street have been converted to below ground cables. As the LSP are is progressively developed, the existing overhead lines will need to be converted to underground.

At the southern end of the site, there is a HV cabling located in Saponara Drive along with ground mounted switchgear and transformer located near the intersection of Saponara and Dietes View.

The presence of HV cabling and lines surrounding the site along with spare system capacity allows for a logical extension of the power network in order to service the development.

Due to the presence of the 1000mm diameter steel water main in Caporn street, the provision of new HV equipment to service the site will require Earth Potential Rise studies to be completed as part of the power design process.

Street lighting will also be required as part of the development in accordance with Western Power and City of Wanneroo guidelines.

3.7.4 Telecommunications

The site is within the NBN fibre fixed line footprint and therefore can be serviced.

Each landowner within the site would enter into an agreement with NBN (or other service provider). NBN is required to recover part of the cost of deploying the NBN network infrastructure by applying a developer contribution charge per premise.

3.7.5 Gas Supply

An ATCO gas supply network exists within the existing residential subdivisions located to the west and south of the site.

At the time of development each landowner will apply to ATCO to provide their design for the gas network to service proposed lots. ATCO will generally install the gas pipe network at no cost to the developer, provided that the developer provides a trench in which to install the gas pipe.

The nature of the gas network is such that it does not affect proposed road or lot layout within a subdivision.