# DEPARTMENT OF COMMUNITIES | PEET SECOND STAGE STRUCTURE PLAN

## PART ONE | IMPLEMENTATION REPORT

April 2022

Government of **Western Australia**
Department of **Communities**

CLE Town Planning + Design

PEET

| | |
|---|---|
| Title: | Department of Communities \| Peet Second Stage Structure Plan<br>Part One \| Implementation Section |
| Prepared for: | Department of Communities and Peet Limited |
| CLE Reference: | 3074Rep222C |
| Date: | 8 Aprill 2022 |
| Status: | Final |
| Review date: | 8 April 2022 |
| Prepared by: | CLE Town Planning + Design |
| Project team: | CLE Town Planning + Design - Planning + Design<br>Environmental - Emerge Associates<br>Bushfire - Emerge Associates<br>Landscaping - Plan E Landscape Architect<br>Traffic - GTA Consultants<br>Engineering - Cossill & Webley Consulting Engineers<br>Local Water Management Strategy - RPS Australia |

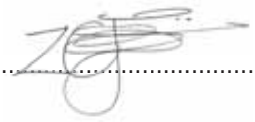
IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

20 May 2022 ..... 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

23 May 2022 ..... Date

23 May 2032 ..... Date of Expiry

## Table of Amendments

| Amendment No. | Summary of the Amendment | Date approved by WAPC |
|---|---|---|
| | | |
| | | |

# EXECUTIVE SUMMARY

The Department of Communities/Peet Second Stage Brabham Structure Plan (the Structure Plan) comprises approximately 50.6 hectares of land, consisting of parts of lots 33, 352, 353, 354 and 355 Murray Road, Brabham. This Structure Plan is the second of the 'Brabham Structure Plans' to be prepared over land owned by the Department of Communities, and represents a logical extension to the approved Department of Communities/Peet First Stage Brabham Structure Plan situated immediately south.

The Structure Plan area is zoned 'Urban' in the Metropolitan Region Scheme (MRS) and 'Special Use' (SU10) in the City of Swan Local Planning Scheme No. 17 (LPS17). The Structure Plan is lodged in accordance with LPS17 provisions, which requires a structure plan prior to development or subdivision. The purpose of the Structure Plan is to provide a planning framework to guide future subdivision and development across the site.

The Structure Plan continues on with the logical expansion of the Brabham community, initially established by the First Stage Brabham Structure Plan, with this residential neighbourhood continuing to respond to the surrounding land use context and drawing on the key elements of the Albion District Structure Plan which provides a high level framework for future land use and development in the area.

Through the inclusion of a permeable and legible local road network, the Structure Plan establishes an appropriate interface to both existing and future surrounding development, and with densities of R20 to R60, the Structure Plan is capable of delivering a residential target of 26.1 dwellings per residential site hectare, achieving State government density targets.

The Structure Plan provides a network of public open space areas which, in addition to those delivered as part of the First Stage Brabham Structure Plan, will provide residents with a combination of passive and active spaces whilst also delivering key drainage objectives and offering the potential for future alternative water solutions, both at a local and district level.

The Structure plan also sees the delivery of the Brabham Primary School, co-located with an area of active open space and a community facility site, as identified by the Albion District Structure Plan. A small local centre is similarly located adjacent to the school and community site, creating an additional point of community focus and amenity. All essential service infrastructure is located within proximity and is easily extended to the Structure Plan area.

The Structure Plan is supported by a number of technical reports which are provided as appendices and summarised in Part 2:

- Environmental Assessment and Management Strategy;
- Wetland and Waterway Management Strategy;
- Bushfire Management Plan;
- Landscape Masterplan;
- Local Water Management Strategy;
- Transport Impact Assessment; and
- Engineering Servicing Report.

These reports comprehensively address all of the relevant planning considerations and demonstrate that the land is suitable for urban development in the form proposed.

Table 1 provides a land use summary of the Structure Plan.

Table 1: Land Use Summary

| Item | Data | Section number referenced within the Structure Plan Report |
|---|---|---|
| Total area covered by the Structure Plan | 50.6 hectares | Section 1.2.2 |
| Area of each land use proposed<br>Zones (as per the Scheme)<br>- Residential<br>- Special Use (Local Centre)<br>Reserves (as per the Scheme)<br>- Road Reserves<br>- Parks and Recreation<br>- Public Purpose (Primary School)<br>- Public Purpose (Civil & Cultural) | <br><br>18.6 hectares<br>0.2 hectares<br><br>10.9 hectares<br>17.1 hectares<br>3.5 hectares<br>0.35 hectares | Section 3.1 |
| Total estimated lots yield<br>Estimated number of dwellings<br>Estimated residential site density<br>- Dwellings per residential site hectare *as per Livable Neighborhoods* | 480 - 490 lots<br>480 - 490 dwellings<br><br>26.1 dwellings per residential site hectare | Section 3.2.1 |
| Estimated population | 1344 - 1372 people @ 2.8 people per household | |
| Number of Primary Schools | One | Section 3.8 |
| Number of Secondary Schools | None | Section 3.8 |
| Amount of Public Open Space | 10.9 hectares (gross)<br>10 hectares (unrestricted)<br>0.8 hectares (restricted) | Section 3.3 |

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# PLANS

## 1.0 STRUCTURE PLAN AREA

This Structure Plan shall apply to lots 33, 352, 353, 354 and 355 Murray Road, Brabham being the land contained within the inner edge of the line denoting the structure plan boundary on the Structure Plan Map.

The Structure Plan is as the Department of Communities/Peet Second Stage Brabham Structure Plan.

## 2.0 STRUCTURE PLAN CONTENT

This Structure Plan comprises:

- Part One – Implementation;
- Part Two – Explanatory Report; and
- Appendices – Technical Reports.

Part One of the Structure Plan comprises the structure plan map and planning provisions. Part Two of the Structure Plan is the planning report component which can be used to interpret and implement the requirements of Part One.

## 3.0 OPERATION

The Structure Plan comes into effect on the date that it is endorsed by the Western Australian Planning Commission.

## 4.0 INTERPRETATION AND RELATIONSHIP WITH STATUTORY PLANNING FRAMEWORK

The Structure Plan constitutes a Local Structure Plan pursuant to Part 5A and Schedule 4 of the City of Swan Planning Scheme 17 and the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes.*

The Structure Plan Map outlines future land use, zones and reserves applicable within the structure plan area.

Pursuant to the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes*, a decision maker of an application for development approval or subdivision approval is to have due regard to the provisions of this Local Structure Plan, including the Structure Plan Map, Implementation Report, Explanatory Report and Technical Appendices.

# 5.0 STAGING

Development staging will follow an orderly sequence and shall not exceed the extension of essential service infrastructure or constructed road access.

# 6.0 LAND USE

## 6.1 Land Use and Zones

The subdivision and development of land is to generally be in accordance with the Structure Plan.

Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zone or reserve under the Scheme, or as otherwise outlined in this Structure Plan.

## 6.2 Residential

### 6.2.1 Dwelling Target

In accordance with the requirements of *Liveable Neighbourhoods*, subdivisions are to achieve an average residential density of 22 dwellings per site hectare across the Structure Plan area.

### 6.2.2 Density

a. The Structure Plan map defines the broad residential density ranges that apply to specific areas within the Structure Plan. Lot specific residential densities, within the defined residential ranges, are to be subsequently assigned in accordance within a Density Plan approved by the WAPC at subdivision stage.

b. A Density Plan is to be submitted at the time of subdivision to the WAPC and shall be consistent with the Structure Plan, and the Residential Density Ranges identified on Plan A and locational criteria contained in Clause 6.2.3.

c. The Density Plan is to include a summary of the proposed dwelling yield of the subdivision.

d. Approval of the Density Plan shall be undertaken at the time of determination of the subdivision application by the WAPC. The approved Residential Density Code Plan shall then form part of the Structure Plan and shall be used for the determination of future development applications.

e. Variations to the Density Plan will require further approval of the WAPC, with a revised Density Plan submitted generally consistent with the approved plan of subdivision issued by the WAPC. The revised Density Plan shall be consistent with Residential Density ranges identified on the Structure Plan map and the locational criteria contained in Clause 6.2.3.

f. A revised Density Plan, consistent with Clause 6.2.2 (e) will replace, wholly or partially, the previously approved Density Plan, and shall then form part of the Structure Plan as outlined in Clause 6.2.2 (d).

g. Density Plans are not required if the WAPC considers that the subdivision is for one or more of the following:

(i) The amalgamation of lots;

(ii) Consolidation of land for 'superlot' purposes to facilitate land assembly for future development;

(iii) The purposes of facilitating the provision of access, services or infrastructure; or

(iv) Land which by virtue of its zoning or reservation under the Structure Plan cannot be developed for residential purposes.

### 6.2.3 Locational Criteria

The allocation of residential densities shall be in accordance with the following locational criteria:

a. The R30 density code shall apply as the base code to all 'Residential' zoned lots, with the exception of those lots coded R20, R40 and R60 as set out in (b) and (c) below.

b. The R20 density code shall apply to lots immediately abutting the Henley Brook Avenue reserve as shown on the Structure Plan map.

c. The R40 density code may apply to all 'Residential' zoned lots where one or more of the following applies:

(i) The lot has a laneway abutting the rear boundary;

(ii) The lot is located within a 400m walkable catchment of a planned Local Centre; and

(iii) The lot is located within a 400m walkable catchment of a planned Primary or High School.

d. The R60 density code may apply to 'Residential' zoned lots that meet one or more of the criteria set out in (c) above and where the lot is located immediately abutting or directly opposite public open space or where a lot measures 900m$^2$ or greater.

## 6.3 Public Open Space

The provision of public open space being provided generally in accordance with the Structure Plan map and Table 1 of Part 1 of this Structure Plan, with an updated public open space schedule to be provided at the time of subdivision for determination by the WAPC, upon advice of the City of Swan.

Table 2: Public Open Space

| Strategic Public Open Space | Indicative Size (ha) |
|---|---|
| POS 1 | 2.3ha |
| POS 2 | 0.8ha |
| POS 3 | 7.0ha |
| POS 4 | 3.1ha |
| POS 5 | 3.0ha |

## 6.4 Special Use Zone (Local Centre)

Land use permissibility for the Special Use Zone (Local Centre) as shown on the Structure Plan map shall be in accordance with Table 3 “Special Use Zone (Local Centre) - Land Use Permissibility” of Part 1 of this Structure Plan.

The Local Centre site is to have a maximum Net Lettable Area of 520m².

Table 3: Special Use Zone (Local Centre) - Land Use Permissibility

| Use Class | Permissibility |
|---|---|
| Child Care Premises | D |
| Convenience Store | |
| Family Day Care | |
| Office | |
| Restaurant | |
| Shop | |

*Note: Use Class as defined in the City of Swan Local Planning Scheme No. 17.*

# 7.0 SUBDIVISION AND DEVELOPMENT

## 7.1 Local Development Plans

The preparation of a Local Development Plan may be required by the Western Australian Planning Commission (WAPC), on the advice of the City of Swan, as a condition of subdivision approval where deemed necessary for land comprising, but not limited to:

(i) Where lot boundaries abut Public Open Space.

(ii) Prior to the lodgement of a development application and/or as a condition of subdivision approval, a Local Development Plan is to be prepared for the 'Special use' zoned lot (local centre) to address the following:

a. Built form guidelines;

b. Ancillary features and landscaping (e.g. seating, lighting, bike parking);

c. Integration with community facilities (either public or private); and

d. Car parking and traffic management.

## 7.2 Bushfire Management

This Structure Plan is supported by a Bushfire Management Plan (Appendix 3). Regardless of whether the land has been formally designated as bushfire prone, any building to be erected on land identified as falling within 100 metres of a bushfire hazard is designated as bushfire prone land and shall comply with the requirements of Australian Standard 3959 under the Building Code of Australia.

# 8.0 OTHER REQUIREMENTS

## 8.1 Conditions of Subdivision Approval

The following technical reports/strategies are to be prepared and submitted as a condition of subdivision approval (where applicable):

- Urban Water Management Plan;
- Bushfire Management Plan (BAL Assessment);
- Acid Sulphate Soils Management Plan;
- Wetland and Buffer Management Plan;
- Foreshore Management Plan; and
- Risk Pipeline Assessment.

A Fauna Management Plan to be submitted for approval by the City of Swan in consultation with the Department of Biodiversity, Conservation and Attractions and must include:

(i) The requirement for a fauna spotter to be present during clearing;

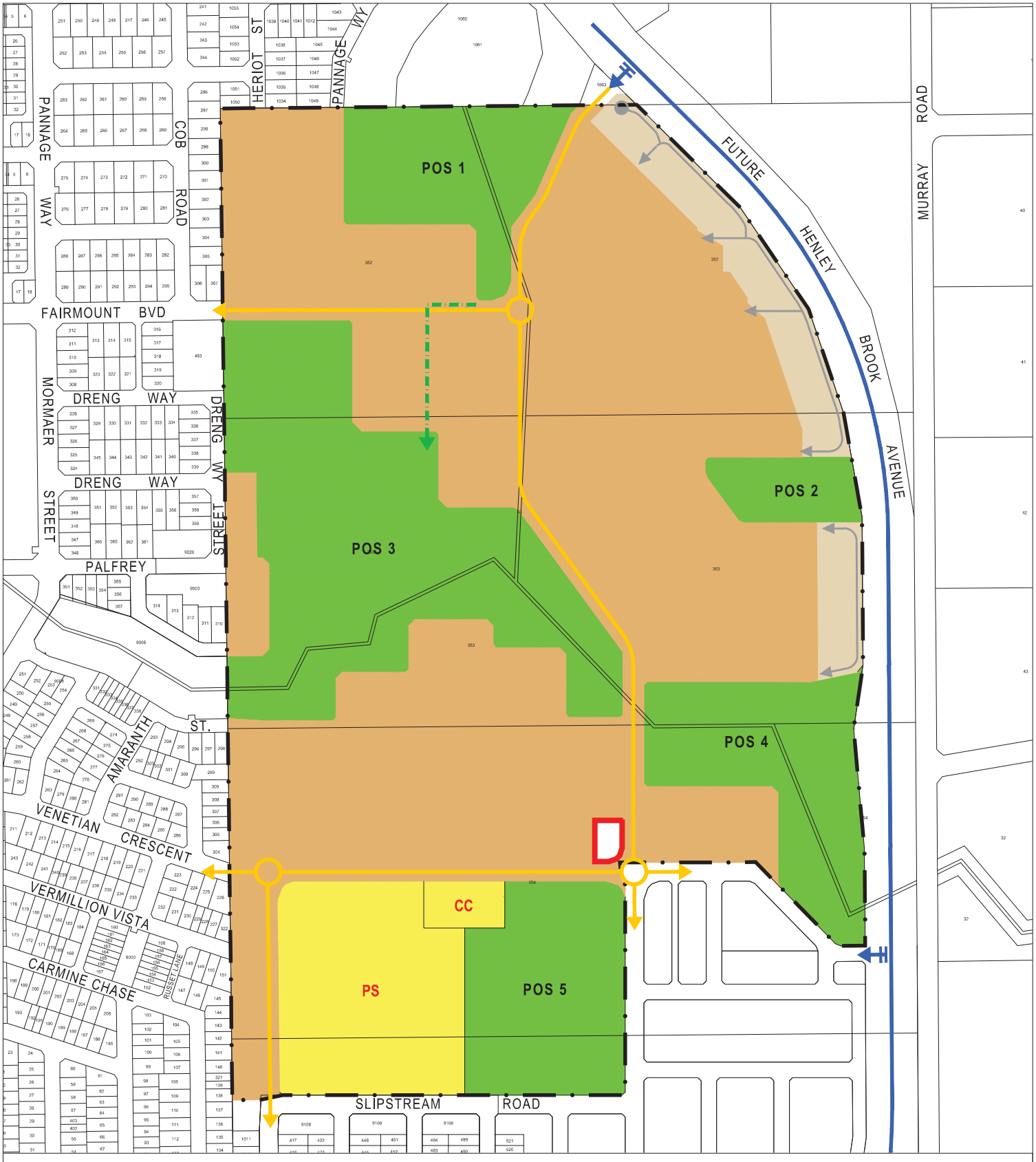
(ii) Kangaroo management and relocation; and

(iii) Commitment to check hollows prior to vegetation clearing.

## 8.2 Development Contributions

The Structure Plan area is within Development Contribution Area 1 (DCA 1) as identified in the Scheme Map and Schedule 13 of the Scheme (as amended), and the Development Contributions Plan DCA 1 - Brabham (Albion) (as amended) should be read in conjunction with this Structure Plan.

A landowner shall be liable to make a cost contribution at the time and in the circumstances contemplated in Part 5A.2 of the Scheme (as amended), and this will be imposed as a condition of subdivision or development approval, generally whichever is granted first.




## LEGEND

**Zones**

- Residential R20
- Residential R30-R60
- Special Use (Local Centre)

**Local Reserves**

- Recreation
- Public Purpose
- PS — Primary School
- CC — Civic and Cultural

**Other**

- LSP Boundary
- Integrator A
- Neighbourhood Connector
- Local Road

**Ecological and Waterflow Corridor**

*The Ecological and Waterflow Corridor is indicative only, with its alignment and configuration subject to refinement as part of the detailed subdivision design process.*

- Full movement intersection
- Roundabout

Note: The embellishment of public open space, inclusive of the provision of irrigation, is to be subject to negotiation with the City of Swan at submission stage.

0 50 100 150 200 250m

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# PLAN A: STRUCTURE PLAN MAP

Department of Communities / Peet Second Stage Brabham Local Structure Plan

plan no: 3074-220D-01
date: 6 May 2022
scale: 1:5,000 @ A4

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# DEPARTMENT OF COMMUNITIES | PEET SECOND STAGE STRUCTURE PLAN

## PART TWO | EXPLANATORY REPORT

April 2022

Government of **Western Australia**
Department of **Communities**

CLE Town Planning + Design

PEET

| | |
|---|---|
| Title: | Department of Communities \| Peet Second Stage Structure Plan<br>Part Two \| Explanatory Section |
| Prepared for: | Department of Communities and Peet Limited |
| CLE Reference: | 3074Rep223b |
| Date: | 12 April 2022 |
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| Review date: | 12 April 2022 |
| Prepared by: | CLE Town Planning + Design |
| Project team: | CLE Town Planning + Design - Planning + Design<br>Environmental - Emerge Associates<br>Bushfire - Emerge Associates<br>Landscaping - Plan E Landscape Architect<br>Traffic - GTA Consultants<br>Engineering - Cossill & Webley Consulting Engineers<br>Local Water Management Strategy - RPS Australia |

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# APPENDICES

# 1.0 PLANNING BACKGROUND

## 1.1 Introduction and Purpose

The Department of Communities/Peet Second Stage Brabham Structure Plan (the Structure Plan) has been prepared on behalf of the Department of Communities and Peet and covers portions of lots 33, 352, 353, 354 and 355 Murray Road, Brabham. The Structure Plan is the second of the 'Brabham Structure Plans' to be prepared over land owned by the Department of Communities.

The Structure Plan is lodged in accordance with the City of Swan Local Planning Scheme No. 17 which requires a structure plan for land zoned 'Special Use'.

The purpose of the Structure Plan is to provide a planning framework to guide future subdivision and development across the site and draws on the key land use elements of the approved Albion District Structure Plan. The Structure Plan also presents as a natural extension to the approved Department of Communities/Peet First Stage Brabham Structure Plan located immediately to the south.

The format of the Structure Plan follows that set out in the Western Australian Planning Commission's (WAPC) Structure Plan Framework, comprising three parts:

**Part 1: Implementation Section:** Contains the Structure Plan Map and outlines the requirements that will be applied when assessing subdivision and development applications.

**Part 2: Explanatory Section:** Discusses the key outcomes and planning implications of the background and technical reports and describes the broad vision and more detailed planning framework being proposed. Part 2 is based on a detailed site specific analysis of opportunities and constraints and the following Technical Reports and Strategies:

- Environmental Assessment and Management Strategy (Emerge Associates);
- Wetland and Waterway Management Strategy (Emerge Associates);
- Bushfire Management Plan (Emerge Associates);
- Local Water Management Strategy (RPS);
- Transport Impact Assessment (GTA Consultants);
- Engineering Servicing Report (Cossill & Webley Engineers); and
- Landscape Masterplan (Plan E).

**Part 3: Technical Appendices:** Includes the technical reports and supporting plans and maps as prepared by the technical consultants in support of the proposal.

## 1.2 Land Description

The following section provides a brief summary of the location, land use and ownership within the Structure Plan area.

### 1.2.1 Location

The Structure Plan is located in the City of Swan, approximately 7km north of the Midland Strategic Metropolitan Centre and 19km north-east of the Perth CBD (Figure 1: Location Plan).

The Structure Plan is generally bound by:

- A number of rural lifestyle properties, fronting onto Park Street to the north;
- Developing residential community of Brabham to the south, being guided by the approved Department of Communities/Peet First Stage Brabham Structure Plan
- Existing and emerging residential communities of Avonlee and Flamewood to the west; and
- Henley Brook Avenue MRS reservation (unconstructed) to the east.

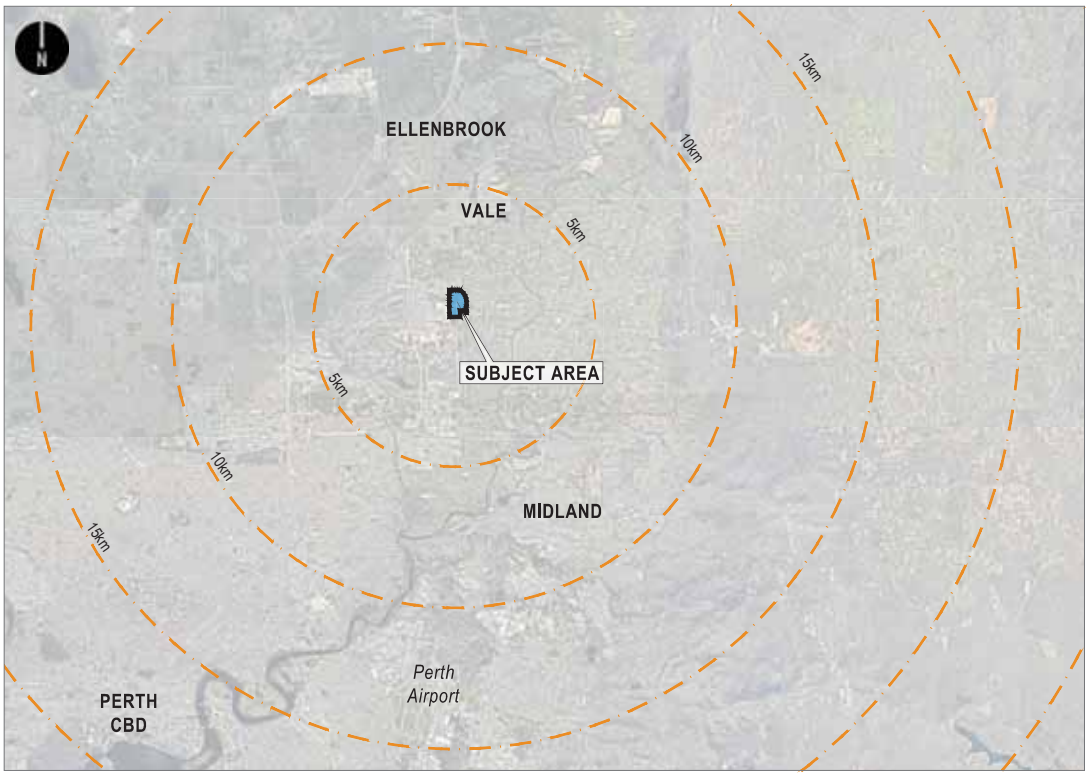


**Figure 1 - Location Plan**
*Source: Nearmap*

### 1.2.2 Area and Land Use

The Structure Plan area is approximately 50.6ha in area and has a past history of low-intensity agriculture use (Figure 2: Site Plan).

These past agricultural pursuits have had a considerable impact on the natural environment of the site resulting in extensive clearing of vegetation for livestock grazing. St Leonards Creek (a minor, non-perennial watercourse) flows across the site in an easterly direction, with the original creek line having been significantly modified. The site connects into the existing road network via Woollcott Avenue which passes through the Structure Plan in an east-west direction, and Murray Road which runs along a portion of the eastern edge of the Structure Plan area.

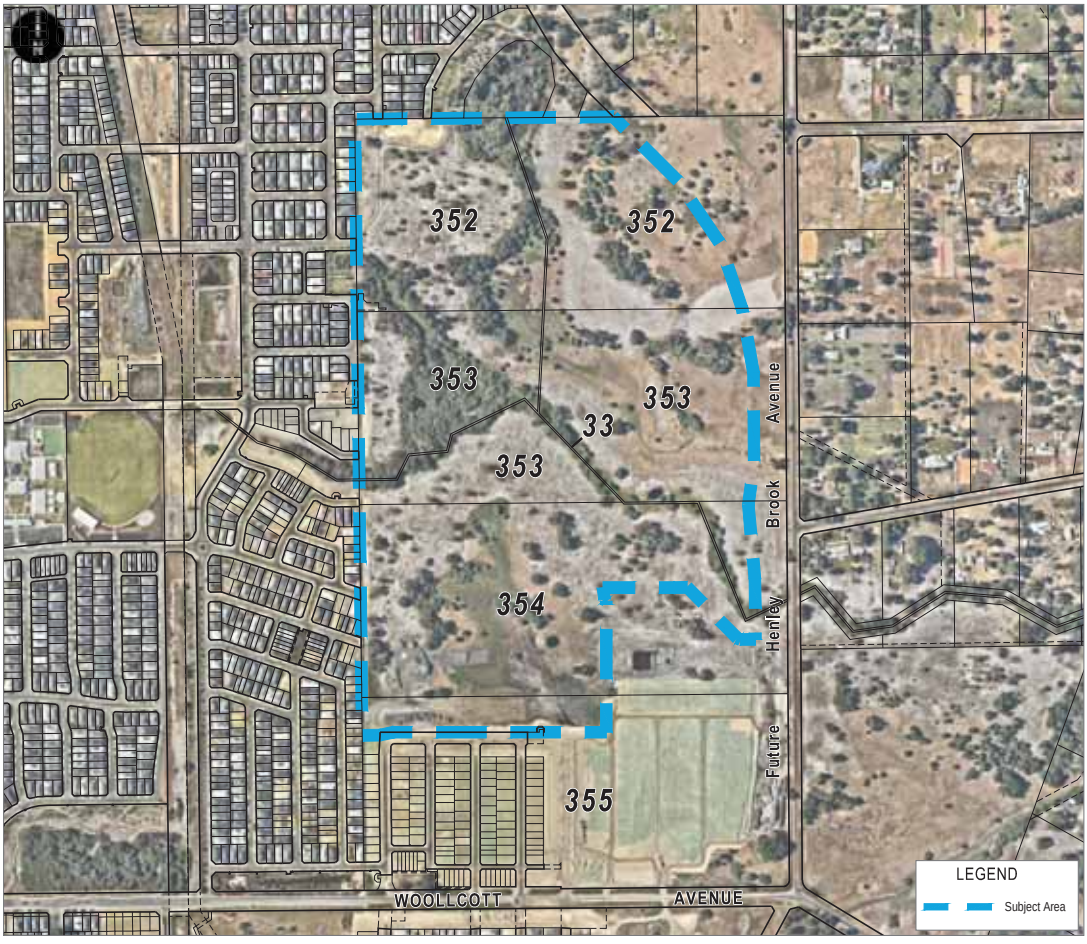


**Figure 2 - Site Plan**
*Source: Nearmap / SLIP*

### 1.2.3 Ownership and Title Details

This Structure Plan comprises 5 titles, being legally described as set out in Table 1.

Table 1: Certificate of Title Details

| Lot Number | Diagram/Plan | Volume | Folio |
|---|---|---|---|
| **Lot 33** | 4560 | 1680 | 54 |
| **Lot 352** | 4560 | 2189 | 144 |
| **Lot 353** | 4560 | 2189 | 145 |
| **Lot 354** | 4560 | 2189 | 146 |
| **Lot 355** | 4560 | 292 | 41A |

The Department of Communities is the majority owner, controlling Lots 352, 353, 354 and 355 while Lot 33 is in the ownership of the City of Swan.

### 1.2.4 Surrounding Land Use and Context

The Structure Plan presents as a logical extension of the Department of Communities/Peet First Stage Brabham Structure Plan with the following a brief summary of the local context (Figure 3: Local Context Plan):

- The emerging residential estates of 'Flamewood' (Parcel Property) and 'Avonlee' (Terra Novis) abut the western edge and a portion of the northern interface of the Structure Plan.
- Land to the north-east of the Structure Plan area generally consists of a number of rural-lifestyle lots fronting onto Park Street.
- Land to the south is currently undeveloped, falling within the Department of Communities/ Peet First Stage Brabham Structure Plan, to be developed for residential purposes.
- The future Henley Brook Avenue (MRS reserve 'Other Regional Roads') runs along the eastern edge, partly coinciding with Murray Road (a rural standard local road).
- Land to the east of the future Henley Brook Avenue reserve comprises a number of larger private rural-lifestyle lots and viticultural lots, falling within the Swan Valley area.
- The Whiteman METRONET Rail Station is planned to be constructed 2km (approx.) south-west of the Structure Plan area, with the 'Whiteman Edge' neighbourhood centre located 1.6km (approx.) away, situated on the corner of Youle Dean Road and Everglades Avenue.
- Drumpellier Drive (Primary Regional Road) is situated approximately 1.5km west of the Structure Plan area with Main Roads WA having recently completed considerable upgrade works to this significant regional road.
- Midland Strategic Metropolitan Centre (7km south) and the Ellenbrook Town Centre (4km north) are both easily accessible from the Structure Plan area, offering immediate employment opportunities and access to retail, commercial and community services.

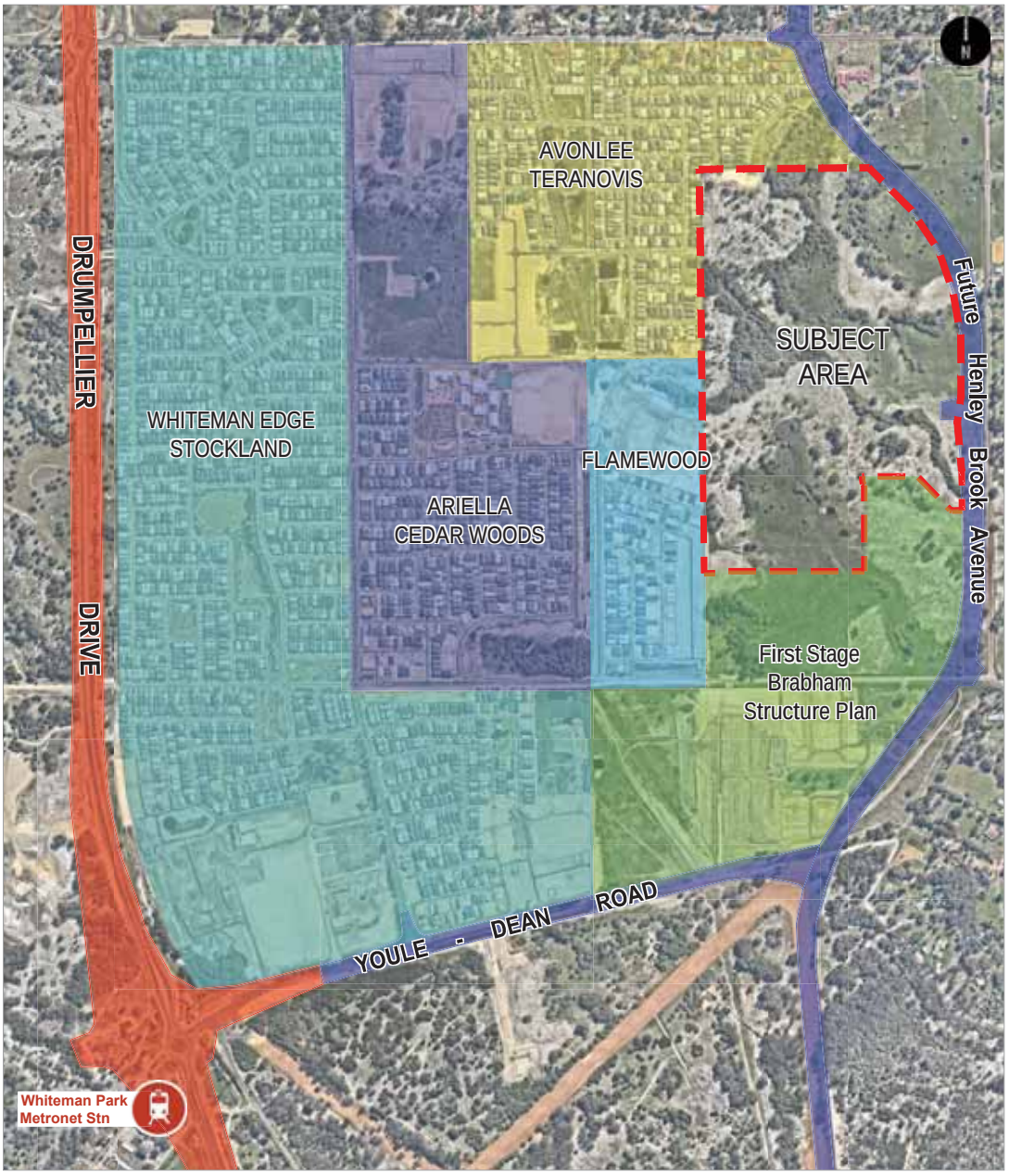


**Figure 3 - Local Context Plan**
*Source: Nearmap*

## 1.3 Planning Framework

### 1.3.1 Metropolitan Region Scheme Zoning

The Structure Plan area is zoned 'Urban' in the Metropolitan Region Scheme.

Land set aside for the construction of Henley Brook Avenue that abuts the eastern edge of the Structure Plan is reserved in the MRS as 'Other Regional Road' (Figure 4: MRS Zoning).

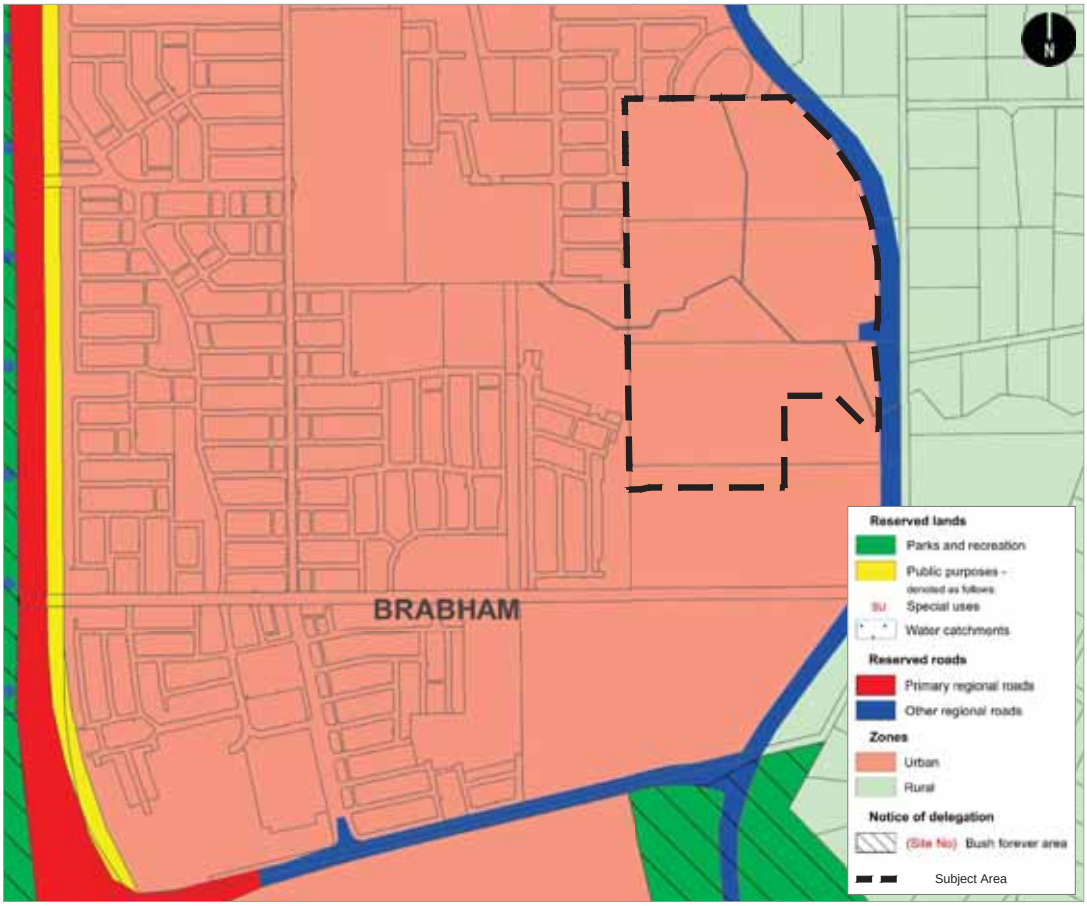


**Figure 4 - MRS Zoning**
*Source: DPLH*

### 1.3.2 City of Swan Town Planning Scheme No 17

The Structure Plan area is currently zoned 'Special Use - Albion' (SU10) in the City of Swan Local Planning Scheme No. 17 (Figure 5: Local Planning Scheme No. 17 Zoning).

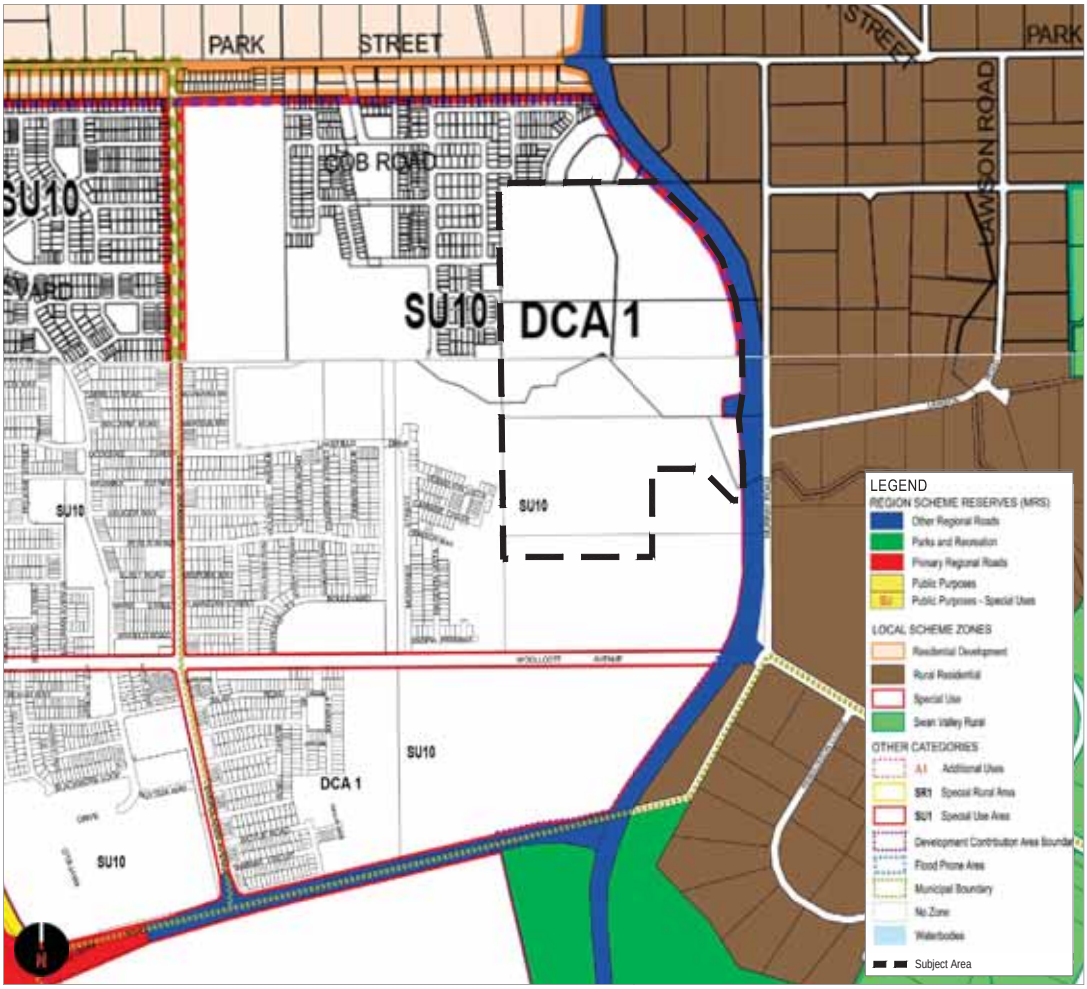


**Figure 5 - Local Planning Scheme 17 Zoning**
*Source: WAPC*

Part 5A and Schedule 4 of Local Planning Scheme No. 17 (LPS17) requires a local structure plan prior to development over all of part of the land falling within the 'Special Use – Albion' zone, with the objective being to achieve coordinated subdivision and development.

For the purposes of LPS17, this Structure Plan satisfies the requirements of Part 5A and Schedule 4.

Schedule 4 (Albion – SU10) sets out a number of environmental management plans that are to be provided as part of a local structure plan (if applicable), as summarised in Table 2 below.

Table 2: Environmental Management Plans (Albion Special use Zone)

| Requirement | Assessed within this report |
|---|---|
| Acid Sulphate Soils (ASS) Site Assessment Management Plan | Refer Section 2.1.1 and Appendix 1 – Environmental Assessment and Management Strategy (Emerge Associates) |
| Water Management Plan | Refer Section 3.6 and Appendix 6 – Local Water Management Strategy (RPS) |
| Wetland Management Plan | Refer Section 3.4.2, 3.4.3 and Appendix 2 – Wetland and Waterway Management Strategy (Emerge Associates) |
| Cultural Heritage Management Plan | Not applicable, refer Section 2.5 and Appendix 1 – Environmental Assessment and Management Strategy (Emerge Associates) |
| Fire Management Plan | Refer Sections 2.6, 3.4 and Appendix 3 – Bushfire Management Plan (Emerge Associates) |

### 1.3.3 Albion District Structure Plan (2009)

The Structure Plan falls within the Albion District Structure Plan (DSP).

This DSP was adopted by the Western Australian Planning Commission (WAPC) in December 2009 and provides a broad framework that guides local structure planning and subdivision for the Albion locality. As the district level planning framework for Albion, the DSP sets out a higher level context for land use, major roads, commercial centres, community infrastructure and public open space (Figure 6: Albion District Structure Plan).


**Figure 6 - Albion District Structure Plan**
*Source: WAPC*

### *Development Principles*

The DSP sets out a number of key development principles that must be considered as part of subsequent (local) structure planning, with the following being relevant to this Structure Plan:

- Majority of the Structure Plan area being developed for residential purposes with a base coding of R30, while allowing for carefully selected pockets of R40 and R60 located adjacent to areas of higher amenity, to support a variety of housing types and market segments;
- Create a transition between the urban development within the Structure Plan area and the Swan Valley Planning Area located to the east through a low density (R20) residential interface;
- Creates a strong, robust local road network which connects seamlessly with adjoining development;
- Delivers a local primary school co-located with an active area of public open space to meet the needs of the future community;

- Provides a multi-purpose community site (3500m$^2$), co-located with the primary school to facilitate a local community hub, to be managed by the City of Swan;
- Creates an integrated open space network that balances environmental, recreational and drainage objectives, most notably the retention and protection of the mapped resource enhancement wetland and its associated buffer and the St Leonards Creek foreshore; and
- Provides for a future local centre within between 300m² and 500m² of retail floor space (NLA) to meet the local convenience needs of future residents.

The Structure plan achieves all of these relevant development principles, discussed in further detail throughout this report.

*Local Structure Plan Areas*

The Albion DSP depicted the boundaries of three local structure plan areas covering the 'Albion' locality but acknowledged that subsequent local structure plan boundaries would ultimately be guided by land ownership, development intentions and staging, allowing for a local structure plan to be prepared for all or part of one of the identified structure plan areas subject to satisfying criteria set out within the DSP. As a result and based on this criteria, various structure plans have been prepared and approved over the southern and western portions of the DSP area, with these now at various stages of approval and development (if not wholly completed).

This Structure Plan represents the 'missing' piece of the planning framework insofar as covering the last remaining land identified for urban development, situated within the far north-eastern portion of the DSP. The Structure Plan area has been established by virtue of other structure plans having been approved along its western and southern edges, with the Henley Brook Avenue MRS reservation establishing the eastern edge. The northern edge is the extent of the DSP with no further development envisaged in this direction.

As a consequence, this Structure Plan boundary is logical and a 'stand-alone' plan, by default satisfying the criteria within the DSP.

The Local Context Plan (Figure 2: Local Context Plan) clearly shows the Structure Plan in context with the adjacent structure plans.

### 1.3.4 Strategic Planning Framework

*Perth and Peel@3.5million (March 2018)*

Perth and Peel@3.5million is a high level 'spatial framework' and strategic plan that manages the growth of the metropolitan region, and provides a framework to guide the planning and delivery of essential housing, infrastructure and services.

It includes the Structure Plan area within the North-East Sub-region, forecasting this sub-region to continue to experience relatively strong population growth, more than doubling from 209,150 people in 2011 to 450,580 by 2050, predominantly within the City of Swan.

*North-East Sub-regional Planning Framework (March 2018)*

The North-East Sub-regional Framework (the Framework) provides an additional level of detail regarding the implementation of Perth and Peel@3.5million at the sub regional level including information about the level of expected population growth, servicing and infrastructure, housing demands, and importantly the document highlights development opportunities throughout the sub region.

The Structure Plan area has been identified in the Framework as 'Urban', recognising its current zone under the MRS.

### 1.3.5 Other Planning Considerations

The following section summarises other government policies relevant to the Structure Plan.

*WAPC State Planning Policy 3.0: Urban Growth and Settlement*

SPP 3.0 sets out the principles and considerations that guide the location of new urban growth and settlements. It focuses on contiguous expansion of urban areas, consolidation in areas with good access to employment, services and transportation, minimised environmental impact and efficient use of suitable land and infrastructure.

The Structure Plan is consistent with SPP 3.0 as it realises planned urban consolidation within the region. Further the site has excellent access to existing and planned transport networks, employment nodes, schools and activity centres, all in addition to all known environmental aspect of the site able to be managed. All essential service infrastructure can be readily and efficiently connected from immediate surrounding areas.

*WAPC State Planning Policy 3.7: Planning in Bushfire Prone Areas*

SPP 3.7 and its Guidelines set out a range of matters that need to be addressed through the planning process to provide an appropriate level of protection of life and property from bushfires.

This Structure Plan is supported by a Bushfire Management Plan (BMP) demonstrating that bushfire risk is not an impediment to the development of the land and that all fire considerations can be appropriately managed in accordance with the Guidelines.

This is discussed further in Sections 2.6 and 3.4 below and the BMP is attached in full as Appendix 3.

### *WAPC State Planning Policy 4.2: Activity Centres for Perth and Peel*

SPP 4.2 sets out the broad planning requirements for the planning and development of new activity centres throughout Perth and Peel.

The Structure Plan is providing for a small local centre which is identified in the Albion DSP, with this centre to provide a maximum retail floor space of between 350m$^2$ and 500m$^2$ (NLA). While acknowledging the important role that local centres play in providing for the day-to-day needs of a local community, SPP 4.2 does not require a Retail Needs Assessment when an endorsed local planning (commercial) strategy, district, local or activity centre structure plan includes an indicative amount of shop-retail floorspace.

This is discussed further in Section 3.8.

### *WAPC State Planning Policy 5.4: Road and Rail Noise*

The purpose of SPP 5.4 (September 2019) is to attenuate potential adverse impacts of road and rail noise upon sensitive land use development.

The Structure Plan is not in proximity to any categorised strategic freight routes (as mapped in SPP5.4) nor any significant traffic routes that are anticipated to carry in excess of 25,000 vehicles per day (VPD) and while the Albion DSP suggests that noise generated by Henley Brook Avenue should be considered at (local) structure planning phase, this was based on traffic modelling that pre-dated more recent strategic decisions relating to the regional transport network, including the State government's 'New Lord Street' (now Drumpellier Drive), 'NorthLink WA' and METRONET (Morley-Ellenbrook Line) projects. Contemporary traffic modelling has found that this road will fall well below the VPD threshold set out in SPP 5.4 and as a consequence road and rail noise is not a matter for consideration.

### *Liveable Neighbourhoods*

*Liveable Neighbourhoods* is the WAPC's 'operational policy' for greenfields development in Western Australia. *Liveable Neighbourhoods* sets out the key considerations for the planning of new communities including subdivision layout and movement networks, the location of open space, community facilities, schools and activity centres.

The Structure Plan has been prepared in accordance with *Liveable Neighbourhoods* and best practice urban design principles, creating a walkable neighbourhood supported by an interconnected network of local roads and pathways, and adopting an integrated approach to the design of public open space and urban water management. These aspects of the Structure Plan are described in more detail in Section 3.

### 1.3.6 Other Approvals

*First Stage Brabham Local Structure Plan*

On 19 May 2020 the WAPC approved the Department of Communities/Peet First Stage Brabham Local Structure Plan which comprised approximately 49ha of land located immediately south of the current Structure Plan area.

The First Stage Brabham Local Structure Plan is the first of a number of structure plans to be prepared over the Department of Communities landholdings at Brabham and facilitated the creation of a residential neighbourhood that is now named 'Brabham Estate' (Figure 7: Approved Department of Communities/Peet First Stage Brabham Local Structure Plan).


**Figure 7 - Approved Department of Communities/Peet First Stage Brabham Local Structure Plan**
*Source: WAPC*

Key elements of the First Stage Brabham Local Structure Plan are:

- Approximately 850 single residential lots with density codes ranging from R20 to R80 supporting a wide range of housing types;
- Establishing a responsive and integrated interface to both existing and future surrounding development through the inclusion of a permeable and legible local road network; and
- Creating an initial framework of public open space that serves a range of functions, balancing active and passive recreational pursuits, and delivering key drainage objectives.

This current Structure Plan provides for the seamless integration with the First Stage Brabham Local Structure Plan. Critically the First Stage Brabham Local Structure Plan was approved with only 6.8% creditable public open space, falling short of the 10% minimum required by *Liveable Neighbourhoods*. This shortfall of open space was due to limited availability of water for irrigation for open space, a matter which has since been resolved. At the time the Department of Communities committed to resolving the shortfall of open space as part of subsequent structure planning, with the current Structure Plan realising this commitment. This is discussed in further detail in section 3.3.

### *Park Street Local Structure Plan 3A*

The Park Street Local Structure Plan 3A (as amended) covers the land located generally to north and west as well as partially covering Lot 352 of the subject Structure Plan (refer Figure 8 Park Street Local Structure Plan 3A).

The Park Street Local Structure Plan 3A was endorsed by the WAPC on 15 March 2018 and provides for the development of its subject land primarily for residential purposes, with a network of supporting open space areas. Pertinently for Lot 352 and this Structure Plan, the Park Street Local Structure Plan 3A establishes a connection between land to the west and the future Henley Brook Avenue byway of a neighbourhood connector road.

This Structure Plan continues with the intent of Park Street Local Structure Plan 3A insofar as it retains the neighbourhood connector road connecting land to the west with the future Henley Brook Avenue and similarly connects to all constructed development to the west and north. Nonetheless, while this Structure Plan remains connected seamlessly with the adjacent development, it looks to refine the internal road network within Lot 352, when compared with that envisaged by the Park Street Local Structure Plan 3A.

In accordance with Part 4, Clause 28 of the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 - Deemed provisions for local planning schemes* approval of this Structure Plan will have the effect of revoking the portion of the Park Street Local Structure Plan 3A as it impacts Lot 352.

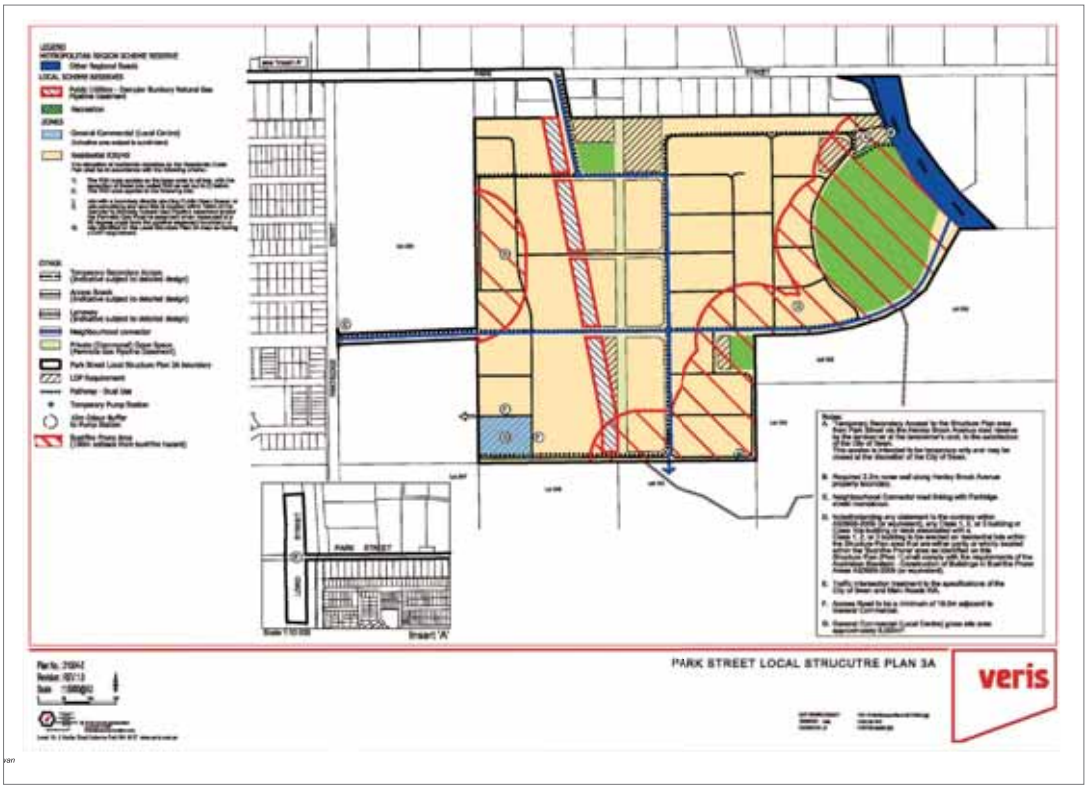


**Figure 8 - Park Street Local Structure Plan 3A**
*Source: Veris*

# 2.0 SITE CONDITIONS AND CONSTRAINTS

Emerge Associates has prepared a comprehensive Environmental Assessment and Management Strategy which describes the site conditions and constraints within the Structure Plan area.

Further to this document, Emerge Associates has also prepared a Wetland and Waterway Management Strategy, in accordance with the Albion DSP and in response to the resource enhancement wetland and the St Leonards Creek waterway found on site.

The following section summarises the key findings of this analysis with a complete copy of the Environmental Assessment and Management Strategy provided as Appendix 1, with the Wetland and Waterway Management Strategy provided as Appendix 2.

## 2.1 Landform and Soils

The Structure Plan area is generally flat, ranging from approximately 24m Australian Height Datum (AHD) in the eastern portion of the site up to 36m AHD in the north-west corner.

The Geological Survey of Western Australia shows that the Structure Plan area is generally characterised by Bassendean Sand. A geotechnical investigation was undertaken by Galt Geotechnics (October 2015) which confirmed that ground conditions are in accordance with geological mapping with a variable thickness of sand overlying clayey soils of the Guildford Formation, making the site suitable for urban development.

### 2.1.1 Acid Sulphate Soils

The Department of Water and Environmental Regulation (DWER) Acid Sulphate Soil (ASS) risk mapping shows the majority of the Structure plan area as ‘moderate to low risk’ with a portion that is not mapped. There is only one isolated ‘high to moderate’ risk area mapped within the south portion of the site.

The Structure Plan area is suitable for urban development with an ASS investigation and management plan to be prepared in the usual manner (if required) at the time of subdivision works which may require the preparation of an Acid Sulphate Soil and Dewatering Management Plan.

### 2.1.2 Contamination

The Structure Plan area is not located within any DWER listed contaminated sites with past low-intensity agricultural practices unlikely to raise any significant contamination risks.

## 2.2 Flora and Vegetation

The Structure Plan area is largely cleared of native vegetation, a result of past agricultural pursuits on the land. A detailed flora and vegetation survey was undertaken by Emerge Associates in July, August, September and October 2018 which found:

- Past agricultural pursuits have resulted in the majority of the Structure Plan area being identified as 'completely degraded' and dominated by non-native species;
- Patches of remnant native vegetation were identified as ranging from 'degraded' to 'very good' condition with the most intact vegetation structure found in the western portion of St Leonards Creek;
- No threatened ecological communities or priority ecological communities were found within the Structure Plan area due to the degraded nature of the vegetation;
- Similarly no threatened or priority flora species were recorded within the Structure Plan area with only one regionally significant flora species recorded along St Leonards Creek; and
- There are no mapped ecological linkages within the site.

## 2.3 Fauna

The Structure Plan is located within the eastern margin of the Swan Coastal Plain which is characterised by areas largely cleared of remnant vegetation for rural land uses.

A level 1 fauna assessment was undertaken by zoologist Greg Harewood in 2018 which included a targeted black cockatoo habitat assessment.

The assessment found evidence of foraging of the three black cockatoo species but found the extent and quality of foraging limited. The assessment inspected all trees that could be used for breeding (DBH > 50cm) and found only three contained hollows (suitable for breeding). Notwithstanding these hollows, there was no evidence of breeding and no roosting trees were identified.

The survey did identify Quenda as utilising the site but this species is known to persist in paddocks with dense grass and areas of nearby remnant vegetation so it does not rely on the Structure Plan area for habitat. While the Peregrine Falcon was identified as having the potential to utilise portions of the site, no evidence of nesting was found.

Overall while fauna species of significance were identified as utilising the Structure Plan area, the land does have an overall low biodiversity value due to past clearing of native vegetation and the degraded nature of remaining remnant vegetation.

A Fauna Management Plan will be prepared in consultation with the Department of Biodiversity, Conservation and Attractions to be submitted with the City of Swan. This Fauna Management Plan will address the following:

(i) The requirement for a fauna spotter to be present during clearing;

(ii) Kangaroo management and relocation; and

(iii) Commitment to check hollows prior to vegetation clearing.

## 2.4 Hydrology

The management of ground and surface water is comprehensively addressed within the Local Water Management Strategy (LWMS) prepared by RPS in support of the Structure Plan.

The LWMS clearly demonstrates that hydrology is not a constraint to urban development. The existing hydrological conditions of the Structure Plan area are summarised below, while the key principles of the LWMS are discussed further in Section 3.6.

### 2.4.1 Ground Water

The Department of Water Perth Groundwater Map (2019) shows that groundwater levels range between approximately 24.5m AHD in the south-eastern portion of the site to 30m AHD in the north-western portion of the site, with a depth to groundwater ranging from approximately 1m to 8m. The groundwater typically flows in a south-easterly direction towards the Swan River, located to the east of the Structure plan area.

### 2.4.2 Surface Water

The Structure Plan is located in the Swan River catchment area and at a local level is within St Leonards Creek catchment. St Leonards Creek is a minor, non-perennial watercourse located within the central portion of the Structure Plan area, which drains to the south-east into the Swan River.

The Structure Plan is not located within the 100 year Average Recurrence Interval floodplain development control area of the Swan River. A number of artificial drains exist within the southern portion of the Structure Plan area, having been installed to support historic agricultural activities.

In accordance with the Albion DSP, a Wetland and Waterway Management Strategy has been prepared by Emerge Associates to outline the management requirements necessary to protect the waterway values of St Leonards Creek.

A copy of the Wetland and Waterway Management Strategy is provided as Appendix 2.

### 2.4.3 Wetlands

The Department of Biodiversity, Conservation and Attractions (DBCA) geomorphic wetlands database shows that the majority of the Structure Plan area is classified as a multiple use wetland (UFI 13396), which is a low management category wetland with few wetland attributes, making it suitable for urban development. A small portion to the northern boundary of the site classified as a resource enhancement wetland (UFI8804).

In accordance with the Albion DSP, a Wetland and Waterway Management Strategy has been prepared by Emerge Associates to outline the management requirements necessary to protect the wetland values associated with resource enhancement wetland UFI8804 and its relating 30m buffer, with the understanding that wetland UFI8804 will be reclassified by the DBCA from a resource enhancement wetland to a conservation category wetland.

A copy of the Wetland and Waterway Management Strategy is provided as Appendix 2.

## 2.5 Heritage

The Aboriginal Heritage Inquiry Systems identifies no registered sites within the Structure Plan area. An Aboriginal Cultural Heritage Survey was undertaken as part of the Albion DSP in 1996 and 1997, with one archaeological site identified to the north of the Structure Plan area. This site was assessed as having low archaeological significance and has since been developed for residential purposes.

There are no listed European sites of heritage significance located within the Structure plan area.

## 2.6 Bushfire Management

Emerge Associates has prepared a Bushfire Management Plan (BMP) in accordance with WAPC's State Planning Policy 3.7: Planning in Bushfire Prone Areas and its associated Guidelines.

The BMP concludes that bushfire risk is not an impediment to development and that the bushfire risk can be managed through the implementation of asset protection zones, interface treatments and the construction of dwellings within 100m of bushfire prone vegetation in accordance with AS3959 Construction of buildings in bushfire prone areas.

A complete copy of the BMP is included as Appendix 3 with the manner in which the Structure Plan responds to bushfire hazards, discussed in further detail within Section 3.4 of this report.

# 3.0 LAND USE AND SUBDIVISION REQUIREMENTS

## 3.1 Land Use

The Structure Plan creates the planning framework for the delivery of a future residential community at Brabham, building upon the approved First Stage Brabham Structure Plan to the south. A Development Concept Plan has been prepared for the site to demonstrate how the development could occur based on the Structure Plan principles and requirements (Figure 9: Development Concept Plan).


**Figure 9 - Development Concept Plan**

The Development Concept Plan provides an example of one manner in which development could occur and the Plan will be refined at the time of subdivision.

The key principles of the Development Concept Plan are to:

- Allow for the creation of a diverse range of high quality housing choices that appeal to a wide market segment, meeting a number of social, environmental and sustainable objectives sought by the Department of Communities;
- Deliver the planned Brabham primary school, co-located with an area of active open space;
- Provide for a multi-purpose community centre site, to be managed by the City for the use and benefit of the future community;
- Provide for a small local centre, with an indicate retail floor area of 350m$^2$ to 500m$^2$, creating a focus of local convenience;
- Deliver high quality open space areas that serve an amenity, conservation and local drainage function;
- Deliver a permeable, interconnected road and path network; and
- Extend the necessary services and infrastructure in a timely and coordinated manner to support the future development.

Based on these principles, the Structure Plan provides the planning framework for the following:

- A yield of approximately 480 - 490 dwellings within the Structure Plan area with residential densities ranging between R20 to R60;
- A base coding of R30 applies, creating opportunities to deliver a range of traditional (front loaded) lots typically ranging in size from 300m² to 550m²;
- Low density R20 lots will be located along Henley Brook Avenue to provide an appropriate interface to the Swan Valley Area;

- Medium density R40 and R60 coded lots will typically front areas of public open space (where a higher level of amenity exists), and on street corners or at the end of street blocks where good opportunities for integration exists. The R40 coding provides the opportunity to deliver contemporary 'compact' lots that typically 'book-end' street blocks in order to create a traditional streetscape to the secondary street. Pockets of higher density R60 lots will provide opportunities for small cottage lots (front or rear accessed) that can accommodate contemporary double storey residential development, or applied to select discrete grouped dwelling lots in appropriate locations;
- An area of approximately 10.9 hectares (gross) of public open space ensuring opportunities for passive recreation and, delivering key local and district drainage objectives;
- A permeable local road network that connects to surrounding development and the existing and future regional road network, providing for pedestrian and cycling infrastructure, and future public transport services;
- Vehicle connections to the regional roads network via a connection to the future Henley Brook Avenue, which strongly supplements and complements connections approved as part of the First Stage Brabham Structure Plan;
- Appropriate separation between identified bushfire hazards identified within the mapped wetland, the St Leonards Creek foreshore edges and all future dwellings; and
- A comprehensive ground and surface water management strategy for the Structure Plan area, which consolidates the opportunity to create an alternative water supply solution for irrigation purposes, first suggested in the First Stage Brabham Structure Plan.

A Local Development Context Plan (Figure 10: Development Context Plan) has been prepared showing the Development Concept Plan in context with the adjacent (southern) land, being land owned by the Department of Communities and which is the subject to the approved First Stage Structure Plan. This demonstrates how this Structure Plan could be developed in a manner that responds to the known environmental features onsite and provides future road connections to its surrounds.

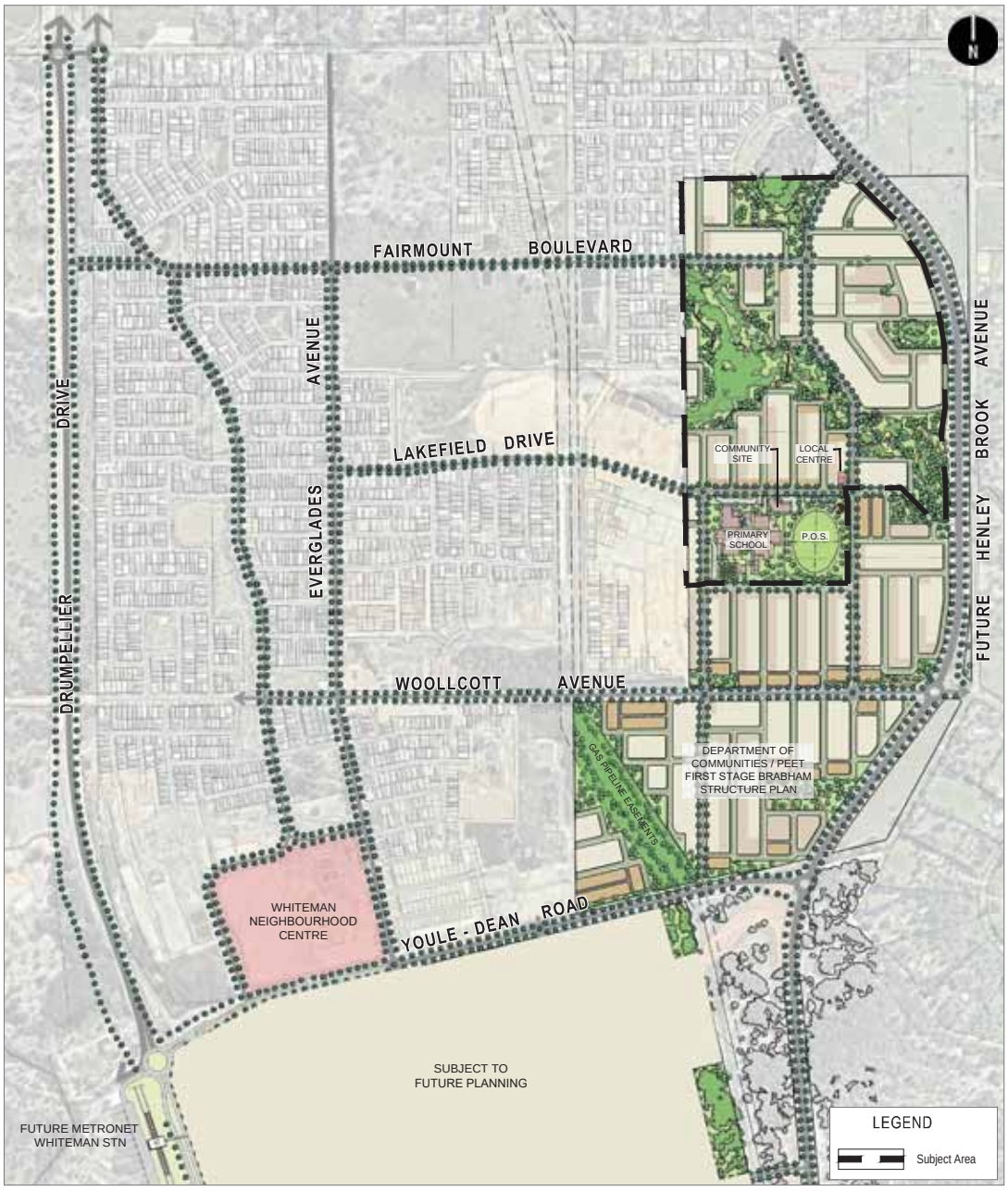


**Figure 10 - Development Context Plan**

## 3.2 Residential

The Structure Plan will support the delivery of a diverse range of housing.

A natural extension to the First Stage Brabham Structure Plan, this Second Stage Structure Plan will tend to be more traditional in nature with regards to dwelling types, commensurate to its relative distance to the Whiteman Town Centre and the planned METRONET Station. Nonetheless, the density and style of housing across the Structure Plan area is responsive to the characteristics of different parts of the site and will be delivered with the objective of creating high quality built form and streetscapes.

### 3.2.1 Dwellings Yields and Density Targets

The Structure Plan has the potential to create approximately 480 - 490 residential lots, set in a density range of R20 to R60 and based on the following planning principles:

- A base coding of R30 applies, providing opportunities to deliver a range of traditional (front loaded) lots typically ranging in size from 300m² to 450m²;
- Low density R20 lots will be located along Henley Brook Avenue to provide an appropriate interface to the Swan Valley Area;
- Medium density R40 coded lots will typically front areas of public open space (where a higher level of amenity exists), and on street corners or at the end of street blocks where good opportunities for integration exists. This coding provides the opportunity to deliver contemporary 'compact' lots that typically 'book-end' street blocks in order to create a traditional streetscape to the secondary street. Single lot sizes will generally range from 180m² to 300m²; and
- R60 coded lots will be allocated to areas adjacent to public open space, providing opportunities for small cottage lots that can accommodate contemporary double storey residential development, or applied to select discrete grouped dwelling lots in appropriate locations.

The Structure Plan has the potential to achieve 26.1 dwellings per site hectare, exceeding the *Liveable Neighbourhoods* requirement for an average of 22 dwellings per residential site hectare.

### 3.2.2 Local Development Plans

Local Development Plans (LDPs) are required where specific variations to the Residential Design Codes are needed to deliver a contemporary built form response. LDPs will be required as a condition of subdivision approval, and be approved by the City of Swan.

The City of Swan's Local Planning Policy POL-LP-11 'Variation to deemed-to comply requirements of the R-codes - Medium-density single house development standards (R-MD Codes)' sets out acceptable variations to the deemed-to-comply provisions of the R-Codes for the lots coded R30 to R60. The variations set out in the R-MD Codes Policy will apply to the Structure Plan area and thereby constitute Acceptable Development. This will avoid the need for LDP's over the majority of lots, improving efficiencies and minimising costs to the end user and to the local government.

LDP's will only be required for lots abutting public open space that may require detailed design responses.

*Lots abutting areas of Public Open Space*

Typically the interface to public open space at the time of subdivision will be via roads, however, in some instances direct lot frontage is an appropriate design response providing product diversity, amenity and increased surveillance of the public spaces.

*Liveable Neighbourhoods* supports residential lots directly abutting open space where the functionality of the POS is not compromised, and where the dwelling addresses the open space provides adequate visual surveillance.

To ensure these public open spaces are not compromised, subsequent subdivision design and engineering detail will ensure that visitor parking is provided along adjacent streets, and the adjacent residential lots are elevated a minimum of 500mm above the POS ground level to create a visible separation between the private and public realm.

Where lots interface with open space LDPs will need to be prepared to control built form. These LDPs will address:

- Minimum setbacks to the public open space;
- Major openings (other than bedrooms) to address the open space; and
- Visually permeable fencing to promote surveillance.

## 3.3 Public Open Space

The Structure Plan expands upon the pubic open space (POS) network that has been established by the approved First Stage Brabham Structure Plan. The areas of POS continue to serve a range of functions within the Structure Plan area, balancing active and passive recreational pursuits, delivering key drainage objectives and offering the potential for future alternative water solutions - both at a local and district level.

In isolation, this Structure Plan provides approximately 10.9ha of open space which when *Liveable Neighbourhoods* credits are applied represents approximately 26.9% POS as shown in Table 3 (Public Open Space Schedule) and Figure 10: Landscape Masterplan. However, this excessive POS provision must be considered in the broader context of POS provided under the approved First Stage Brabham Structure Plan and with regards to the Albion DSP.

The following is a summary of the key aspects of the open space based on *Liveable Neighbourhoods* requirements. A more detailed description of the public open space is provided in Section 3.3.2.

- 10.9ha (gross) of open space is distributed across the Structure Plan (excludes the St Leonards Creek foreshore and the northern resource enhancement wetland core) accommodating both active and passive uses and in part performing a multi-use drainage function;
- The resource enhancement wetland core has been taken as a deduction from the gross site area, with the associated 30m buffer being treated as restricted open space in accordance with *Liveable Neighbourhoods*;
- The St Leonards Creek foreshore, as defined by contemporary riparian vegetation mapping, has likewise been deducted from the gross site area;
- Approximately 0.33ha of the open space will receive drainage from the first 15mm storm events (for calculation purposes this is treated as the 1 year storm event and taken as a deduction as set out in *Liveable Neighbourhoods*);
- This stormwater will be infiltrated close to source, using soakwells, lot connections pits and bio-retention areas in POS;
- Only 0.81ha (approx.) of the public open space is made up of restricted use open space, as defined by *Liveable Neighbourhoods. Liveable Neighbourhoods* specifies that no more than 2% of the 10% public open space can be made up of restricted use open space, with the Structure Plan falling well below this limit;
- Drainage flows over and above the first 15mm event will be directed via a piped drainage system to maintain serviceability of roads and pedestrian pathways; and
- Stormwater from major (100 year) events will be accommodated in natural low points within the St Leonards Creek open space, to be conveyed to the reconstructed wetland located east of the Structure Plan.

Table 3: Public Open Space Schedule

| | Area | Total |
|---|---|---|
| **Site Area** | | **50.61** |
| **Deductions** | | |
| Primary School | 3.50 | |
| Community Site | 0.35 | |
| Local Centre | 0.15 | |
| St Leonards Foreshore | 5.24 | |
| Wetland Core | 0.69 | |
| ***Net Site Area*** | | |
| ***Other Deductions*** | | |
| 1:1 Drainage within POS | 0.33 | |
| Gross Subdivisible Area | | 40.35 |
| POS @ 10% | | 4.03 |
| **Public Open Space Requirement** | | |
| May Comprise: | | |
| Min 8% unrestricted POS | 3.22 | |
| Max 2% restricted POS | 0.80 | |
| **Public Open Space Provided** | **Unrestricted** | **Restricted** |
| Wetland Park (POS 1) | 0.09 | 0.81 |
| Eastern Park (POS 2) | 2.08 | Nil |
| St Leonards Creek West (POS 3) | 0.78 | Nil |
| St Leonards Creek East (POS 4) | 3.28 | Nil |
| Ocal (POS 5) | 3.0 | Nil |
| **TOTAL POS PROVIDED (ha)** | **10.04** | **0.81** |
| **Summary Public Open Space Contribution** | | |
| Unrestricted POS provided | 10.04 | |
| Restricted POS provided | 0.81 | |
| **Total Creditable POS provided** | **10.86** | **26.9%** |

*Notes:*

1. *Site Area is the total area of the LSP boundary, included all lots and reserves within the boundary (based on Concept Plan CLE Ref. 3074-221-01).*
2. *In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrance interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrance interval up to the five year recurrance interval is restricted open space up to 20%; areas for the detention of stormwater for a greater than five year average recurrance interval is within unrestricted open space (LN R25).*
3. *Drainage areas are based on the RPS modelling and Plan E Landscape Masterplan.*
4. *All POS areas are indicative only and are subject to refinement and detailed design at subdivision stage.*
5. *Wetland Park (POS 1) restricted use open space including resource enhancement wetland buffer.*

### 3.3.1 Public Open Space Principles and Context

The provision of public open space throughout the wider 'Albion' locality was established under the Albion District Structure Plan by way of the following principles:

- POS provision at a rate of 10%;
- All lots within 450m of public open space; and
- Even distribution of public open space across various Structure Plan areas.

The Department of Communities/Peet First Stage Brabham Structure Plan was approved with a significant 'under supply' of public open space (6.8%, as credited by *Liveable Neighbourhoods*) on the basis that this Structure Plan represented only a portion of the land owned by the Department of Communities and that a commitment was given that the shortfall of open space would be provided on the surrounding landholdings, delivered as part of subsequent structure plans and in accordance with the DSP. This 'under supply' of open space was, at that time, responding to the limited availability of water for irrigation (with this issue now resolved) and the acknowledgment that planned open space network was to be consistent with the Albion DSP, in particular:

- 3ha of co-located of open space (with a future primary school) immediately north of the First Stage Brabham Structure Plan, with this land owned by the Department of Communities;
- St Leonards Multiple Use Open Space to the north of the First Stage Brabham Structure Plan providing an opportunity for passive recreation; and
- Resource enhancement wetland and its buffer similarly providing a space of local (passive) amenity.

This Second Stage Brabham Structure Plan sees the provision of these three areas of open space and delivers upon the commitment to deliver a minimum of 10% across these two structure plan areas (combined). As outlined above and set out in Table 3, this Structure Plan in isolation 'over supplies' public open space with 26.9% provided but considered in the context of both Brabham Structure Plans, the result is 13.9ha (approx.) of creditable open space which equates to 16.4%, well exceeding the 10% minimum established by *Liveable Neighbourhoods.* This is shown in Table 4 (Combined Public Open Space Schedule) which covers the combined landholdings of both the First and Second Stage Brabham Structure Plans.

## Table 4: Combined Public Open Space Schedule

| | Area | Total | |
|---|---|---|---|
| **Site Area** | | **99.41** | |
| Parmelia Gas Pipeline Easement | 0.92 | | Structure Plan 1 |
| Dampier to Bunbury Natural Gas Pipeline | 1.24 | | |
| Youle-Dean Road Widening | 0.40 | | |
| Woollcott Avenue Road Reserve (existing) | 1.62 | | |
| Primary School | 3.50 | | Structure Plan 2 |
| Community Site | 0.35 | | |
| St Leonards Foreshore | 5.24 | | |
| Wetland Core | 5.24 | | |
| ***Total*** | ***14.10*** | | |
| ***Total Net Site Area*** | | ***85.31*** | |
| Deductions | | | |
| Total drainage area up to the 1:1 year event | 0.82 | | |
| ***Total*** | ***0.82*** | | |
| ***Total Gross Subdivisable Area*** | | ***84.49*** | |
| ***POST @ 10%*** | ***8.44*** | | |
| **Public Open Space Contribution** | | | |
| Min 80% unrestricted POS | 6.75 | | |
| Max 20% restricted POS able to be credited | 1.69 | | |
| **Unrestricted Open Space** | | | |
| Northern Pocket Park (POS 1) | 0.41 | | Structure Plan 1 |
| Woolcott Avenue Multi Use Corridor West (POS 2) | 0.27 | | |
| Woolcott Avenue Multi Use Corridor East (POS 3) | 0.45 | | |
| Central Park (POS 4) | 1.50 | | |
| Southern Open Space (POS 5) | 0.40 | | |
| Wetland Park (POS 1) | 0.90 | | Structure Plan 2 |
| Eastern Park (POS 2) | 0.78 | | |
| St Leonards West (POS 3) | 3.28 | | |
| St Leonards East (POS 4) | 2.08 | | |
| Oval (POS 5) | 3.00 | | |
| **Total Unrestricted Use** | | **13.07** | |
| **Restricted Open Space** | | | |
| Wetland Buffer (POS 1) | 0.81 | | |
| **Total Restricted Use Open Space** | | **0.81** | |
| **Summary** | | | |
| Min Unrestricted POS required | 6.75 | | |
| Unrestricted Open Space Provided | 13.07 | | |
| Maximum restricted Open Space | 1.69 | | |
| Restricted Open Space Provided | 0.81 | | |
| **Total Unrestricted & Restricted Public Open Space Provision** | | **13.89** | |
| **Total Public Open Space Provision as a % Gross Subdivisable Area** | | **16.4%** | |

*Notes:*

1. *The site area is the combined areas of the approved First Stage Brabham Structure Plan and the proposed Second Stage Brabham Structure Plan. (based on Concept Plans CLE Ref. 3074-221-01 and 3074-15P-01).*
2. *In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrance interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrance interval up to the five year recurrance interval is restricted open space up to 20%; areas for the detention of stormwater for a greater than five year average recurrance interval is within unrestricted open space (LN R25).*
3. *Drainage areas are based on the RPS modelling and Plan E Landscape Masterplan.*
4. *All POS areas are indicative only and are subject to refinement and detailed design at subdivision stage.*


**Figure 11 - Landscape Masterplan**
*Source: Plan E*

### 3.3.2 Description of Public Open Space

The Structure Plan creates a number of distinct areas of open space which are described in the Landscape Masterplan prepared by Plan E (refer Figure 11: Landscape Masterplan) and provided as Appendix 4. The following briefly summarises each of these areas of open space.

*Wetland Open Space (POS 1)*

- Total area of approximately 0.9ha (excluding the wetland core);
- 30m buffer surrounding the wetland core to comprise primarily of the rehabilitation and/or reintroduction of native ground cover plant species beneath existing trees, undertaken to ensure a low bushfire fuel zone;
- No drainage is proposed within the 30m wetland buffer;
- Small pockets of amenity may be provided within the buffer being limited to seating nodes located along a footpath network which will link to surrounding developed areas; and
- Pockets of public open space situated outside the 30m wetland buffer provide opportunities for additional local amenity, including shade structures with seating, circulating footpaths and interpretive signage.

*Northern Local Park (POS 2)*

- Total area of approximately 8,400m$^2$;
- Identified as a local space, designed to retain a number of existing trees centrally within the park;
- Perimeter treatments to comprise of turf and low managed groundcover plants;
- Further opportunities for toddler play area, shade structure and seating to provide local residents a point of amenity; and
- Vegetated basin located in south-east corner of the park to accommodate drainage (first 15mm and up to 100 year event).

*St Leonards Creek Open Space - East and West Portions (POS 3 and POS 4)*

- Total area of approximately 10.8ha, which includes the St Leonards Creek foreshore;
- All riparian vegetation within the St Leonards Creek foreshore is located centrally within the open space, which will be retained and protected to ensure the environmental value of this space is enhanced;
- The St Leonards Creek open space will accommodate stormwater from the major (100 year) events, with natural low points utilised for drainage overflow;
- Pedestrians will be able to cross the creek line via four footbridges situated at uniform distances along the open space, ensuring pedestrian legibility. Weirs will be located at the same position as the footbridges, allowing for the management of stormwater experienced during major (storm) events;
- Periphery of the open space (outside of the foreshore) will include parkland landscape treatments including small pockets of common (first 15mm) storm event drainage basins, open turf areas for recreation, circulating footpaths and seated resting nodes; and
- Three playground areas are nominated with one to include adventure style play equipment; and
- Opportunities for public toilets and BB facilities.

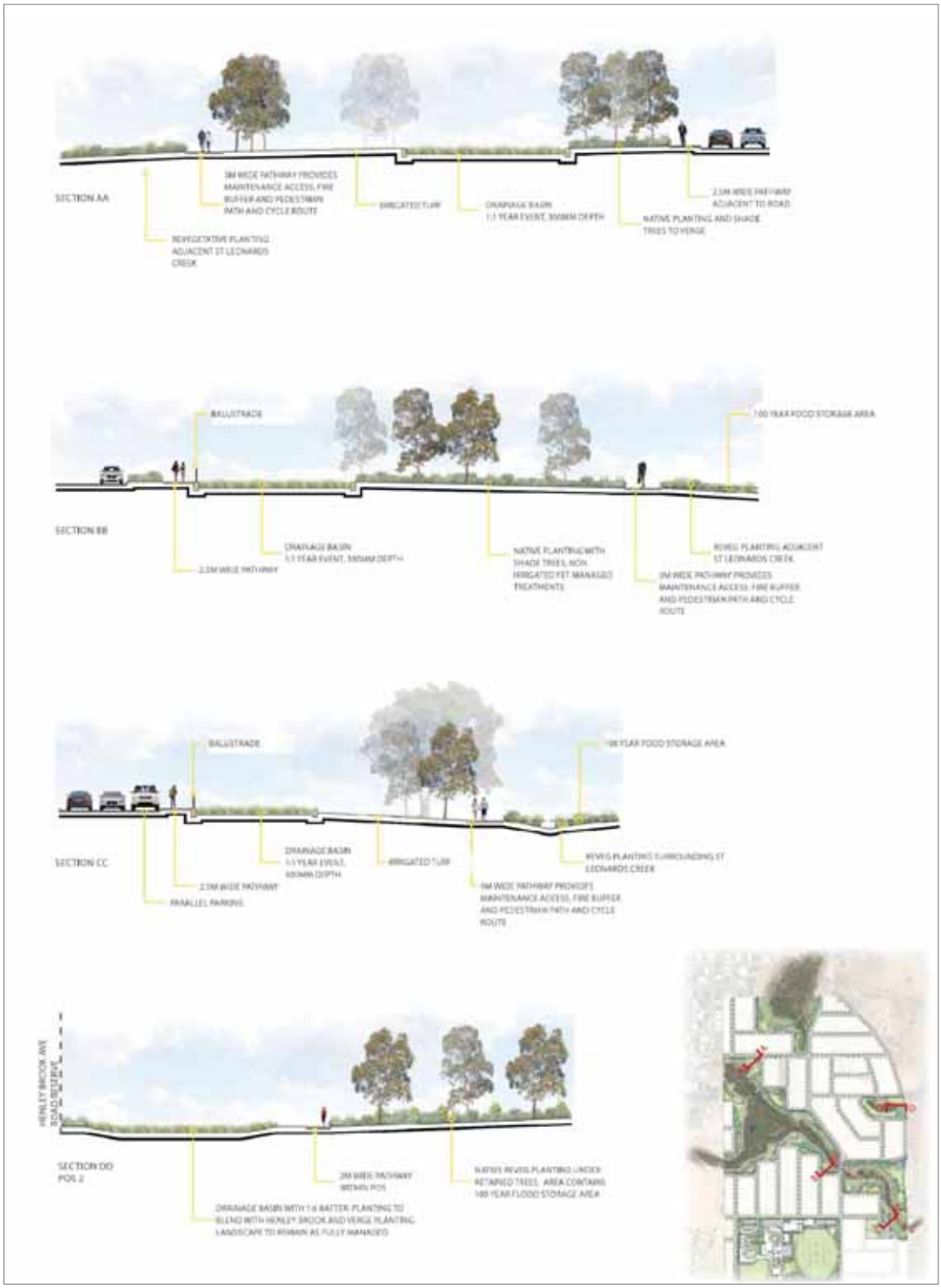


**Figure 12 - Landscape Sections**
*Source: Plan E*

Sample cross-sections have been prepared the St Leonards Creek Open Space to demonstrate the interface with the creek and adjacent street, showing indicative planting, carriageways, footpaths and integration of adjoining open space (Figure 12: Landscape Sections).

*School Park ( POS 5)*

- Total area of approximately 3ha of high active open space;
- District level open space which can accommodate a senior AFL oval, 2 square pitches and/ or a cricket pitch;
- Open space is co-located with the primary school and community centre to enable shared use facilities for the community;
- Supports recreation via an all abilities playground, pavilion with toilet and change room facilities with up to 48 car parking bays;
- Circular pathways to encourage pedestrian activity and exercise nodes, which can integrate with the adjacent residential development; and
- Further opportunities for shade structures, seating, bins and drink taps.

### 3.3.3 Streetscapes

A street tree masterplan has been prepared to support the Structure Plan landscape concepts. Street trees have been carefully selected to deliver quality street scapes which will provide a sense of place and distinct theme to this new residential area.

Street trees have been selected with regard to the width of reserves and the role particular roads will serve. Lakefield Drive and the key north-south Neighbourhood Connector road have been provided with a higher standard of landscaping by way of a specific selection of tree species and a maturity of these trees to reflect the high order of these two roads (Figure 13: Street Tree Masterplan)

The more key Local Access Roads will similarly be differentiated from other 'lower order' Local Access Roads through tree species to introduce character flavours throughout the estate

The detailed engineering and landscaping schedule of the streets will be determined in consultation with the City at subdivision stage.


**Figure 13 - Street Tree Masterplan**
*Source: Plan E*

## 3.4 Bushfire Management

The Structure Plan provides a design response and the planning framework that addresses potential bushfire hazards. It demonstrates that the risk from bushfire is not an impediment to development and it can be managed through a combination of building protection zones, mandatory dwelling setbacks and appropriate construction standards.

In accordance with the WAPC's 'State Planning Policy 3.7: Planning in Bushfire Prone Areas' and 'Planning for Bush Fire Protection Guidelines', a Bushfire Management Plan has been prepared by Emerge Associates. It includes a detailed (post-development) Bushfire Hazard Assessment.

This Hazard Assessment shows that bushfire prone vegetation (post-development) is restricted to:

- Native vegetation (classified as forest and shrubland) within St Leonards Creek that traverses across the Structure plan area;
- Grassland within the rural residential lots located to the eastern side of the Henley Brook Avenue reserve (currently Murray Road);
- Native vegetation (classified as forest and shrubland) within the northern wetland and its associated buffer; and
- Retained trees within the eastern area of public open space.

The Assessment requires that an Asset Protect Zone (APZ) be established between the identified bushfire prone vegetation and any future dwellings in order to achieve a Bushfire Attack Level (BAL) of 29 or less in accordance with AS3959 "Construction of buildings within bushfire prone areas." The Structure Plan creates this APZ through locating streets and managed public open space area between the identified bushfire risk and any future dwellings, and in rare circumstances, mandating future dwelling setbacks to ensure BAL-40 and BAL-FZ construction standards are not required.

Importantly, the implementation of the BMP through the delivery of the Structure Plan with have the benefit of clearing grassland that is presently identified in the First Stage Brabham Structure Plan immediately to the south, thereby removing this hazard.

A copy of the Emerge Associates BMP is provided as Appendix 3.

## 3.5 Movement Network

GTA Consultants have prepared a comprehensive Transport Impact Assessment (TIA) in support of the Structure Plan, forecasting traffic volumes and a recommended road network hierarchy to accommodate expected traffic flows. The following section summarises the key elements of the TIA, including the existing and planned movement network, road hierarchy classification and an overview of the cyclist and pedestrian network.

The Transport Impact Assessment prepared by GTA Consultants can be found as Appendix 5.

### 3.5.1 Existing Movement Network

The Structure Plan is supported by a regional road network that allows for convenient access to local, district and regional destinations. Key aspects of this existing road network surrounding the Structure Plan are:

**Drumpellier Drive** is reserved as a Primary Regional Road under the MRS and is classified as a Primary Distributor by Main Roads WA. With a posted speed limit of 80km/h north of Marshall Road, Drumpellier Drive was recently upgraded to a four-lane, dual carriageway.

**Murray Road** is identified as a local road that runs north-south, just east of proposed Henley Brook Avenue. With a current speed limited of 70km/h, Murray Road is constructed to a rural standard only.

**Park Street** is categorised as a Local Distributor, running in an east-west director to the north of the Structure Plan. Constructed to a rural standard with a speed limit of 60km/h, Park Street has been upgraded to an urban standard further west, with a speed limit of 70km/h.

**Woollcott Avenue** runs east-west through the First Stage Brabham Structure Plan (south), connecting to West Swan Road to the east but terminating prior to Drumpellier Drive (to the west). Currently acting as a local distributor, Woollcott Avenue is in the process of being upgraded with the easternmost portion presently at a rural standard whilst the western portion has been upgraded and categorised as a Neighbourhood Connector.

**Youle Dean Road** abuts the southern edge of the First Stage Brabham Structure Plan, running in an east-west direction between Drumpellier Drive and Everglades Avenue with a speed limit of 70km/h. Categorised as a Integrator B, Youle Dean Road is reserved as ‘Primary Regional Roads’ in the MRS up to the Stockland ‘Whiteman Edge’ Centre and ‘Other Regional Roads’ east from that point.

**Lakefield Drive** is an Access Road that runs east-west, currently constructed between Everglades Avenue and Mormaer Street (east of the Structure Plan area). With a speed limit of 50km/h, Lakefield Road is planned to connect through to Henley Brook Avenue via a priority controlled T-intersection, passing through the Structure Plan area.

**Fairmont Boulevard** is a partially constructed Neighbourhood Connector road that forms an east-west connection through the Structure Plan and the rest of Brabham to the east, eventually connecting through to Park Street via Everglades Avenue. Fairmont Boulevard has a speed limit of 50km/h.

**Henley Brook Avenue** (unconstructed) is a major north-south distributor in the corridor and abuts the eastern edge of the Structure Plan area. In accordance with City of Swan planning, Henley Brook Avenue shall be constructed as a dual divided carriageway.

*Pedestrian and Cyclist Network*

In surrounding developed areas and approved Structure Plans, local street have (or are required to have) footpaths to at least one side of the road. On-road cycle lanes exist on upgraded sections of Woollcoott Avenue, which will ultimately extend through to Henley Brook Avenue as remaining portions are upgrades. On-road cycling lanes are also present along Partridge Street connecting to Youle Dean Road, with on-road cycling lanes and shared pathways located along Drumpellier Drive.

### 3.5.2 Proposed Movement Network

The Transport Impact Assessment prepared by GTA Consultants comprehensively addresses traffic movement considerations within the Structure Plan area.

*Road Network*

The planned road network shown on the Development Concept Plan (Figure 8) provides a robust and permeable layout throughout the Structure Plan area, with seamless connections to the adjacent residential estates of 'Flamewood' and 'Avonlee', a strong, logical extension to the approved road network in the First Stage Brabham Structure Plan to the south and facilitating excellent connections to the future Henley Brook Avenue to the east.

The Road Hierarchy Plan shows the hierarchy of the movement network planned for the area and the external connections to the existing network (Figure 14: Road Hierarchy Plan).

The key elements of the planned road network are as follows:

- **Henley Brook Avenue** is planned to be constructed as a dual divided carriageway and is identified in the Albion DSP as a Primary Distributor/Integrator A road. Construction of Henley Brook Avenue is to be funded by the Albion Development Contribution Plan.
- **Lakefield Drive** being continued as a Neighbourhood Connector from 'Flamewood' estate to the west, through to its connection to Henley Brook Avenue as a full movement T-intersection.
- **Fairmont Boulevard** continues as a Neighbourhood Connector from 'Avonlee' to the west of the Structure Plan, being downgraded as a Local Access Street for the eastern portion.
- **North-South Neighbourhood Connector** will extend from the First Stage Brabham Structure Plan, passing through the Structure Plan area, connecting to Henley Brook Avenue to the north.


**Figure 14 - Road Hierarchy Plan**
*Source: GTA Consultants*

- **Local Access Streets** make up the remainder of the network and are typically proposed to contain a pavement width of 6m with a reserve width ranging from 14.2 to 16.6m the majority to be constructed as 15m road reserves, to be reduced by when adjacent to public open space.
- **Laneways** shall be a minimum width of 6m to accommodate two way movements and rubbish collection, increased to a width of 9m where these provide the only public road frontage.

The Albion DSP planned for a number of intersections along Henley Brook Avenue, connecting the Structure Plan (and the First Stage Brabham Structure Plan to the south) to this key road; however, planning of these intersections pre-dated recent strategic decisions relating to the regional transport network, including the State government's 'New Lord Street' (now Drumpellier Drive), 'NorthLink WA' and METRONET (Morley-Ellenbrook Line) projects.

As a result, the Structure Plan looks to introduce the northern most planned connection to Henley Brook Avenue, as set out in the DSP. This allows the North-South Neighbourhood Connector that passes through the Structure Plan to connect to Henley Brook Avenue as a full movement T-intersection

This connection is in addition to three further connections approved as part of the First Stage Brabham Structure Plan:

- **Henley Brook Avenue / Youle Dean Road Roundabout**, a three-armed roundabout with recent design drawings prepared by the City of Swan supporting this intersection being controlled via a roundabout in lieu of signals;
- **Henley Brook Avenue / Woollcott Avenue Roundabout**, a four-armed roundabout which is again shown in the aforementioned design drawings prepared by the City of Swan; and
- **Henley Brook Avenue / Lakefield Drive**, (immediately south of St Leonards Creek) approved as a full movement intersection.

Collectively, these connections provide a permeable local network with strong connections to the surrounding higher order road network.

*Pedestrian and Cyclist Networks*

The Structure Plan will provide an excellent level of accessibility and permeability for pedestrian and cyclist, both throughout the Structure Plan area and via connections to surrounding urban development.

The key principles for determining the planned pedestrian and cycling facilities are as follows:

- Footpaths on at least one side of all access roads;
- Dual use paths will be provided to all Neighbourhood Connector and Integrator roads;
- On-street cycle lanes will be provided in accordance with City of Swan standards, to be incorporated on all Neighbourhood Connectors and Integrator roads (where applicable); and
- Opportunities for pedestrian bridges to cross over St Leonards Creek, improving north-south movement, in addition to the planned north-south road crossing.

The key principles and the final location of pedestrian bridges, footpaths, dual use shared paths and cycle lanes will be determined in consultation with the City of Swan as part of the detailed engineering stage following subdivision approval.

*Public Transport*

The Structure Plan is located in proximity to the recently announced Whiteman Park METRONET Train Station, one of the State's key public transport facilities which will provide future residents with outstanding public transport options.

The Public Transport Authority is currently planning for improved bus services, which includes introducing a number of bus routes throughout the locality. Preliminary planning indicates a future bus service will pass through the Structure Plan area along Lakefield Drive, with final detail of this service not yet known.

### 3.5.3 Analysis of the Transport Network

GTA have undertaken comprehensive traffic modelling for the movement network proposed by the Structure plan. It demonstrates that the proposed network and associated reserve widths have the capacity to accommodate expected traffic volumes in the year 2031. The modelling adopted the Main Road's ROM24 model, with the SIDRA analysis based on main Roads WA Operational Modelling Guidelines.

The Structure Plan is expected to generate approximately 3,000 vehicles per day, with all vehicle movements falling within the acceptable limits outlined by *Liveable Neighbourhoods* for the respective road categories proposed by the Structure Plan and will not compromise the Albion DSP transport network.

The precise nature and function of all internal intersections will be determined once the location and alignment of streets will be finalised as part of the subdivision approval. All intersection spacing and treatments will be designed to accord with *Liveable Neighbourhoods* standards

## 3.6 Water Management

The Structure Plan has been designed to accommodate the principles of best practice urban water management principles.

A Local Water Management Strategy (LWMS) has been prepared by RPS in support of the Structure Plan, prepared in accordance with the principles and objectives of WAPC's Better Urban Water Management Guidelines and the approved Albion Local Water Management Strategy (JDA Hydrologists, 2009). The RPS LWMS is provided in its entirety as Appendix 6.

Establishing key principles for the management of stormwater runoff and groundwater quality, implementation of the LWMS will be through the development of subsequent Urban Water Management Plans (UWMP) which will be prepared at the time of subdivision.

### 3.6.1 Irrigation

The Department of Communities has obtained two groundwater licenses to extract total of 64,885kL/yr from the Superficial Aquifer in the Swan Groundwater Area for the purpose of irrigating the public open space areas and street landscaping. This amount includes 16,000 kL/yr already set aside for irrigation of the First Stage Brabham Structure Plan area with the remaining 48,885 kL/yr to cover the subject Structure Plan. This groundwater allocation is sufficient for the purpose of irrigation of both structure plans.

*Rehabilitated Wetland and Alternative Water Solution*

All subsoil drainage from the Structure Plan area will be graded to what is presently a multiple use wetland (the natural low point in the landscape) located on Lot 359 Murray Road, east of the Structure Plan.

Lot 359 is owned by the Department of Communities and the wetland, which covers approximately 5ha of Lot 359, will be reconstructed and landscaped with native nutrient stripping vegetation to allow for the primary treatment of this subsoil drainage. On 13 March 2020 the City of Swan granted approval for the rehabilitation work of this wetland (Figure 15: Approved Wetland Rehabilitation Plan).

While adequate groundwater is available for the Structure Plan, it is generally understood that reliance on extracted groundwater for irrigation is not a sustainable (long term) solution and an alternative and innovative water supply strategy is being considered which involves the use of subsoil drainage water discharge.

Recent Cooperative Research Centre (CRC) for Water Sensitive Cities monitoring at the Whiteman Edge and Rivergums (Baldivis) developments has shown that subsoil discharge volumes far exceed the amount needed to irrigate the public open space and streetscape landscaping. This has resulted in a strategy to further investigate the feasibility to harvest subsoil drainage for irrigation purposes.

**Figure 15 - Approved Wetland Rehabilitation Plan**
*Source: Plan E*

This will involve using the rehabilitated wetland on Lot 359 as the primary treatment of subsoil drainage, where this drainage can be directly harvested for irrigation, or potentially stored within the aquifer during the peak rainfall period for recovery during drier periods. Pre-development flow rates will be maintained to ensure that the harvesting of subsoil drainage will not have any downstream implications. This strategy is a total water cycle management solution with the aim of the residential development becoming its own water supply catchment and offers a rare opportunity for a solution which will benefit not only the current Structure Plan but potentially the wider Brabham locality.

Nonetheless, this Structure Plan is not contingent on subsoil harvesting for irrigation and the LWMS does not look to address the matter at this time.

### 3.6.2 Stormwater Management

Stormwater management will be based around current water sensitive design principles and best management practices to effectively manage water quality and quantity from both minor and major storm events. The LWMS refines the stormwater strategy set out in the approved Albion Local Water Management Strategy (JDA Hydrologists, 2009) which was prepared as part of the Albion DSP.

The key objectives of the drainage system will be:

- Maintain the existing hydrological regime where possible and minimise imported fill;
- Improve stormwater quality, as compared to a development that does not actively manage stormwater; and
- Rainfall from the minor (first 15mm) events will be retained and infiltrated as close-to-source as practicable.

The LWMS sets out a stormwater management strategy which proposed the following:

- Stormwater from the first 15mm event (generally equating to the 1 year ARI event) will be collected and infiltrated as close to source as possible, using soakwells, lot connections pits and bio-retention areas in areas of public open space;
- A piped drainage system that will cater for stormwater flows for the minor 20% AEP event (generally equating to the 5 year ARI) to maintain serviceability of roads and pedestrian pathways;
- Flows from major events (1% AEP), once the capacity of the piped drainage system is reach, will be conveyed safely overland via the road network and designated flow paths to basin storage areas within public open space and ultimately to St Leonards Creek. St Leonards Creek will provide the majority of the flood storage requirements for the Structure Plan area; and
- Habitable floor areas of buildings will be at least 0.3m above the 1% AEP flood level of road reserves, within drainage basins and flood storage areas and 0.5m above the 1% AEP flood level within St Leonards Creek.

### 3.6.3 Groundwater Management

The Structure Plan utilises the unconfined aquifer as a means of stormwater disposal. Groundwater will be controlled via a system of subsoil drains located within road reserves and beneath areas of POS. The level at which these subsoil drains are to be installed, the Controlled Groundwater Level (CGL), will be in accordance with the DWER's 'Water Resource Considerations when Controlling Groundwater Levels' (2013) which requires consideration of the following:

**Free Flowing Drainage Outlet** - the subsoil drainage system will be set at 0.3m above the invert of the upgraded culvert beneath Murray Road which leads to the rehabilitated wetland located east on Lot 359 Murray Road, which exceeds the minimum separation set in DWER's 'Water Resource Considerations when Controlling Groundwater Levels' (2013).

**Infrastructure Protection** - finished lot levels will be tentatively set at 1.2m above subsoil drainage inverts which will be refined at the time of detailed design. Estimated clearances to groundwater levels are to exceed IPWEA guidelines, based on groundwater monitoring undertaken in adjacent areas.

**Groundwater Quality** – stormwater management will improve the quality of infiltrated water through reducing flows velocities, biological uptake, absorption to soil, and increasing infiltration and treatment areas. Subsoil drainage water quality is expected to significantly improve, as compared to pre-development groundwater quality, accordingly to monitoring results of two other urban developments.

**Protection of water dependant ecosystems –** subsoil drainage will not discharge into the northern wetland or St Leonards Creek. Instead subsoil drainage will be piped along the eastern boundary of the Structure plan (with this pipe running beneath St Leonards Creek), conveying drainage to the rehabilitated wetland on Lot 359. This pipe itself provides no groundwater control and is only to convey upstream subsoil drainage.

**Subsoil Harvesting for Alternative Water Supply** - all subsoil drainage from the Structure Plan area will be discharged to the rehabilitated wetland located on Lot 359, allowing for potential future harvesting of this drainage for irrigation water. The volume available for harvesting is subject to further assessment however, the subsoil harvesting has received in principle support by DWER. Nonetheless, this Structure Plan is not contingent on subsoil harvesting for irrigation, with the LWMS similarly not addressing the matter.

### 3.6.4 Monitoring and Reporting

An extensive pre-development groundwater monitoring programme has been completed across the Albion DSP area and the Brabham development. The completed pre-development monitoring is in excess of two winter peaks and providing a sound understanding of current groundwater levels and quality, which has informed the drainage design.

Post-development monitoring of groundwater levels and quality will occur on a quarterly basis, carried out over a three year period, with it proposed that after this initial three year period, a review is undertaken in consultation with DWER and the City of Swan. This post-development groundwater monitoring programme will locate and utilise the pre-development bores and in the situation of a (pre-development) bore having been destroyed or is no longer available, a new bore will be installed as close as practicable to ensure consistency in the monitoring regime.

Surface water monitoring will occur for the same quarterly frequency and duration at the final subsoil drainage outlets and St Leonards Creek (upstream and downstream of the Structure Plan area), and will be measured for the same water quality parameters as the groundwater monitoring.

If water quality parameters (particularly nitrogen and phosphorus) exceed the average pre-development values by 20% or more for two consecutive sampling occasions, initially the City of Swan and DWER will be notified and an investigation will be undertaken to establish the likely cause of the exceedance, the likely impacts and potential remedies. At that point, a specific contingency plan may be implemented, with possible measures including:

- Further soil amendment in infiltration/treatment areas;
- Increased planting of nutrient stripping vegetation in infiltration areas; and
- Reintroduce public awareness programs.

## 3.7 Activity Centres

The Structure Plan is in close proximity to a number of existing and planned activity centres, ensuring immediate and excellent access to employment opportunities, retail, commercial and community services.

The Midland Strategic Metropolitan Centre is located 7km south of the Structure Plan while the Ellenbrook Town Centre is located only 5km north, both identified as significant centres in 'State Planning Policy 4.2 – Activity Centres for Perth and Peel', providing for a wider range of commercial, community and employment opportunities. Further, the Structure plan is located approximately 1km from the planned centre located at the corner of Everglades Avenue and Youle Dean Road, classified as a 'Large Neighbourhood Centre' in the Albion DSP and as an 'Emerging District Centre' in State Planning Policy 4.2 – Activity Centres for Perth and Peel (referred to as the Albion District Centre). This centre offers residents excellent access to the more frequent (day to day) needs.

### 3.7.1 Local Centre

The Albion DSP identifies one local centre within the Structure Plan area, with this centre to offer between 300m² and 500m² of retail floor space (NLA), satisfying the local convenience needs of future residents.

The Albion DSP (or more specifically the DSP Centres Strategy and Employment Report) goes on to suggest that this eastern local centre comprise:

- Convenience store: 300m$^2$ – 400m$^2$;
- Other retail tenancy: 120m$^2$ – 220m$^2$; and
- Non-retail tenancy: 100m$^2$ – 150m$^2$.

The DSP acknowledged that the location shown on the DSP map is indicative, to be resolved as part of local structure planning and that the eventual development of the centre is 'entirely dependent on future market conditions'. The Structure plan designates the local centre at the intersection of the key north-south and east-west (18m wide) Neighbourhood Connector roads (immediately north of the primary school/community site/co-located open space) by way of a 'Special Use' zone. A number of low intensity, non-residential land uses are then approvable at the discretion of the City

## 3.8 Education

The Structure Plan delivers one 3.5ha primary school site, co-located with a 3ha (shared) area of public open space and a 3,500m$^2$ multi-purpose community site.

The provision of a primary school site, co-located with open space, is consistent with the Albion DSP which had planned for a primary school at this general location.

The primary school site and the collocated open space is surrounded by neighbourhood connectors, which in conjunction with the future development on the adjoining (southern) lot, will provide the school with excellent access and circulation, consistent with the principles of *Liveable Neighbourhoods*.

## 3.9 Servicing and Staging

The following section summarises the engineering considerations in the Engineering Servicing Report prepared by Cossill & Webley Consulting Engineers, provided as Appendix 7.

### 3.9.1 Earthworks Strategy

A preliminary earthworks strategy has been prepared for the Structure Plan area with finished levels to be dictated by a number of considerations being:

- Match into existing levels where the Structure plan abuts developed areas;
- Ensure adequate clearance to sub-soil drainage infrastructure;
- Achieve minimum clearance between finished levels and controlled groundwater levels;
- Providing minimum cover over sewer infrastructure and achieve minimum grades acceptance for gravity-reliant infrastructure (both sewer and drainage); and
- Provide for adequate separation between areas with underlying clayey soils to obtain a 'Class A' soil classification.

As part of civil subdivision works, the Structure Plan area will be earthworked through cut and import fill operation to ensure all these considerations are met.

### 3.9.2 Sewer Reticulation

The Structure Plan will be serviced by the existing Type 90 waterwater pumping station (No. 902-73) located immediately south in Lot 801 Youle-Dean Road. Sewer from the Structure Plan area will be gravity to this pumping station.

### 3.9.3 Water Reticulation

The Water Corporation has confirmed that the Structure Plan has been accounted for in its current Water Supply Scheme.

Water supply will be provided by extending existing services from development west of the site which will include a DN200mm water main located off Heriot Street and a DN150mm water main in Fairmount Boulevard.

Development from the south will also be staged such that water supply will also be available from extension coming off Woollcott Avenue to support the system, provided as part of the Department of Communities/Peet First Stage Brabham Structure Plan.

The Water Corporation has advised that a DN400 distribution main will be constructed in Lord Street from an existing distribution main located in Gnangara Road to Parks Street as part of the ultimate water supply for Brabham, but this is on the Water Corporation's Capital Works Programme (to be constructed by the Water Corporations), with development of the Structure plan not contingent on its provision.

### 3.9.4 Underground Power

Western Power has confirmed that the Structure Plan can be connected to power via the existing high voltage network presently located west in Lot 19 Woollcott Avenue, with the network fed from the Beechboro substation which has sufficient capacity with the need for infrastructure upgrades. All power infrastructure within the development to be underground and fed from transformers strategically located within the site.

### 3.9.5 Gas Reticulation

ATCO Gas has advised that the Structure Plan can be supplied with reticulated gas via an extension from existing mains located in the Woollcott Avenue reserve.

### 3.9.6 Telecommunications

Current Federal Government telecommunication policy identifies the National Broadband Network Company (NBN Co) as becoming the wholesale telecommunications provider. The design and installation of a standard pit and pipe network that can accommodate a high speed broadband network will be undertaken as development of the site progresses, with the installation of the network infrastructure to be provided by the NBN Co, or an alternative service provided.

### 3.9.7 Staging and Timing

It is anticipated the Structure Plan will be implemented to match market demand. Development will typically proceed in a northerly fashion, providing for a progressive and logical extension to the previously approved Department of Communities/Peet First Stage Brabham Structure Plan area (to the south) to meet the market. Key focal points of the Structure Plan area will include development of lots surrounding St Leonards Creek, and the Primary School site, which will be ultimately accessed through the extension of Lakefield Drive, and the North-South connector from the First Stage Brabham Structure Plan.

## 3.10 Developer Contributions

The Structure plan is within Development Contribution Area 1 (DCA1) under Schedule 13 of LPS17, and is subject to contribution to the costs of infrastructure in accordance with the relevant Development Contribution Plan (DCP) and Cost Apportionment Schedule. The DCP covers the entire Albion DSP area, and puts in place a shared funding scheme for a range of road and community infrastructure.