

It is certified that this Structure Plan was approved by resolution of the Western Australian Planning Commission on 11 / 06 / 2019

This Structure Plan expires on 11 / 06 / 2029

Signed [Signature]

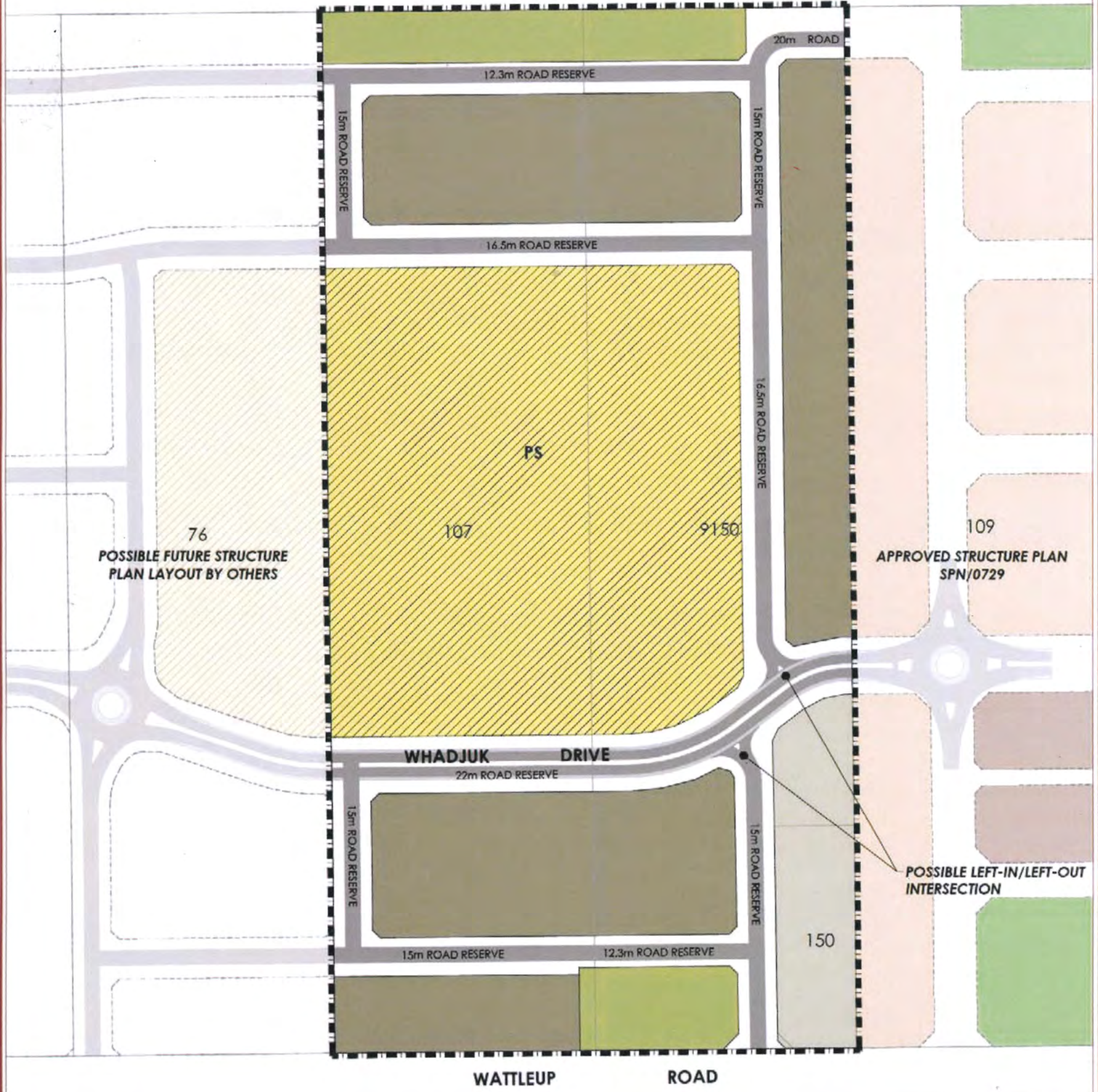
Director, Planning and Development

File No. 110/169

HARRY WARING
MARSUPIAL RESERVE

LEGEND

- STRUCTURE PLAN AREA
- INDICATIVE LAYOUT
- ZONES
 - RESIDENTIAL R30
 - RESIDENTIAL R40
- LOCAL SCHEME RESERVES
 - PARKS AND RECREATION
 - PUBLIC PURPOSES - PRIMARY SCHOOL



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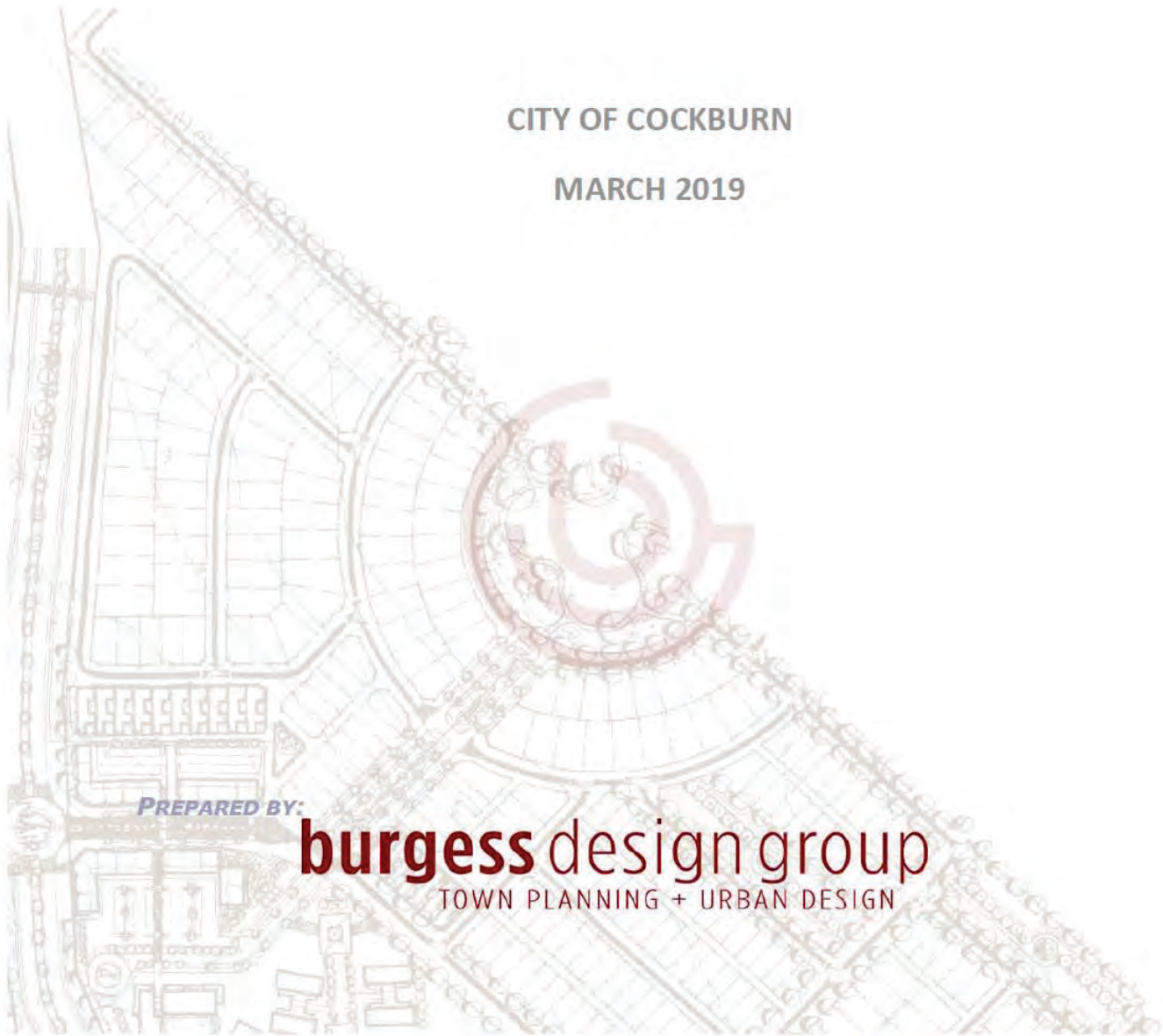
PLAN 1: QUENDA ESTATE LOCAL STRUCTURE PLAN
LOTS 107, 150 & 9150 WATTLEUP ROAD
HAMMOND PARK
CITY OF COCKBURN

QUENDA ESTATE LOCAL STRUCTURE PLAN

LOTS 107, 150 & 9150 WATTLEUP ROAD,
HAMMOND PARK

CITY OF COCKBURN

MARCH 2019



PREPARED BY:

burgess design group
TOWN PLANNING + URBAN DESIGN

LOTS 107, 150 & 9150 WATTLEUP ROAD, HAMMOND PARK

CITY OF COCKBURN

QUENDA ESTATE LOCAL STRUCTURE PLAN

Revision 4: March 2019

Prepared for: **Open Corp Pty Ltd**

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Revision No: 4

Quality Assurance

Revision:	Date:	Author:	Reviewer:
1	25.10.2016	Mitch Bisby	Mark Szabo
2	02.12.2016	Mitch Bisby	Mark Szabo
3	16.10.2017	Mitch Bisby	Mark Szabo
4	22.03.2019	Mitch Bisby	Mark Szabo

**FORMAL ADOPTION OF THE LOCAL STRUCTURE PLAN FOR LOTS 107, 150 & 9150 WATTLEUP ROAD,
HAMMOND PARK, CITY OF COCKBURN**

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

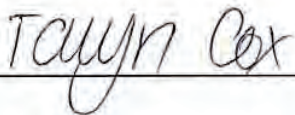
IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

_____ 11 June 2019 _____ 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

_____ 12 June 2019 _____ Date

_____ 11 June 2029 _____ Date of Expiry

TABLE 1: AMENDMENTS

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

TABLE 2: DENSITY PLANS

DENSITY PLAN NO.	AREA OF DENSITY PLAN APPLICATION	DATE ENDORSED BY WAPC

EXECUTIVE SUMMARY

This local structure plan applies to Lots 107, 150 & 9150 Wattleup Road, Hammond Park; being the land contained within the inner edge of the line denoting the structure plan area as shown on the structure plan map.

A summary of all key statistics and planning outcomes of the structure plan is provided in Table 3 below:

TABLE 3: SUMMARY TABLE		
ITEM	DATA	STRUCTURE PLAN REF (SECTION NO.)
Total area covered by the structure plan	8.0914 hectares	1.2.2
Area of each land use proposed:	Hectares	
- Residential	2.7761	3.3
- Public Purposes (Primary School)	2.8522	
- Public Open Space	0.5239	
Total estimated lot yield	89	3.3
Estimated number of dwellings	89	3.3
Estimated residential site density	32 dwellings per site hectare	3.3
Estimated population	267	3.3
Number of primary schools	1	3.6
Estimated area and percentage of public open space given over to:		
- Local parks	0.5239 hectares 10%	3.2

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ABBREVIATIONS & ACRONYMS

BAL	Bushfire Attack Level
BHL	Bushfire Hazard Level
BMP	Bushfire Management Plan
DCA10	Development Contribution Area 10
DCA13	Development Contribution Area 13
EAMS	Environmental Assessment and Management Strategy
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
LPP1.16	Local Planning Policy 1.16 <i>Single House Standards for Medium Density Housing</i>
LWMS	Local Water Management Strategy
mAHD	Metres in relation to the Australian Height Datum
POS	Public Open Space
Scheme	City of Cockburn Local Planning Scheme No.3
SSDSP	Southern Suburbs District Structure Plan - Stage 3
WAPC	Western Australian Planning Commission

1. STRUCTURE PLAN AREA

This structure plan shall apply to Lots 107, 150 and 9150 Wattleup Road, Hammond Park; being the land contained within the inner edge of the line denoting the structure plan area as shown on the structure plan map (refer to **Plan 1 – Structure Plan Map**).

2. OPERATION

The date the structure plan comes into effect is the date the structure plan is approved by the WAPC.

3. STAGING

Development is not dependent upon a staged approach for servicing and implementation purposes.

4. SUBDIVISION AND DEVELOPMENT REQUIREMENTS

4.1 LAND USE PERMISSIBILITY

Land use permissibility within the structure plan area shall be in accordance with the structure plan map (**Plan 1**) and the corresponding zones and reserves set out in the City of Cockburn Town Planning Scheme No. 3.

4.2 PUBLIC OPEN SPACE

- a) Due to the need for extensive earthworks required to make the structure plan area developable, native vegetation is unlikely to be retained. This notwithstanding, where possible, public open space is to accommodate trees as shown in the proposed landscape drawings in Appendix D of the local water management strategy dated 18 March 2019 (Appendix 8 of this structure plan).
- b) The interface between the structure plan area and the Harry Waring Marsupial Reserve (Crown Reserve 29241) is to be designed in consultation with the Department of Biodiversity, Conservation and Attractions and the City of Cockburn.

4.3 RESIDENTIAL

- a) Residential densities applicable to the structure plan area are shown on the structure plan map.
- b) The provisions of the City of Cockburn *Local Planning Policy 1.16: Single House Standards for Medium Density Housing* apply to all land designated residential under this structure plan.

4.4 PUBLIC PURPOSES (PRIMARY SCHOOL)

As the structure plan identifies a primary school site spanning three separate landholdings, the City of Cockburn recommends the following conditions be imposed on any future subdivision approval that may be granted:

- (S2) The land denoted as proposed primary school on the approved plan of subdivision is to be set aside as a separate lot, pending the acquisition of the land by the Department of Education. (Department of Education)
- (S3) The landowner/applicant making a pro-rata contribution towards the cost of the acquisition of the primary school site identified in the subdivision locality. (Department of Education).

4.5 EARTHWORKS

Due to the complexity of earthworks required and their effect (in terms of providing standard service infrastructure, the gradient of roads and paths and the construction of large retaining walls) on nearby landholdings, an earthworks plan should be submitted to and approved by the City of Cockburn prior to a subdivision application being submitted to the WAPC. The earthworks plan is to demonstrate how:

- a) all internal roads and footpaths, particularly road and footpaths surrounding the primary school site, can achieve an acceptable gradient which facilitated acceptable and safe pedestrian access;
- b) an equitable and practical distribution of earthworks can be achieved and the use of retaining walls minimised – the construction of significant retaining walls on Lot 76 (when compared with Lots 107, 150 and 9150) and/or around the primary school site are not acceptable; and
- c) a slope of 1 in 20 or less can be achieved across the primary school site.

4.6 MOVEMENT NETWORK

Road reserve widths are to be consistent with those indicated on the structure plan map (Plan 1). However, if on-street car parking cannot be accommodated with the 12.3 metre wide road reserves abutting public open space, then these road reserves are to be widened to 13.5 metres.

It is recommended that the applicant liaise with the City of Cockburn at the earliest possible opportunity to ensure the road around the perimeter of the primary school site is appropriately designed. The design is to include (where possible) on-street car parking.

4.7 WATTLEUP ROAD

A full upgrade of Wattleup Road is required fronting the structure plan area. The location and type of any intersection treatments is subject to further discussions with the City of Cockburn as part of the subdivision approval process.

4.8 SOIL CONTAMINATION

As the site has, historically, been used for horticultural purposes, the potential for soils and groundwater contamination exists. For this reason, the City of Cockburn recommends:

- a) The proponent liaise with the Department of Water and Environmental Regulation (contaminated sites branch) in relation to the potential for soil and groundwater contamination; and

- b) Any future application to subdivide the site be referred to the Department of Water and Environmental Regulation (contaminated sites branch).

Further to the above, to protect the conservation values of the Harry Waring Marsupial Reserve, any soil or fill imported to the site should be free of weed seed and/or *Phytophthora dieback*.

4.9 FAUNA RELOCATION

Due to the site's proximity to the Harry Waring Marsupial Reserve (and in accordance with the environmental assessment and management strategy), it is recommended that any future approval to subdivide the site require the preparation and implementation of a fauna relation management plan.

Further to the above, it should be noted that, regardless of any management plan that may be in place, the relation of fauna required approval from the Department of Biodiversity, Conservation and Attractions.

4.10 SERVICING

The applicant is to consult with the Water Corporation regarding the provision of reticulated potable water and sewerage services to the site and any modifications to sewer catchment boundaries that may be required.

4.11 SEPARATION FROM NEARBY LAND USES

Lots within 500 metres of the site may contain and uses (such as vineyards, orchards and market gardens) with off-site effects. In this regard, Environmental Protection Authority guidelines recommend buffer areas 500 metres wide around activities such as orchards and vineyards and 300 to 500 metres wide around market gardens.

To ensure the continuation of these nearby land uses is not compromised by more sensitive (residential) development of nearby land, applications to subdivide land within the structure plan area should be accompanied by an analysis of site conditions which demonstrates the amenity of proposed residential development is not likely to be affected by those nearby activities.

5. LOCAL DEVELOPMENT PLANS

Local development plans are to be prepared in accordance with Part 6 of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, prior to the creation or development of lots:

1. of irregular shape or less than 260m² in area;
2. that obtain access from a laneway or right of way;
3. abutting areas of public open space; and/or,
4. Intended to accommodate grouped or multiple dwellings.

Local development plans shall set out the following:

- a) street and boundary setbacks;
- b) dwelling orientation;
- c) fencing;
- d) open space;

- e) garage setbacks and width;
- f) vehicular and pedestrian access;
- g) parking requirements;
- h) overshadowing; and,
- i) visual privacy.

6. DEVELOPMENT CONTRIBUTIONS

The site falls within Development Contribution Areas 13 & 10.

Development is therefore subject to cost contributions in accordance with the development contribution plans contained at Schedule 12 of the Scheme.

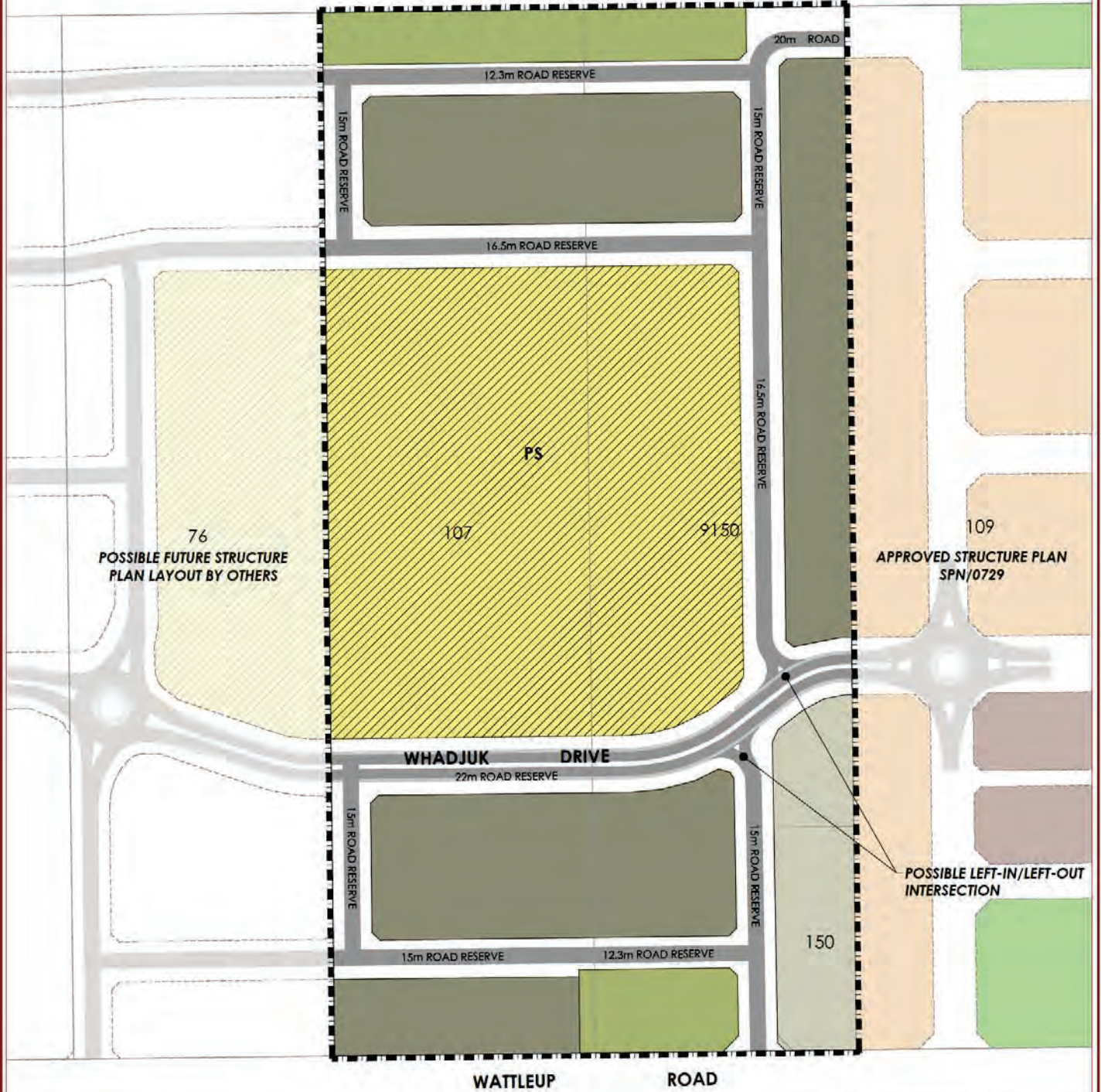
7. ADDITIONAL INFORMATION

TABLE 4: ADDITIONAL INFORMATION		
ADDITIONAL INFORMATION	APPROVAL STAGE	CONSULTATION REQUIRED
BAL Contour Map	Subdivision	City of Cockburn, WAPC
Fauna Relocation Management Plan	Condition of Subdivision Approval	City of Cockburn Department of Parks and Wildlife
Urban Water Management Plan	Condition of Subdivision Approval	City of Cockburn
Emergency Evacuation Plan (School site)	Development Application	City of Cockburn

HARRY WARING
MARSUPIAL RESERVE

LEGEND

-  STRUCTURE PLAN AREA
-  INDICATIVE LAYOUT
- ZONES**
-  RESIDENTIAL R30
-  RESIDENTIAL R40
- LOCAL SCHEME RESERVES**
-  PARKS AND RECREATION
-  PUBLIC PURPOSES - PRIMARY SCHOOL



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PLAN 1: QUENDA ESTATE LOCAL STRUCTURE PLAN
LOTS 107, 150 & 9150 WATTLEUP ROAD
HAMMOND PARK

CITY OF COCKBURN

PART TWO | EXPLANATORY SECTION

1. PLANNING BACKGROUND

1.1 INTRODUCTION AND PURPOSE

The Quenda Estate Local Structure Plan has been prepared on behalf of Open Corp Pty Ltd. (OpenCorp. or Developer) and in collaboration with a multi-disciplinary team, comprising:

- Emerge Associates – Environmental Assessment and Management Strategy, Flora and Vegetation Survey, Fauna Survey, and Bushfire Management Plan;
- LD Total – Landscape Master Plan;
- Development Engineering Consultants – Engineering and Services Report and Local Water Management Strategy;
- Cardno – Transport Impact Assessment.

The objective of the structure plan is to guide the subdivision and development of the site.

1.2 LAND DESCRIPTION

1.2.1 LOCATION

The site is located in Hammond Park within the municipal boundary of the City of Cockburn, approximately 25 kilometres south of the Perth CBD, and 5.5 kilometres southwest of Cockburn Central (refer **Figure 1**).

The site is bound by Wattleup Road to the south and the Harry Waring Marsupial Reserve to the north.

1.2.2 AREA AND LAND USE

The structure plan encompasses a total of 8.0914ha of land.

Lot 107 is currently vacant. Lot 150 accommodates a single dwelling, together with a number of outbuildings (sheds, water tanks and agricultural structures), that was excised from Lot 9150, which has historically been used as an orchard and more recently as a sprouting facility (refer **Figure 2**).

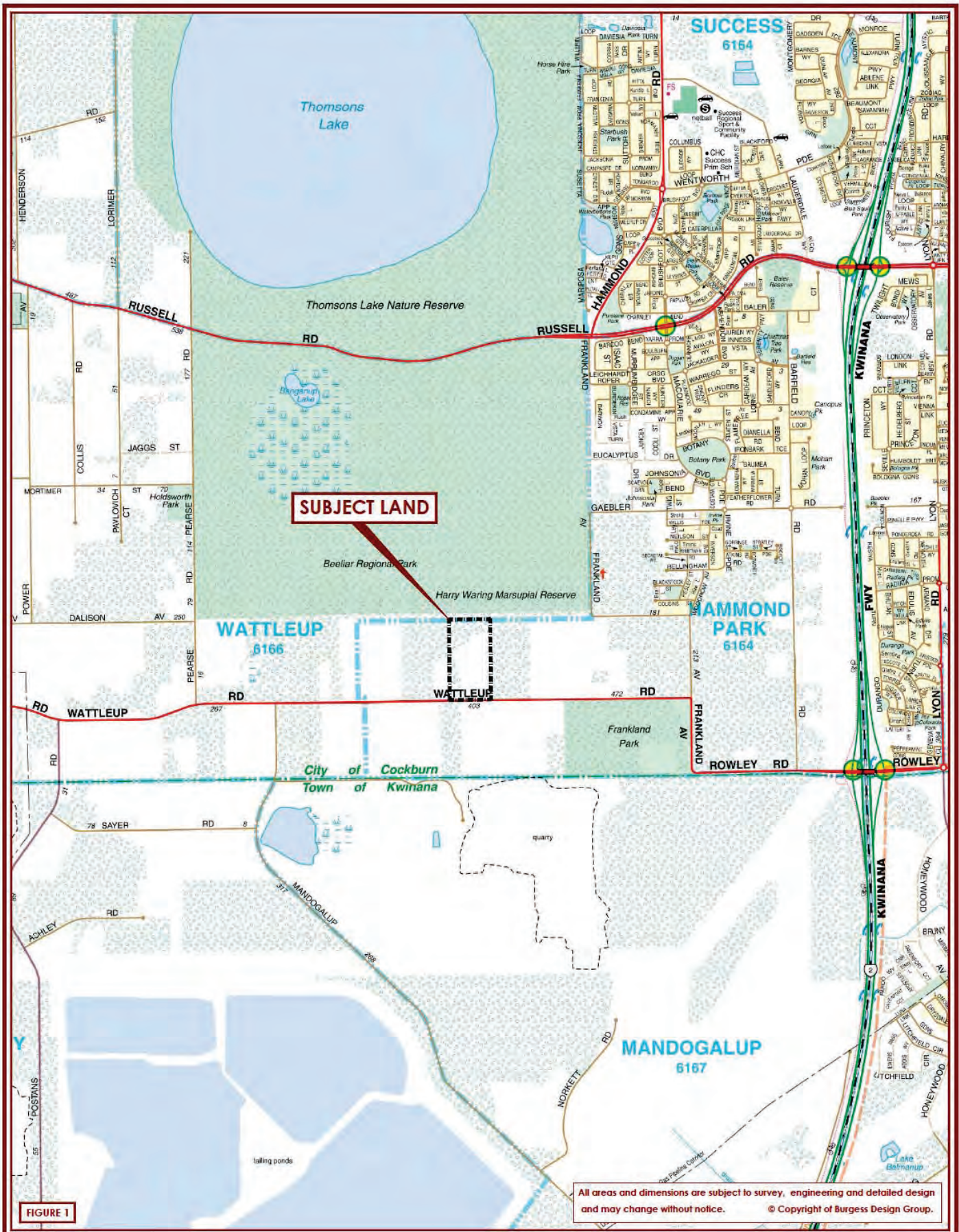
The site is partially vegetated, with native Banksia Woodland covering the northern and western portions of the site. The balance of the site has been cleared to accommodate horticultural uses and generally contains unmanaged introduced grassland.

1.2.3 LEGAL DESCRIPTION AND OWNERSHIP

The site can be legally described as:

- Lot 107 on Plan 8384, volume 1310, folio 520;
- Lot 150 on Plan 413434, volume 294, folio 335; and
- Lot 9150 on Plan 413434, volume 2942, folio 336

Copies of the certificates of title can be found at **Appendix 2**.



0 0.25 0.5 0.75 1km
SCALE 1:25,000 (A4)

LOCATION PLAN
LOT 107, 150 & 9150 WATTLEUP RD
HAMMOND PARK




LEGEND
 Subject Land

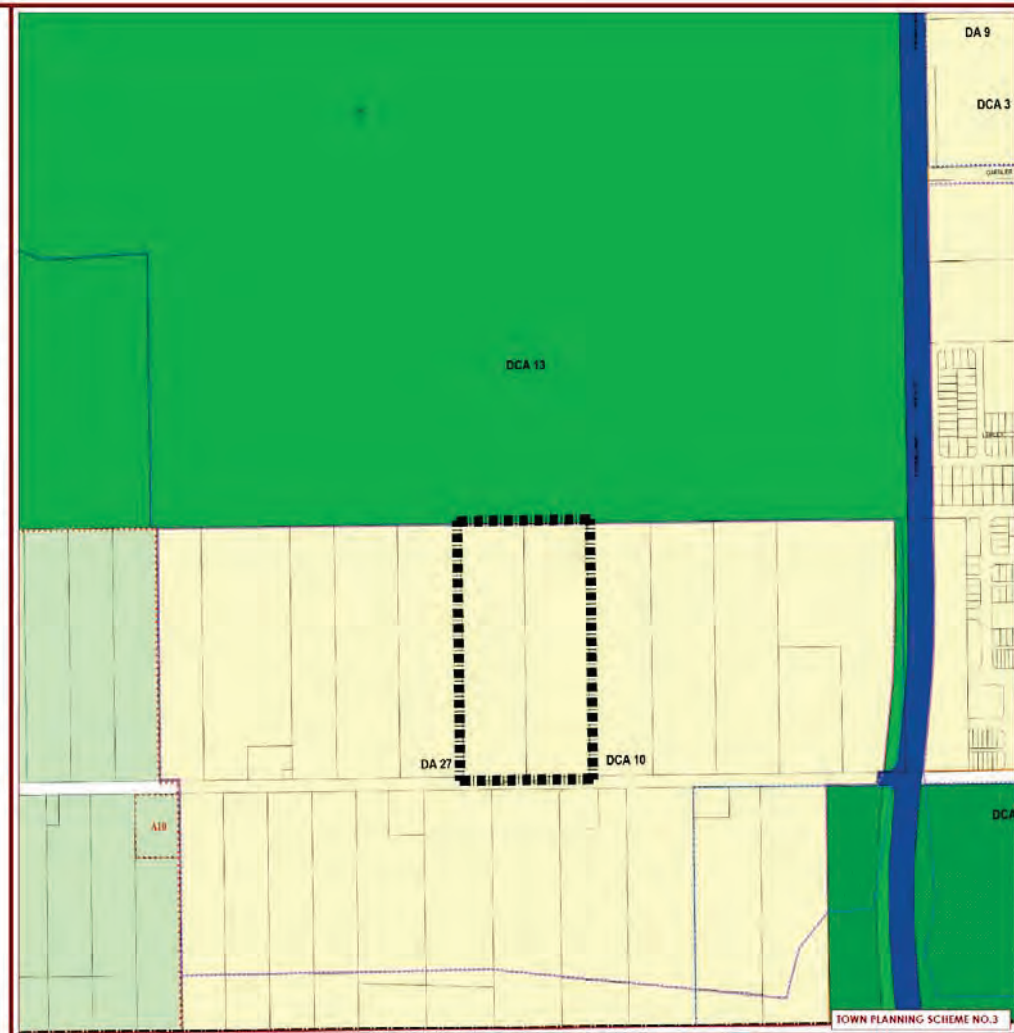
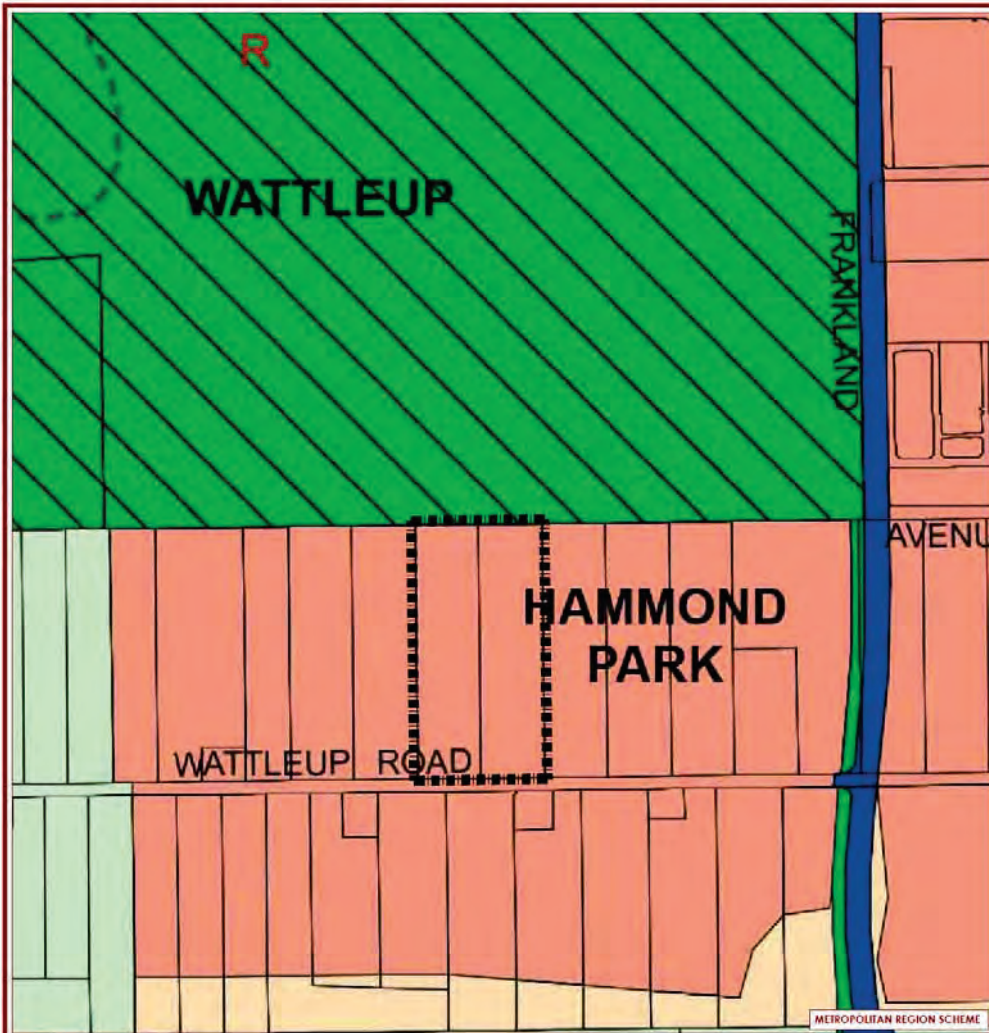
FIGURE 2

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0 25 50 75 100m
 SCALE 1:4,000 (A4)

AERIAL PHOTO
LOT 107, 150 & 9150 WATTLEUP RD
HAMMOND PARK



Legend

Scheme boundary	Zones	Notice of delegation
Reserved lands	Parks and recreation	Bush Forever area
Parks and recreation	Rural	
Reserved roads	Urban	
Other regional roads	Urban deferred	

LEGEND

REGION SCHEME RESERVES (MRS)	LOCAL SCHEME ZONES	OTHER CATEGORIES
Other regional roads	Development	B01 Special use area
Parks and recreation	Residential	Town/tenancy coastal plain catchment area
Parks and recreation restricted	Rural	Building envelope
LOCAL SCHEME RESERVES		SVA Bushfire vulnerability area
Local road		DA1 Development area
Parks and recreation		Development contribution area



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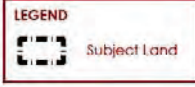


FIGURE 3



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MRS & LPS 3 ZONING MAP
LOT 107, 150 & 9150 WATTLEUP RD
HAMMOND PARK
CITY OF COCKBURN

Plan No: OPE WAT 7-01b-03 Client: OPENCORP.
 Date: 22.03.19 Planner: MB

1.3 PLANNING FRAMEWORK

1.3.1 ZONING AND RESERVATIONS

The site is zoned urban under the Metropolitan Region Scheme and development under the City of Cockburn Town Planning Scheme No.3 (Scheme) (refer Figure 3).

Pursuant to Clause 4.2.1 of the Scheme, the development zone provides for the subdivision and development of land generally in accordance with a Structure Plan.

The site is also located within Development Contribution Areas 10 and 13. Development is therefore subject to cost contributions in accordance with the development contribution plans contained at Schedule 12 of the Scheme.

1.3.2 SOUTHERN SUBURBS DISTRICT STRUCTURE PLAN – STAGE 3

The site falls within the area subject to the *Southern Suburbs District Structure Plan – Stage 3* (SSDSP) (refer Figure 4). The SSDSP has been adopted by the City as a strategic document to guide the development of land generally west of Kwinana Freeway, from Gaebler Road to the north, through to Rowley Road to the south. The SSDSP sets out broad land uses that may be refined through the preparation of Local Structure Plans.

The SSDSP designates predominantly medium density residential uses, together with a primary school site and a parcel of public open space over the structure plan area.

The uses proposed herein generally accord with those identified in the SSDSP, as detailed in subsequent sections of this report.

1.3.3 PLANNING STRATEGIES

Directions 2031

Directions 2031 recognises the benefits of a more consolidated city and sets realistic goals to promote housing affordability and sustainable urban growth. The Structure Plan is considered compliant with the key objectives and themes of Directions 2031 and responds in the following manner:

- The structure plan facilitates urban development that is efficient in its design and use of resources;
- The structure plan exceeds the minimum dwelling density target of 15 dwellings per gross urban zoned hectare;
- The proposed development forms part of a planned and integrated development area.

1.3.4 PLANNING POLICIES

State Planning Policy 3: Urban Growth and Settlement

This policy sets out the principles and considerations which apply to planning for urban growth and settlements in Western Australia.

This proposal responds to the objectives of *State Planning Policy 3: Urban Growth and Settlement* by:

- Providing a variety of housing opportunities;
- Forming part of a planned development cell; and,
- Providing for a type of development that responds to the capability and amenity of the land, and the character of the area.

LEGEND

Residential Density	Local Centre (Pedestrian Based Retail)	Key Open Space Areas:	Key Road Structure (Existing and Proposed)
High	Mixed Business/Commercial/ Home Based Business	Public Open Space	Major Shared Path
Medium	Community Facilities/ Schools etc	Regional Open Space	Historic Baldivis Tramway Trail
	Conservation Category Wetland* <small>*in accordance with DEC Geomorphic Wetlands Swan Coastal Plain dataset</small>		400m Walkable Catchment
			Central Precinct

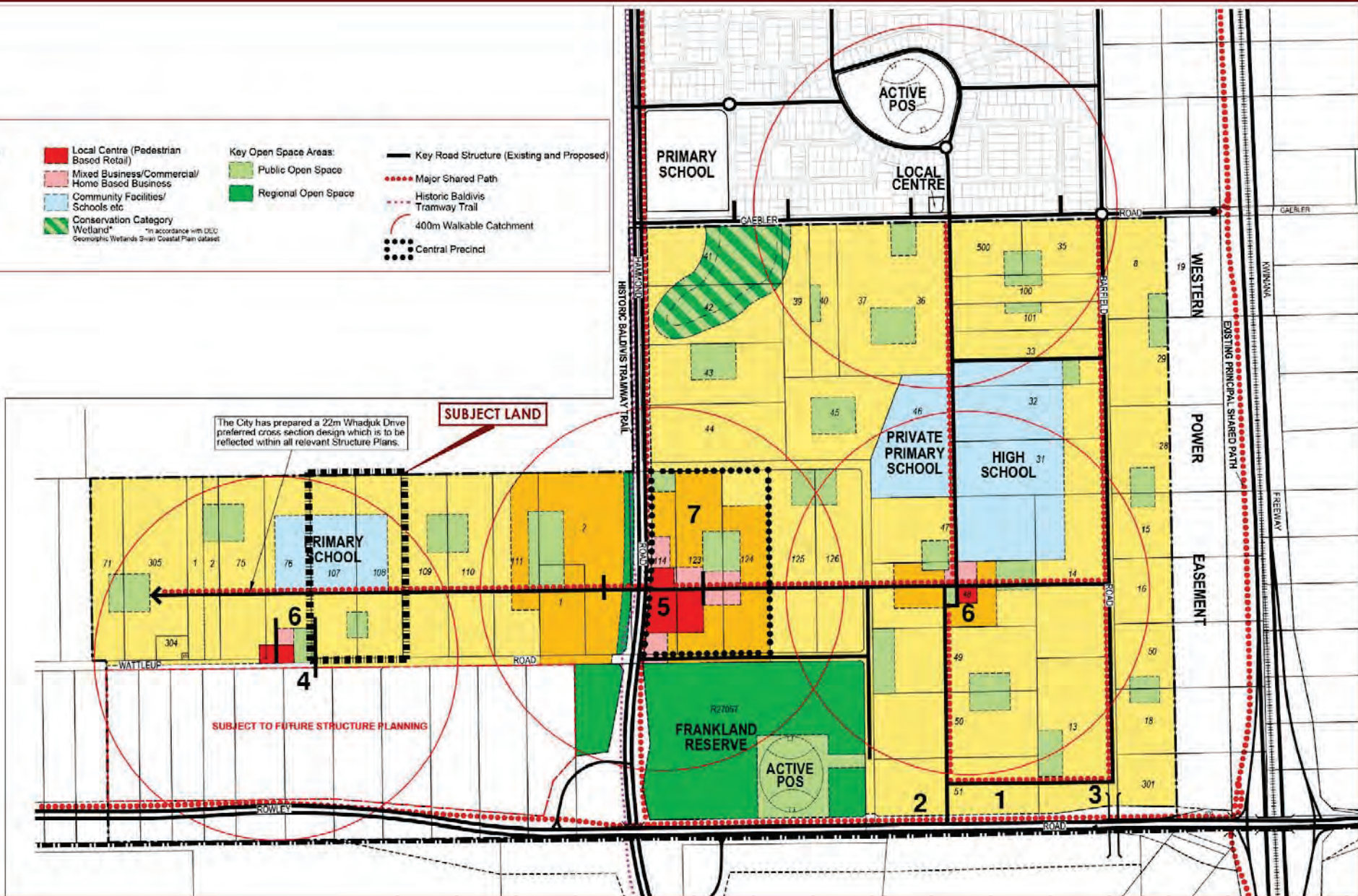


FIGURE 4



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LEGEND

Subject Land



SOUTHERN SUBURBS DISTRICT STRUCTURE PLAN - STAGE 3
LOT 107, 150 & 9150 WATTLEUP RD
HAMMOND PARK
CITY OF COCKBURN

State Planning Policy 3.7: Planning in Bushfire Prone Areas

WAPC *State Planning Policy 3.4: Planning in Bushfire Prone Areas* directs how land use planning should address bushfire risk management in Western Australia, and applies to all land declared bushfire prone by the Commissioner for Fire and Emergency Services, pursuant to s. 18P of the *Fire and Emergency Services Act 1998*.

The structure plan responds to the objectives of *State Planning Policy 3.7: Planning in Bushfire Prone Areas* by:

- Identifying and considering the impacts of potential bushfire risk areas in the design and delivery of the structure plan at an early stage, such that it can be managed as an integral part of development;
- Providing for the development of a permeable urban form to facilitate easy access and egress in the event of a bushfire emergency; and,
- Maximising separation to potential bushfire hazards whilst simultaneously managing ecological impacts.

Liveable Neighbourhoods

Liveable Neighbourhoods is a state-wide development control policy with the aim of facilitating the development of sustainable communities. It provides an integrated planning and assessment policy for the preparation of structure plan and subdivision designs, and represents an alternative performance-based approach to conventional subdivision policies.

This structure plan adopts the principles of *Liveable Neighbourhoods* and has been developed to meet the objectives and requirements of each of the *Liveable Neighbourhoods* design elements.

1.3.5 PRE LODGEMENT CONSULTATION

AGENCY	DATE OF CONSULTATION	SUMMARY OF OUTCOME
Alinta Gas	By others, date unknown.	No issues.
Department of Education	17 February 2016; 28 August 2017	The Department supports the proposed structure plan in principle.
Department of Water	By others, date unknown.	No issues.
Fire and Emergency Services Authority	By others, date unknown.	No issues.
Local government	17 February 2016, ongoing	City of Cockburn to assess Structure Plan.
Main Roads Western Australia	By others, date unknown.	No issues.
Public Transport Authority	By others, date unknown.	No issues.
Telstra	By others, date unknown.	No issues.
Water Corporation	By others, date unknown.	No issues.
Western Power	By others, date unknown.	No issues.

2. SITE CONDITIONS AND CONSTRAINTS

The following section provides a summary of the key site characteristics identified through detailed technical analysis and planning. A context and constraints map has been prepared to illustrate the main issues discussed below (refer Figure 5).

2.1 BIODIVERSITY AND NATURAL AREA ASSETS

An Environmental Assessment and Management Strategy (EAMS) has been prepared by Emerge Associates (2016) to support the design and implementation of the structure plan (refer Appendix 3). The EAMS provides a synthesis of information from a range of sources and site specific assessments, including:

- A Flora and Vegetation Survey;
- A Fauna Assessment;
- A Local Water Management Strategy; and,
- A Bushfire Management Plan.

2.1.1 FLORA AND VEGETATION

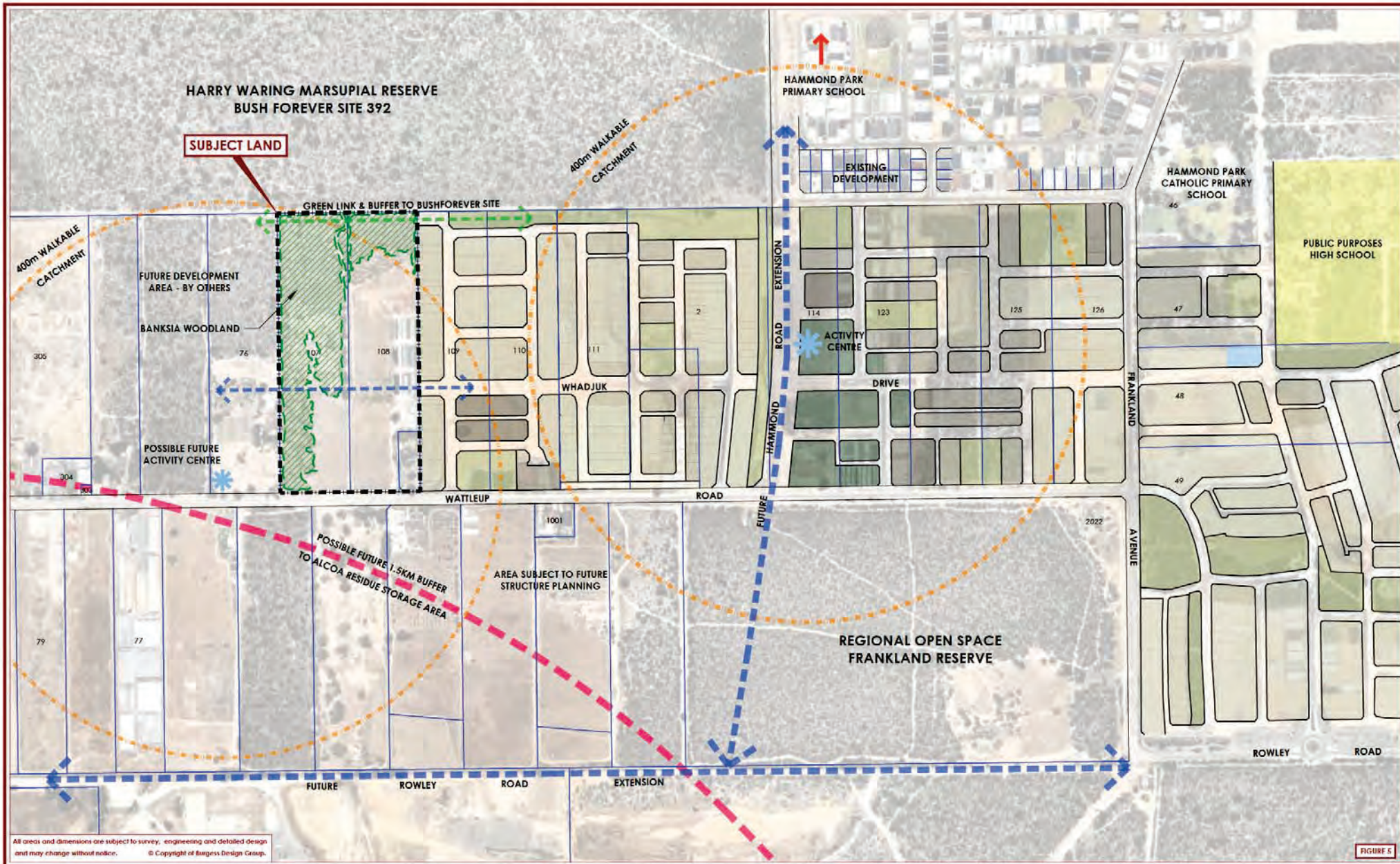
The site lies within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia; falls within the Bassendean Complex – Central and South; and, is mapped as occurring within the ‘Spearwood 6’ association, described as medium woodland; Tuart and Jarrah. The ‘Spearwood 6’ vegetation association has 24.04% of its pre-European extent remaining, exceeding the 10% minimum target set out by the Environmental Protection Authority.

Aerial imagery indicates the site was completely cleared of native vegetation between 1965 and 1974. A portion of Banksia Woodland has since regenerated in the north western portion of the site, likely self seeding from the adjacent Harry Waring Marsupial Reserve, and is in ‘good’ to ‘excellent’ condition. This vegetation may provide habitat for native and conservation significant fauna; namely: Carnaby’s, Baudin’s and Forest Red-Tailed Black Cockatoos, and Quenda. The remainder of the site is completely degraded, comprising introduced grassland, and has historically been used as an orchard and sprout growing facilities.

The portion of regenerated Banksia Woodland aligns closely with Floristic Community Type 28, associated with the ‘Banksia Woodlands of the Swan Coastal Plain’ Threatened Ecological Community that was recently listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The proposed clearing of Lot 107 was referred to the Department of Environment and Energy pursuant to the EPBC Act and subsequently determined to be ‘not a controlled action’ in March 2017 (referral 2017/7890) (refer Appendix 4). The Developer is currently considering its obligations under the EPBC Act in relation to Lot 9150.

No threatened or priority flora species were recorded in the site, and none are considered likely to occur due to a lack of suitable habitat. Additionally, no known environmentally sensitive areas occur within the site.

The site is located south of Bush Forever Site 392, being the Harry Waring Marsupial Reserve. Site 392 comprises approximately 270ha, and has been recognised for various unique environmental attributes including conservation significant flora and fauna. The Structure Plan responds to Site 392 through the strategic designation of public open space and road reserves to provide an appropriate interface that both buffers potential environmental impacts and maximises separation to the potential bushfire risk.



All areas and dimensions are subject to survey, engineering and detailed design and may change without notice. © Copyright of Burgess Design Group.

FIGURE 5



LEGEND

Subject Land



LEGEND

R20	R40	R80	Public Open Space
R25	R50	Local Centre	
R30	R60	Public Purposes	

CONTEXT PLAN
LOT 107, 150 & 9150 WATTLEUP RD
HAMMOND PARK
CITY OF COCKBURN

No remnant vegetation is proposed to be retained within the site due to engineering and servicing constraints. As such, it will not be necessary to prepare a flora and vegetation management plan to manage vegetation within the site. Landscaping will involve the use of native flora species to promote biodiversity within the development.

2.1.2 FAUNA

Banksia dominated woodland and emergent Jarrah trees identified by the flora and vegetation survey as occurring within the north western portion of the site may support native fauna species; in particular: Carnaby's, Baudin's and Forest Red-Tailed Black Cockatoos and Quenda.

The fauna assessment prepared to support the EAMS found that whilst fauna habitat values of the regenerated vegetation appear to be relatively good, its biodiversity values are limited by virtue of its fragmentation, with the site itself providing a relatively small area and limited capacity to support most fauna species. Further, it is unlikely that impacts on Black Cockatoos as a result of the development would result in a 'significant impact' as defined by the Federal Department of the Environment and Energy. The assessment concludes that no constraints on development relating to fauna species are, at this stage, anticipated.

Engineering constraints dictate that the site is likely to be completely cleared to accommodate development. As such, a fauna relocation management plan may be required to ensure terrestrial fauna are relocated to the adjacent Bush Forever Site 392, which is superior in both extent and quality as fauna habitat to that located within the site.

2.2 LANDFORM AND SOILS

The site moderately rises from 37m in relation to the Australian Height Datum (mAHD) at the south and north western corners of the site to a high point of 46mAHD in the north eastern corner, with an average grade of approximately 3%.

The site is located within the Bassendean Dune System, described as low relief, leached grey, siliceous Pleistocene sand dunes with well drained grey sands intervening sandy and clayey swamps and gently undulating plains. Soils are believed to consist of sand derived from Tamala Limestone of residual origin, with good infiltration and some pollutant attenuation properties due to small clay content.

Landgate's WA Land Atlas indicates there is no known risk of acid sulfate soils occurring within the site.

2.3 GROUNDWATER

Groundwater flows in a westerly direction, and is believed to be a minimum of 19-20 metres below ground level, that being at around 17mAHD. This significant depth to groundwater means that no further investigations or management measures are required.

2.4 SURFACE WATER

No defined streamlines or floodways occur within the site. This is consistent with the high permeability of the underlying sand. Any surface water runoff that does not permeate the soil will likely be directed to lower lying areas adjacent to the site.

2.5 BUSHFIRE HAZARD

A Bushfire Management Plan (BMP) has been prepared to support the structure plan (refer Appendix 5). The findings of the BMP are summarised below.

The site falls within an area declared bushfire prone by the Commissioner for Fire and Emergency Services, pursuant to s. 18P of the *Fire and Emergency Services Act 1998*.

The Bushfire Hazard Level (BHL) within the site has been assessed as 'moderate' to 'extreme', with land surrounding the site also assessed as moderate to extreme. The assessed risk is considered to be manageable in accordance with the requirements of SPP3.7 and the WAPC' *Guidelines for Planning in Bushfire Prone Areas 2015* (Guidelines). The structure plan responds to these risks through the strategic siting of road reserves and public open space to maximise separation to potential bushfire risks; and, in particular, to ensure that management measures do not impact upon the ecological values of the adjacent Bush Forever Site 392 abutting the northern boundary of the site.

The BMP demonstrates compliance with all four elements of the Guidelines, as follows:

2.5.1 LOCATION

A Bushfire Attack Level (BAL) assessment undertaken to support the BMP demonstrates that future development is located in an area that can or will, on completion, be subject to a BAL rating of BAL-29 or lower.

2.5.2 SITING AND DESIGN

Asset protection zones have been integrated into the design of the structure plan through the strategic siting of roads and public open space, and will act in conjunction with increased construction standards in accordance with AS3959, where applicable, to ensure that dwellings are not subject to an unacceptable level of radiant heat flux.

2.5.3 VEHICULAR ACCESS

The layout, design and construction of vehicular access throughout the structure plan area will allow vehicles to move through the site easily and safely at all times. Importantly, the integrated road network allows people to move away from the main permanent source of bushfire risk north of the site and provides links through to Wattleup road to the south and ultimately also through to development east and west of the site.

2.5.4 WATER

Development will be serviced with a permanent and secure reticulated water supply for fire fighting purposes. Suitable hydrants will be provided in accordance with Water Corporation and City of Cockburn requirements.

2.5.5 VULNERABLE LAND USES

The primary school depicted on the structure plan map is likely to be considered a vulnerable land use, which *State Planning Policy 3.7: Planning in Bushfire Prone Areas* defines as a land use where persons may be less able to respond in a bushfire emergency. Further information on, and examples of vulnerable land uses can be found in section 5.5 of the Guidelines.

The structure plan has been designed to provide appropriate opportunities for evacuation of the primary school in the event of emergency, primarily through the provision of appropriate access arrangements as set out in the Guidelines.

Section 5.2.2 of the Guidelines requires that an emergency evacuation plan be prepared at the development application stage to assess the vulnerabilities and develop an appropriate response. This plan should be prepared in accordance with the requirements of the Guidelines and in consultation with the City of Cockburn and other relevant stakeholders.

2.6 HERITAGE

There are no known Aboriginal heritage sites or other heritage places within the site.

However, it is noted that the *Aboriginal Heritage Act 1972* provides for the protection and preservation of Aboriginal heritage and culture throughout Western Australia, including places and objects that are of significance to Aboriginal People. Under the *Aboriginal Heritage Act 1972*, Aboriginal sites and materials are protected regardless of whether they have been previously recorded or reported, or not.

3. LAND USE AND SUBDIVISION REQUIREMENTS

3.1 LAND USE

The structure plan designates medium density residential land uses, ranging from R30 to R40, a public purposes reserve for a primary school and two parcels of Public Open Space (POS) (refer **Plan 1**).

The proposed uses generally accord with those shown on the City of Cockburn's SSDSP, as detailed in the proceeding sections.

Land use permissibility shall be in accordance with the corresponding zone or reserve under the Scheme.

3.2 PUBLIC OPEN SPACE

The structure plan depicts two parcels of POS, totalling 0.5293 gross hectares, and representing 10 per cent public open space contribution.

POS has been located to:

- Maximise amenity and access to recreational areas;
- Provide a buffer to environmentally sensitive areas and areas with a known bushfire hazard;
- Accommodate drainage infrastructure as part of a broader water sensitive urban design strategy; and,
- Facilitate the retention of remnant vegetation, where permitted by engineering and servicing constraints.

POS should be provided generally in accordance with the structure plan map (refer **Plan 1**) and the POS Schedule (refer **Appendix 1**), and should comprise a minimum of 10 per cent of the net subdivisible area.

A landscape master plan has been prepared and this can be found attached at **Appendix 6**, which sets out an integrated landscape strategy for the site that ties in with approved development to the east.

3.3 RESIDENTIAL

The structure plan proposes approximately 2.7761ha of medium density residential uses ranging from R30 to R40. These densities have been designated in accordance with the locational criteria set out in the SSDSP, as follows:

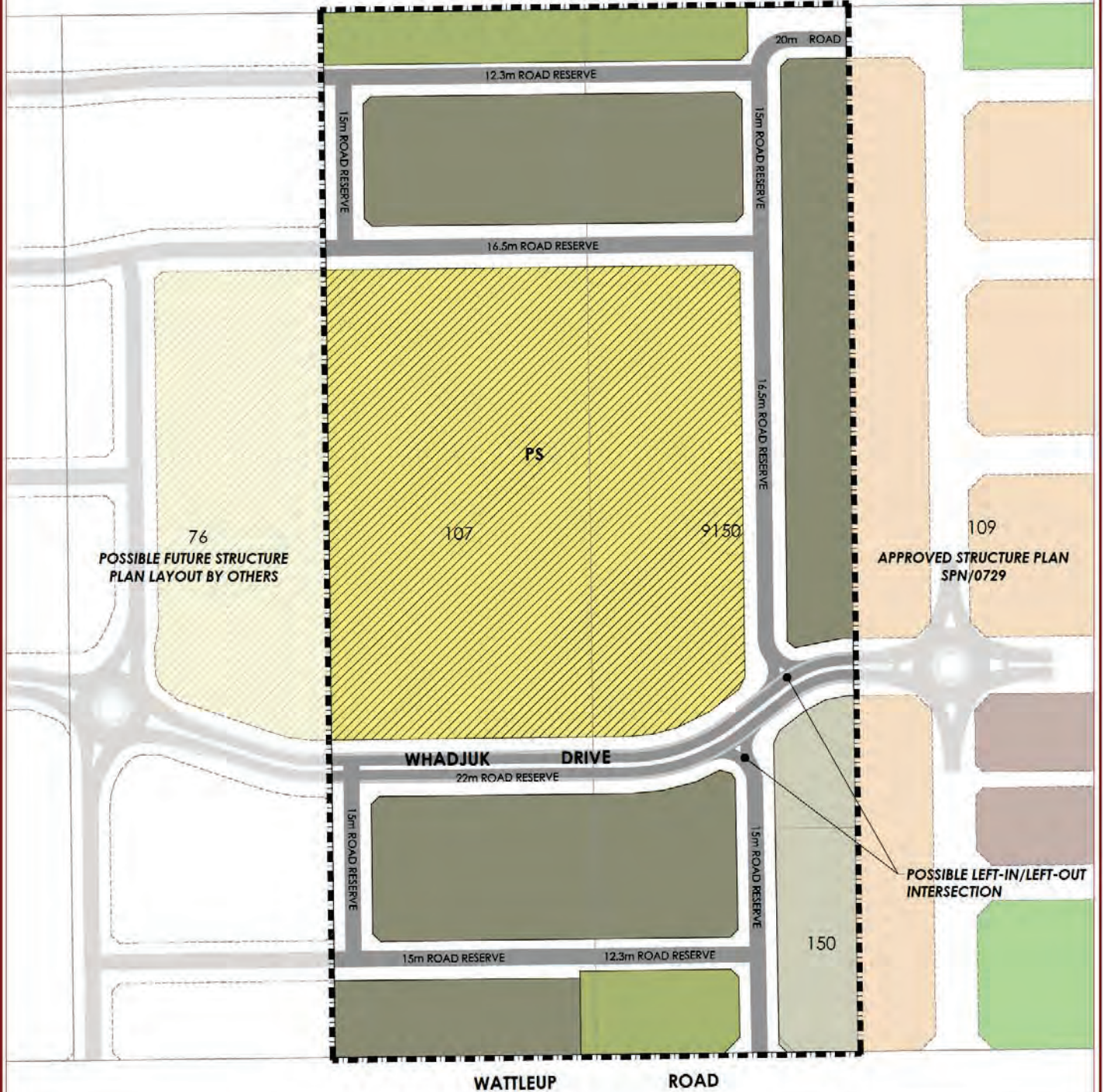
- Base density of R30 over the whole Structure Plan area; and,
- Increased density of R40 designated adjacent to areas of POS, and within close proximity to the future activity node shown within Lot 106 on the SSDSP.

These densities are expected to yield approximately 89 single residential lots ranging in size from 275m² to 475m². The site is expected to accommodate approximately 89 dwellings, with a total population of 267 people, based on an average of 3 persons per household in Hammond Park at the 2016 Census.

HARRY WARING
MARSUPIAL RESERVE

LEGEND

-  STRUCTURE PLAN AREA
-  INDICATIVE LAYOUT
- ZONES
 -  RESIDENTIAL R30
 -  RESIDENTIAL R40
- LOCAL SCHEME RESERVES
 -  PARKS AND RECREATION
 -  PUBLIC PURPOSES - PRIMARY SCHOOL



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PLAN 1: QUENDA ESTATE LOCAL STRUCTURE PLAN
LOTS 107, 150 & 9150 WATTLEUP ROAD
HAMMOND PARK

CITY OF COCKBURN

The anticipated dwelling yield will provide a density of 11 dwellings per gross urban-zoned hectare and 32 dwellings per site hectare. The number of dwellings per gross urban-zoned hectare does not meet the target set out under Directions 2031 because a large portion of the site is set aside for the primary school. However, the density per site hectare (i.e. residential zoned land) of 32 dwellings far exceeds the target set out in Liveable Neighbourhoods of 22 dwellings, and is considered to be suitable on that basis.

3.3.1 RESIDENTIAL MEDIUM DENSITY DEVELOPMENT STANDARDS

WAPC Planning Bulletin 112/2016: Medium-density single house development standards – Development Zones prescribes uniform variations to *State Planning Policy 3.1: Residential Design Codes* generally applicable to medium density residential development in development zones. Planning Bulletin 112/2016 provides for its adoption by way of local planning policy.

City of Cockburn Local Planning Policy 1.16: Single House Standards for Medium Density Housing (LPP1.16) provides for the implementation of Planning Bulletin 112/2016 where an approved structure plan or local development plan identifies that the Policy applies.

As stated in Part One, Section 4.2.3 of this structure plan, LPP1.16 applies to the structure plan area.

3.4 MOVEMENT NETWORKS

A transport impact assessment was prepared by Cardno in October 2017 to support the design and implementation of the structure plan (refer **Appendix 7**). The TIA has been prepared in accordance with *WAPC Transport Impact Assessment Guidelines: Volume 2 - Planning Schemes, Structure Plans and Activity Centres 2016*. A summary of the key findings of this report is provided below.

3.4.1 EXISTING ROAD NETWORK

A summary of the existing road network, including pre development traffic volumes, is provided in **Table 6** below.

Road	Classification	Treatment	Posted Speed Limit	Pre-development daily traffic volume
Wattleup Road	Regional Distributor	Two-lane, undivided carriageway.	80km/h	4,368
Frankland Avenue north of Wattleup Road	Access Road	Two-lane, undivided carriageway.	50km/h	1,057
Frankland Avenue south of Wattleup Road	Regional Distributor	Two-lane, undivided carriageway.	70km/h	5,113
Mandogalup Road	Access Road	Two-lane, undivided carriageway.	70km/h	1,378

3.4.2 FUTURE ROAD NETWORK

3.4.2.1 ROWLEY ROAD

Rowley Road has been identified as a future primary link between Kwinana Freeway and the Latitude 32 Industrial Area. The Department of Planning, Lands and Heritage has identified the need to upgrade and extend Rowley Road westwards as a dual carriageway, which will run parallel to Wattleup Road and will relieve Wattleup Road of freight traffic.

3.4.2.2 HAMMOND ROAD

Hammond Road will be extended south of Russell Road, ultimately passing underneath the future extent of the Rowley Road extension.

3.4.2.3 WATTLEUP ROAD

Wattleup Road will continue to be a major freight route until such a time as the Rowley Road extension is undertaken. Following that, Wattleup Road will accommodate primarily local traffic.

3.4.3 PROPOSED ROAD NETWORK

The proposed road network comprises:

- A series of 'Access Street C' reserves; and,
- One 'Neighbourhood Connector A' reserve, forming an extension of Whadjuk Drive.

The proposed road network has been designed to integrate seamlessly with surrounding structure plan areas and provides a legible and well planned response to the constraints of the site. Principally, this includes the provision of an appropriately located primary school site with road access along all boundaries, together with a suitable interface to the Harry Waring Marsupial Reserve in terms of accessibility, separation to bushfire risk and ecological buffering.

3.4.3.1 LOCAL ACCESS STREETS

Local access streets have been designed to facilitate the safe and efficient movement of pedestrians, cyclists, and vehicles – including emergency vehicles – throughout the development. The road network is integrated with approved development to the east, and provides opportunities for integration with future development to the west.

3.4.3.2 WHADJUK DRIVE, 'NEIGHBOURHOOD CONNECTOR A'

Whadjuk Drive will form the main east-west pedestrian, cycling, and vehicular movement spine for trips within the SSDSP area. A 22 metre wide reserve will accommodate a single lane divided carriageway with bike paths, indented parking and footpaths to the specifications of the City of Cockburn. Whadjuk Drive will integrate seamlessly with surrounding structure plan areas, with a minor realignment contained entirely within the structure plan area and Lot 76 (indicatively) which serves to accommodate a primary school site to the specifications of the Department of Education whilst also providing a traffic calming function to aid in the safe movement of pedestrians in the area.

3.4.4 INTERSECTION TREATMENTS

The transport impact assessment provides an analysis on the possible impacts arising from anticipated trip generation rates resulting from the proposed development.

Development within the structure plan area is expected to generate in the order of 800 vehicle movements during the AM peak hour, and 820 in the PM peak hour. SIDRA analysis indicates that development will have no notable impact on the existing road network, and all existing and proposed intersections will function at an acceptable level of service.

3.4.5 PUBLIC TRANSPORT

3.4.5.1 AUBIN GROVE TRAIN STATION

Aubin Grove Train Station provides excellent access to the regional rail network via the Perth to Mandurah Line. Works associated with the station include:

- Six bus feeder services into Cockburn and Aubin Grove Stations;
- Construction of approximately 2,000 parking bays;
- Widening of Russell Road; and,
- Bicycle facilities and connection to the local cycle network.

3.4.5.2 BUS ROUTES

The SSDSP provides for a future bus route along Wattleup Road/Whadjuk Drive, potentially linking the site with the Latitude 32 Industrial Area and the broader public transport network.

3.4.5.3 PEDESTRIAN AND BIKE NETWORK

The SSDSP provides for an interconnected network of shared paths, bike lanes and footpaths throughout Wattleup/Hammond Park. To that end, the City of Cockburn's prescribed cross-section for Whadjuk Drive includes the provision of cycle lanes and footpaths either side of the street. This will provide a strong pedestrian and cycle link throughout the broader development cell, supplemented by a number of shared paths and other suitable treatments along adjoining local access streets.

3.5 WATER MANAGEMENT

A Local Water Management Strategy (LWMS) has been prepared for the site by Development Engineering Consultants (October 2017, refer **Appendix 8**).

The LWMS sets out a framework to deliver best practice outcomes through the use of water sensitive urban design principles to ensure appropriate total water cycle solutions are achieved.

3.5.1 STORMWATER

Sandy soils provide excellent soakage characteristics throughout the site, resulting in little to no run-off during rain events.

All stormwater will be infiltrated as close to the source as possible, with the underlying soils providing appropriate infiltration and nutrient uptake properties to accommodate the predicted volumes without need for further management measures. Sufficient groundwater

separation exists in higher areas of the catchment to facilitate infiltration without the need for bio-retention areas.

3.5.1.1 1 IN 1 YEAR EVENT

Stormwater flows from roads will be contained firstly within below ground storage and then surcharge to swales located in areas of POS. Open based drainage-pits will be installed to maximise 'at source' soakage for rainfall events of about 1.5 mm to 2.0mm.

All lots will retain water on site in rainwater tanks and/or soakwells to accommodate up to a 5 year storm without outflow. Beyond this storm, stormwater will surcharge and run overland to the street drainage system.

Nutrient loading and particulate matter – which is particularly prevalent in 1 in 1 year events and newly established areas due to the application of fertilisers for new gardens as well as construction waste – will be minimised through education of residents and maintenance personnel, frequent street and storm water maintenance programmes, and planting of appropriate native species.

3.5.1.2 1 IN 5 YEAR EVENT

Piped drainage systems will be designed to accommodate the 1 in 5 year ARI event without any inundation of roadways.

3.5.1.3 1 IN 100 YEAR EVENT

Flows in excess of the 1 in 5 year event will surcharge and run overland, where the road network will accommodate and direct flows towards each POS area and compensating basin.

Lot levels will be a minimum of 300mm above the top water level of the basins, and lots will be designed to ensure conveyance for major storms will be along roadways without flooding homes.

3.5.2 GROUNDWATER

Sufficient depth to groundwater exists and will be maintained; as such there is no further need to manage groundwater across the site.

3.5.3 URBAN WATER MANAGEMENT PLAN

An urban water management plan will be required at subdivision stage to refine the LWMS, and guide the implementation of development across the site.

3.6 EDUCATION FACILITIES

The structure plan accommodates a portion of a primary school site, comprising approximately 2.8522ha of land. The balance of the 4ha site - approximately 1.1478ha - shall be located within Lot 76, adjacently west of the structure plan area.

The school site reflects that shown on the SSDSP, which identifies the need for a public primary school site to service an anticipated catchment of 1,600 dwellings generally south of the Harry Waring Marsupial Reserve and Frankland Avenue.

In accordance with the Department of Education's requirements, the school site has been shown with road frontage along all boundaries, and is generally regular in shape to facilitate the efficient design and ongoing use of facilities.

3.7 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

An engineering services report has been prepared to support the structure plan (refer **Appendix 9**). The report confirms that there are no major constraints that prevent the land from being developed for urban purposes, and the site is capable of being provided with all essential services and infrastructure. A summary of the report is provided below.

3.7.1 POWER

Sufficient power supply exists in the area to supply the development. A 22kVA high voltage plus low voltage aerial power line is located along the southern verge of Wattleup Road connecting to Frankland Avenue to the east of the site. This service will be extended as necessary to provide the development with power.

3.7.2 WATER

Reticulated water is currently not available at the site.

Water Corporation has advised that sufficient supply exists to service the site from mains located in Frankland Avenue to the east of the site. An extension from this main will be brought to the site along Wattleup Road from the development to the east.

3.7.3 SEWER

The site currently falls within a gravity sewer catchment connected to the Bibra Main Sewer.

Development will require the extension of a gravity sewer from the corner of Frankland Avenue and Hammond Road through adjoining development to the east. The planned extension of this sewer will extend to Wattleup Road to provide a discharge point for a future Waste Water Pump Station located west of the site.

3.7.4 TELECOMMUNICATIONS

Telstra services exist in the area along Wattleup Road and Frankland Avenue. These services may be extended to service the proposed development.

The developer shall be required to install telecommunications 'pipe and pit' infrastructure to allow for the future installation of cables for the National Broadband Network.

3.7.5 GAS

Gas mains are available in the vicinity of Frankland Avenue to the east of the site. Gas will be extended through development to the east to service the site.

3.8 DEVELOPMENT CONTRIBUTION ARRANGEMENTS

The subject land falls within a Special Control Area, as designated on the Scheme Map, being Development Contribution Areas 10 and 13 (DCA10 and DCA13, respectively). Development is therefore subject to cost contributions in accordance with the development contribution plans contained at Schedule 12 of the Scheme.

DCA10 provides for the apportionment of costs associated with the widening and upgrading of Hammond Road between Gaebler and Rowley Roads, together with a proportional contribution to the cost of regional drainage infrastructure. DCA13 applies to all land within the City of Cockburn to be subdivided and/or developed for residential, rural residential or resource zone purposes, and is in addition to any other contribution requirements. DCA13 does not apply to lots that have no subdivision or development potential. DCA13 provides for proportional contributions toward regional, sub-regional and local infrastructure items.

As of November 2016, the City of Cockburn indicates that contributions in the order of \$47,354.96 per hectare may be payable under DCA10, and \$4,114.27 per lot/dwelling under DCA13.

4. CONCLUSION

The structure plan as described in this report satisfies the planning frameworks adopted by the City of Cockburn and the Western Australian Planning Commission, and the advice received during consultation with other agencies.

The proposed development has been shown to be an ideal and timely addition to the area. Additionally, the proposed land uses will support the ongoing growth of local and regional services and amenities, whilst capitalising on the capacity of existing infrastructure.

In light of the information presented herein, the structure plan is shown to be a logical and well planned addition to the community of Hammond Park.