

DEPARTMENT OF COMMUNITIES / PEET FIRST STAGE BRABHAM LOCAL STRUCTURE PLAN

PART ONE | IMPLEMENTATION

March 2020



Government of Western Australia
Department of Communities

PEET



Town Planning + Design
www.cleplan.com.au

Title: Department of Communities / Peet First Stage Brabham
Local Structure Plan
Part One | Implementation

Prepared for: Department of Communities / Peet Limited

CLE Reference: 3074Rep105B

Date: 18 March 2020

Status: Final

Review date: 18 March 2020

Prepared by: CLE Town Planning + Design

Project team: Town Planning + Urban Design – CLE Town Planning + Design
Environmental – Emerge Associates
Bushfire – Emerge Associates
Landscaping – Plan E Landscape Architect
Local Water Management Strategy - RPS Australia
Traffic – GTA Consultants
Acoustics – Lloyd George Acoustics
Engineering – Cossill & Webley Consulting Engineers

This report is for the exclusive use of the Client, pursuant to Agreement between the Client and CLE Town Planning + Design. CLE accepts no liability or responsibility whatsoever in respect of any use of or reliance upon any information contained within this report by anyone who is not party to the Agreement and/or has come into possession of the Report through parties other than the Client or CLE.

CLE is not accountable for any information which may be contained within the Report which has been supplied by others and reproduced by CLE in this report.

Copyright and any other Intellectual Property arising from this report and the provision of the services in accordance with the Agreement belongs exclusively to CLE unless otherwise agreed and may not be reproduced or disclosed to any other person other than the Client without the express written authority of CLE.

Any reproduction by the Client is to reference CLE as the original author

Plans and figures contained in this report have been prepared for general information purposes only and may inadvertently use uncontrolled data from external sources. CLE does not guarantee the accuracy of the plans and they should not be used for any detailed site design. The content of this report including all plans remains the property of CLE.

© CLE 2020

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

19 May 2020
..... 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:

Talyn Cox
..... Witness

20 May 2020
..... Date

19 May 2030
..... Date of Expiry



Table Of Amendments

Amendment No.	Summary of the Amendment	Date approved by WAPC



Executive Summary

The Department of Communities/Peet First Stage Brabham Local Structure Plan (the LSP) comprises approximately 48.8ha of land and consists of Lot 10 Woollcott Avenue and part of Lots 354 and 355 Murray Road, Brabham. The LSP is the first of a number of local structure plans to be prepared over the Department of Communities landholdings at Brabham.

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

The LSP supports the creation of a residential neighbourhood that responds to the surrounding land use context, and draws 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.

In brief, the LSP is capable of delivering a residential density target of 35.5 dwellings (per residential site hectare), achieving State government density targets and with density ranging from R20 to R80, the LSP area supports a diverse range of housing choice. In addition to more traditional housing choice, medium density housing options will be located around areas of public open space and within proximity to key roads.

The LSP establishes a responsive and integrated interface to both existing and future surrounding development through the inclusion of a permeable and legible local road network.

Furthermore, the LSP provides for a framework for delivery of public open space that can serve a range of functions within the LSP 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.

The site can be readily serviced, with essential infrastructure located within proximity and easily extended to the LSP area. The LSP is supported by the following reports, included as appendices, and summarised in Part 2:

- Environmental Assessment and Management Strategy
- Bushfire Management Plan
- Landscape Masterplan
- Local Water Management Strategy
- Transport Impact Assessment
- Transportation Noise Assessment
- Engineering Servicing Report

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

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

Table A: Land Use Summary

Item	Data	Section number referenced within the Structure Plan Report
Total area covered by the structure plan	48.8 hectares	Section 1.2.2
Area of each land use proposed		
Zones (as per the Scheme)		
- Residential	23.9 hectares	Section 3.1
Reserves (as per the Scheme)		
- Road Reserves	21.8 hectares	
- Parks and Recreation	3.0 hectares	
Total estimated lots yield	825 - 875 lots	Section 3.2.1
Estimated number of dwellings	825 – 875 dwellings	
Estimated residential site density		
Dwellings per residential site hectare <i>(as per Perth & Peel @ 3.5 million and Liveable Neighbourhoods)</i>	35.5 dwellings per residential site hectare	
Estimated population	1260 – 1400 people @ 2.8 people per household	
Number of Primary Schools	None	Section 3.8
Number of Secondary Schools	None	
Amount of Public Open Space	3.5 hectares (gross) 3.0 hectares (unrestricted) None (restricted)	Section 3.3



Table of Contents

- 1.0 Structure Plan Area
- 2.0 Structure Plan Content
- 3.0 Operation
- 4.0 Interpretation And Relationship With Statutory Planning Framework
- 5.0 Staging
- 6.0 Land Use
 - 6.1 Land Use and Zones
 - 6.2 Residential
 - 6.2.1 *Dwelling Target*
 - 6.2.2 *Density*
 - 6.2.3 *Locational Criteria*
 - 6.3 Public Open Space
- 7.0 Subdivision And Development
 - 7.1 Local Development Plans
 - 7.2 Notifications on Title
 - 7.3 Bushfire Management
 - 7.4 Gas Pipeline Corridors
- 8.0 Other Requirements
 - 8.1 Conditions of Subdivision Approval
 - 8.2 Development Contributions

Plans

Plan A: Structure Plan Map

1.0 Structure Plan Area

This Structure Plan shall apply to Lot 10 Woollcott Avenue and part of Lots 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.

2.0 Structure Plan Content

This Structure Plan comprises:

- Part One – Implementation
- Part Two – Explanatory Report
- 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

This 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, R60 and R80 as set out in (b), (c) and (d) below.
- b. The R20 density code shall apply to lot immediately abutting the Henley Brook Avenue reserve.
- 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;
 - (iii) The lot is located within a 400m walkable catchment of a planned Primary or High School.
- d. The R60 – R80 density codes are to apply to lots immediately abutting or directly opposite public open space or in the locations as shown on the Structure Plan map.

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 1: Strategic Public Open Space

Strategic Public Open Space	Indicative Size (ha)
POS 1	0.41ha
POS 2	0.27ha
POS 3	0.45ha
POS 4	1.50ha
POS 5	0.40ha
Total	3.03ha

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) R80 lots requiring variations to the Residential Design Codes, as set out in Part 2 (Explanatory Report) of the LSP.
- (ii) Where lot boundaries abut Public Open Space.
- (iii) Lots subject to 'Quiet House Design' requirements as identified in the Road Traffic Acoustic Assessment.

7.2 Notifications on Title

In respect of applications for the subdivision of land the Council shall recommend to the Western Australian Planning Commission that a condition be imposed as part of a subdivision approval for a notification to be placed on the Certificate(s) of Title(s) to advise of the following: -

- (i) Lots abutting power infrastructure which must be made accessible to Western Power on a regular basis for the purpose of maintenance, upgrades and expansion to this infrastructure.
- (ii) Land or lots deemed to be affected by road traffic noise as identified in the Transportation Noise Assessment contained within Appendix 5.

7.3 Bushfire Management

This Structure Plan is supported by a Bushfire Management Plan (Appendix 2). 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.

7.4 Gas Pipeline Corridors

The WAPC, on advice of the City of Swan and/or relevant utilities service provider(s), may require as a condition of subdivision approval:

- (i) the implementation as part of subdivisional works, any endorsed AS2885 Safety Management Study (Qualitative Risk Assessment) to the specification of the WAPC and/or relevant utilities service provider(s) (DBP Transmission / APA Group).
- (ii) a notification prepared pursuant to Section 70A of the Transfer of Land Act 1893 shall be placed on the certificate of title of lot(s) within the setback distances outlined in Planning Bulletin 87. Notice of this notification shall also be included on the diagram or plan of survey (Deposited Plan or Survey Strata Plan). The notification is to state as follows:

This lot is adjacent to the Dampier to Bunbury Natural Gas Pipeline (DBNGP) Corridor established under the Dampier to Bunbury Pipeline Act 1997. As such some development restrictions may apply.

- (iii) a notification prepared pursuant to Section 70A of the Transfer of Land Act 1893 shall be placed on the certificate of title of lot(s) within the setback distances outlined in the Planning Bulletin 87. Notice of this notification shall also be included on the diagram or plan of survey (Deposited Plan or Survey Strata Plan). The notification is to state as follows:

This lot is adjacent to the Parmelia Gas Pipeline Corridor established under the Petroleum Pipelines Act 1969. As such some development restrictions may apply.

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
- Safety Management Study (Qualitative Risk Assessment)

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-R40
-  Residential R60-R80

Local Reserves

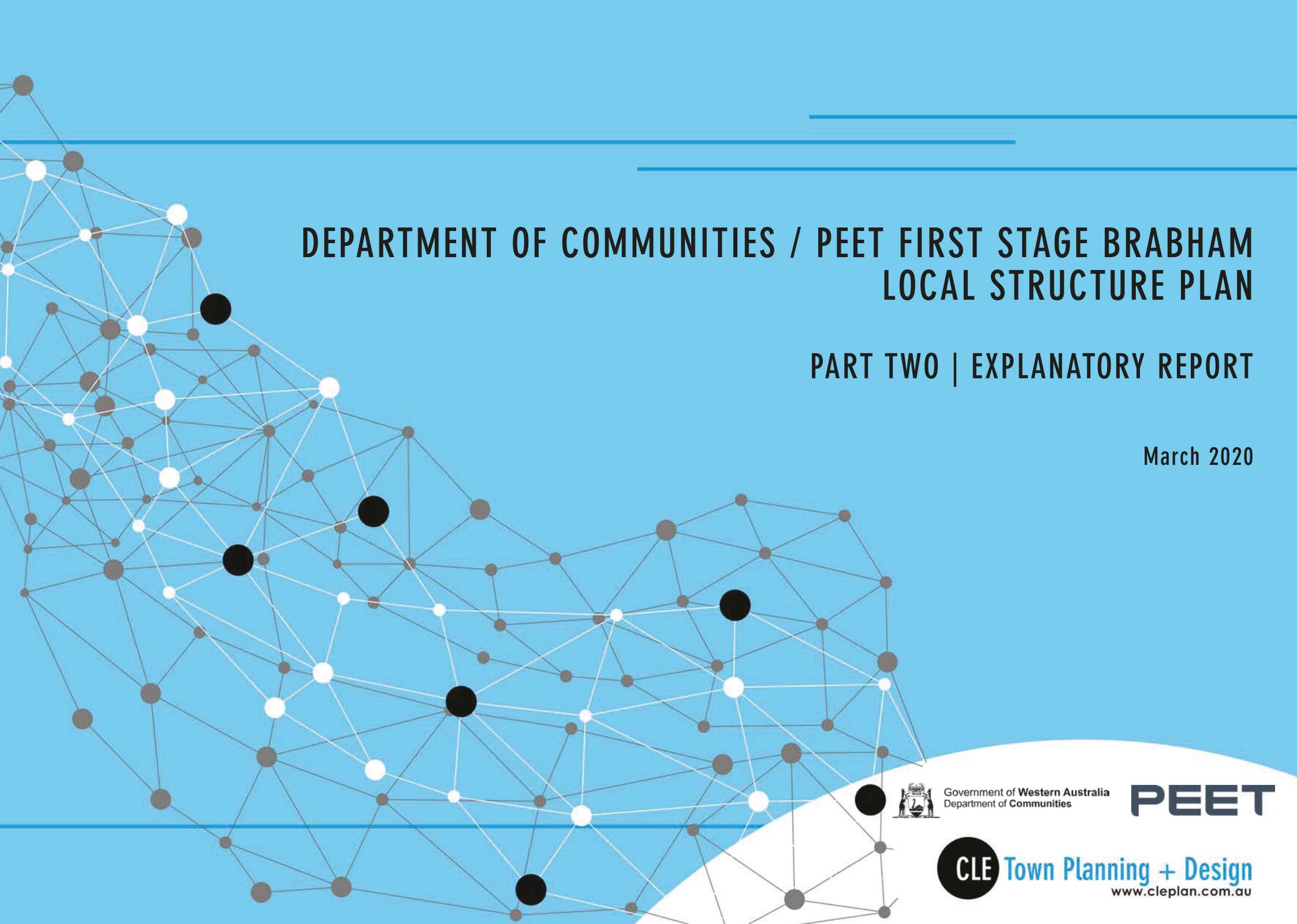
-  Recreation

Other

-  Private (Communal) Open Space (Gas Pipeline Easement)
-  LSP Boundary
-  Integrator A
-  Integrator B
-  Neighbourhood Connector
-  Local Road
-  Youle-Dean Road Widening
-  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.





DEPARTMENT OF COMMUNITIES / PEET FIRST STAGE BRABHAM LOCAL STRUCTURE PLAN

PART TWO | EXPLANATORY REPORT

March 2020



Government of Western Australia
Department of Communities

PEET



Town Planning + Design
www.cleplan.com.au

Title: Department of Communities / Peet First Stage Brabham
Local Structure Plan
Part Two | Explanatory Report

Prepared for: Department of Communities / Peet Limited

CLE Reference: 3074Rep106B

Date: 18 March 2020

Status: Final

Review date: 18 March 2020

Prepared by: CLE Town Planning + Design

Project team: Town Planning + Urban Design – CLE Town Planning + Design
Environmental – Emerge Associates
Bushfire – Emerge Associates
Landscaping – Plan E Landscape Architect
Local Water Management Strategy - RPS Australia
Traffic – GTA Consultants
Acoustics – Lloyd George Acoustics
Engineering – Cossill & Webley Consulting Engineers

This report is for the exclusive use of the Client, pursuant to Agreement between the Client and CLE Town Planning + Design. CLE accepts no liability or responsibility whatsoever in respect of any use of or reliance upon any information contained within this report by anyone who is not party to the Agreement and/or has come into possession of the Report through parties other than the Client or CLE.

CLE is not accountable for any information which may be contained within the Report which has been supplied by others and reproduced by CLE in this report.

Copyright and any other Intellectual Property arising from this report and the provision of the services in accordance with the Agreement belongs exclusively to CLE unless otherwise agreed and may not be reproduced or disclosed to any other person other than the Client without the express written authority of CLE.

Any reproduction by the Client is to reference CLE as the original author

Plans and figures contained in this report have been prepared for general information purposes only and may inadvertently use uncontrolled data from external sources. CLE does not guarantee the accuracy of the plans and they should not be used for any detailed site design. The content of this report including all plans remains the property of CLE.

© CLE 2020

Table of Contents

1.0 Planning Background

- 1.1 Introduction and Purpose
- 1.2 Land Description
- 1.3 Planning Framework

2.0 Site Conditions and Constraints

- 2.1 Landform and Soils
- 2.2 Flora and Vegetation
- 2.3 Fauna and Habitat
- 2.4 Hydrology
- 2.5 Heritage
- 2.6 Bushfire Management
- 2.7 Road Transport Noise

3.0 Land Use and Subdivision Requirements

- 3.1 Land Use
- 3.2 Residential
- 3.3 Public Open Space
- 3.4 Bushfire Management
- 3.5 Movement Network
- 3.6 Traffic Noise Assessment
- 3.7 Water Management
- 3.8 Activity Centres
- 3.9 Education
- 3.10 Servicing and Staging
- 3.11 Natural Gas Pipelines
- 3.12 Developer Contributions

Figures

- Figure 1: Location Plan
- Figure 2: Site Plan
- Figure 3: Location Context Plan
- Figure 4: MRS Zoning
- Figure 5: City of Swan Local Planning Scheme No. 17 Zoning
- Figure 6: Albion District Structure Plan
- Figure 7: Local Context Plan
- Figure 8: Development Concept Plan
- Figure 9: Lifestyle Village Concept Plan
- Figure 10: Landscape Masterplan
- Figure 11: Woolcott Avenue POS Cross Section
- Figure 12: Road Hierarchy Plan
- Figure 13: Woolcott Avenue Cross Section
- Figure 14: Access Street Cross Section

Appendices

- Appendix 1: Environmental Assessment and Management Strategy (Emerge Associates)
- Appendix 2: Bushfire Management Plan (Emerge Associates)
- Appendix 3: Landscape Masterplan (Plan E Landscape Architects)
- Appendix 4: Transport Impact Assessment (GTA Consultants)
- Appendix 5: Transportation Noise Assessment (Lloyd George Acoustics)
- Appendix 6: Local Water Management Strategy (RPS)
- Appendix 7: Engineering Servicing Report (Cossill & Webley Consulting Engineers)

1.0 Planning Background

1.1 Introduction and Purpose

The Department of Communities/Peet First Stage Brabham Local Structure Plan (the LSP) has been prepared on behalf of the Department of Communities and Peet over Lot 10 Woolcott Avenue and part of Lots 354 and 355 Murray Road, Brabham. The LSP is the first of a number of local structure plans to be prepared over the Brabham landholdings owned by the Department of Communities.

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

Part 1: Implementation Section: Contains the LSP 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);
- Bushfire Management Plan (Emerge Associates);
- Local Water Management Strategy (RPS);
- Transport Impact Assessment (GTA Consultants);
- Transportation Noise Assessment (Lloyd George Acoustics)
- 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 LSP area.

1.2.1 Location

The LSP is located in the City of Swan, approximately 7km north of the Midland Strategic Metropolitan Centre and 18km north-east of the Perth CBD (Figure 1: Location Plan).

The LSP area is generally bound by:

- Undeveloped land to the north;
- Existing and emerging residential communities of Flamewood and Whiteman Edge to the west;
- Henley Brook Avenue reservation (unconstructed) and Murray Road to the east; and
- Youle-Dean Road (unconstructed) to the south.

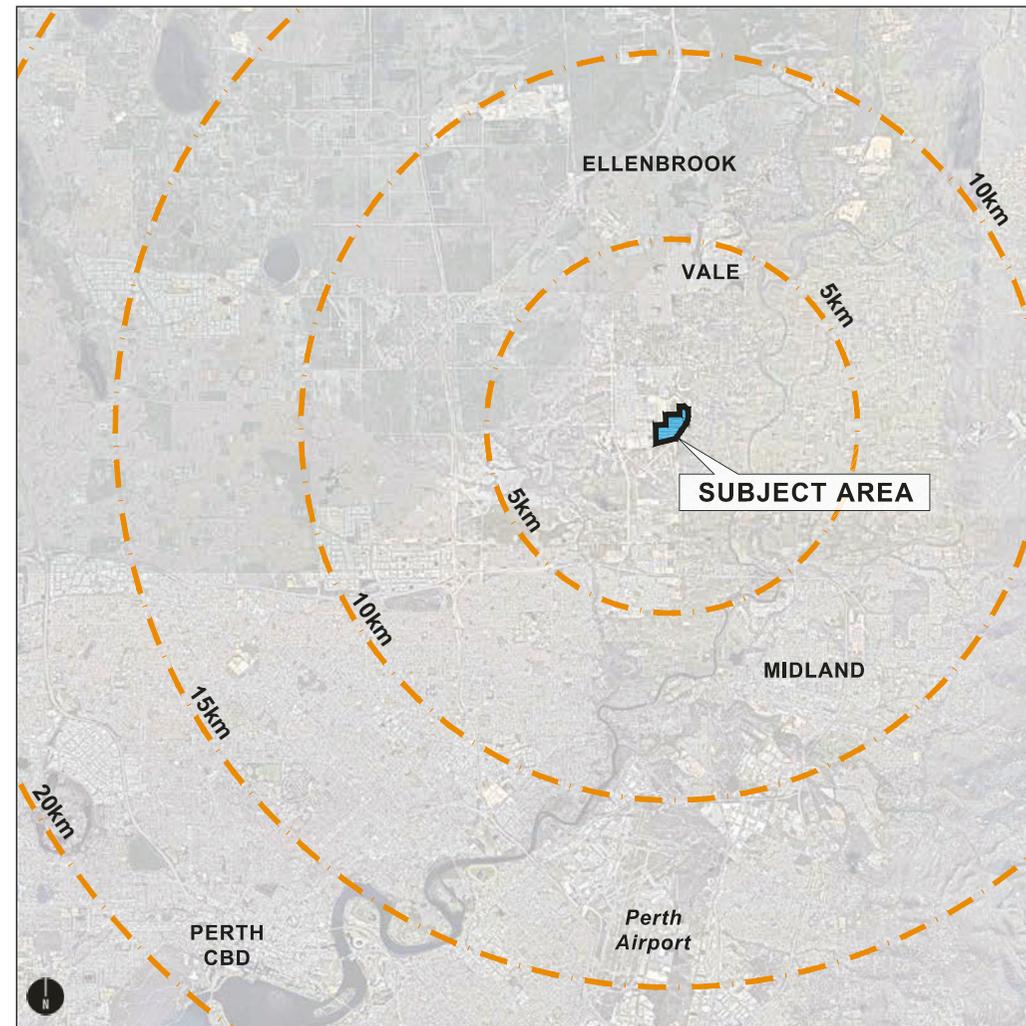


Figure 1 Location Plan

Source: Nearmap

1.2.2 Area and Land Use

The LSP area is approximately 48.8ha in area and has a 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. The site connects into the existing road network via Woollcott Avenue which passes through the LSP area in an east-west direction, and Murray Road which runs along a portion of the eastern edge of the LSP area.



Figure 2 Site Plan
Source: Nearmap & SLIP

1.2.3 Ownership and Title Details

This LSP comprises 3 titles. This land is legally described as set out in Table 1.

Table 1: Certificate of Title Details

Lot Number	Diagram/Plan	Volume	Folio
Lot 10	D33233	1410	95
Lot 354	P004560	2189	146
Lot 355	P004560	292	41A

The Department of Communities is the owner of all three lots subject to the LSP.

1.2.4 Surrounding Land Use and Context

The LSP represents the next phase in the creation of the Albion community with the following a brief summary of the local context:

- Land to the north of the LSP area consists of former (generally cleared) agricultural land, with the exception of St Leonards Creek which passes through the land, flowing west to east. This land is owned by the Department of Communities, to be the subject of a future local structure plan.
- The emerging residential estates of ‘Flamewood’ (Parcel Property) and ‘Whiteman Edge’(Stockland) abut the western boundary of the LSP, with the residential estates of ‘Avonlee’ and ‘Ariella’ in close proximity.
- The planned ‘Whiteman Edge’ neighbourhood centre is located 550m (approx.) west of the LSP area along Youle-Dean Road.
- The Lord Street road reservation (Primary Regional Road) is situated approximately 1km west of the LSP area, with Main Roads WA currently working to deliver the ‘New Lord Street’ project.
- Youle-Dean Road reserve (presently unconstructed) runs along the southern edge of the LSP area, reserved as ‘Other Regional Roads’. Land to the south of this reservation is owned by the Department of Communities and will be subject to future local structure planning, pending the announcement of the Brabham METRONET Station location in proximity to its western edge.

- The future Henley Brook Avenue (reserved 'Other Regional Roads') runs along the eastern edge, partly coinciding with Murray Road, a constructed rural standard local road.
- Land to the east of the future Henley Brook Avenue reserve comprises of a number of larger private rural-lifestyle lots and viticultural lots, falling within the Swan Valley area.
- The Parmelia and Dampier to Bunbury Natural Gas Pipelines, being two high pressure gas mains, pass through the western portion of the LSP. Both pipelines are situated within their own respective easements.
- Midland Strategic Metropolitan Centre (7km south) and the Ellenbrook Town Centre (5km north) are both easily accessible from the LPS area, offering immediate employment opportunities and access to retail, commercial and community services.

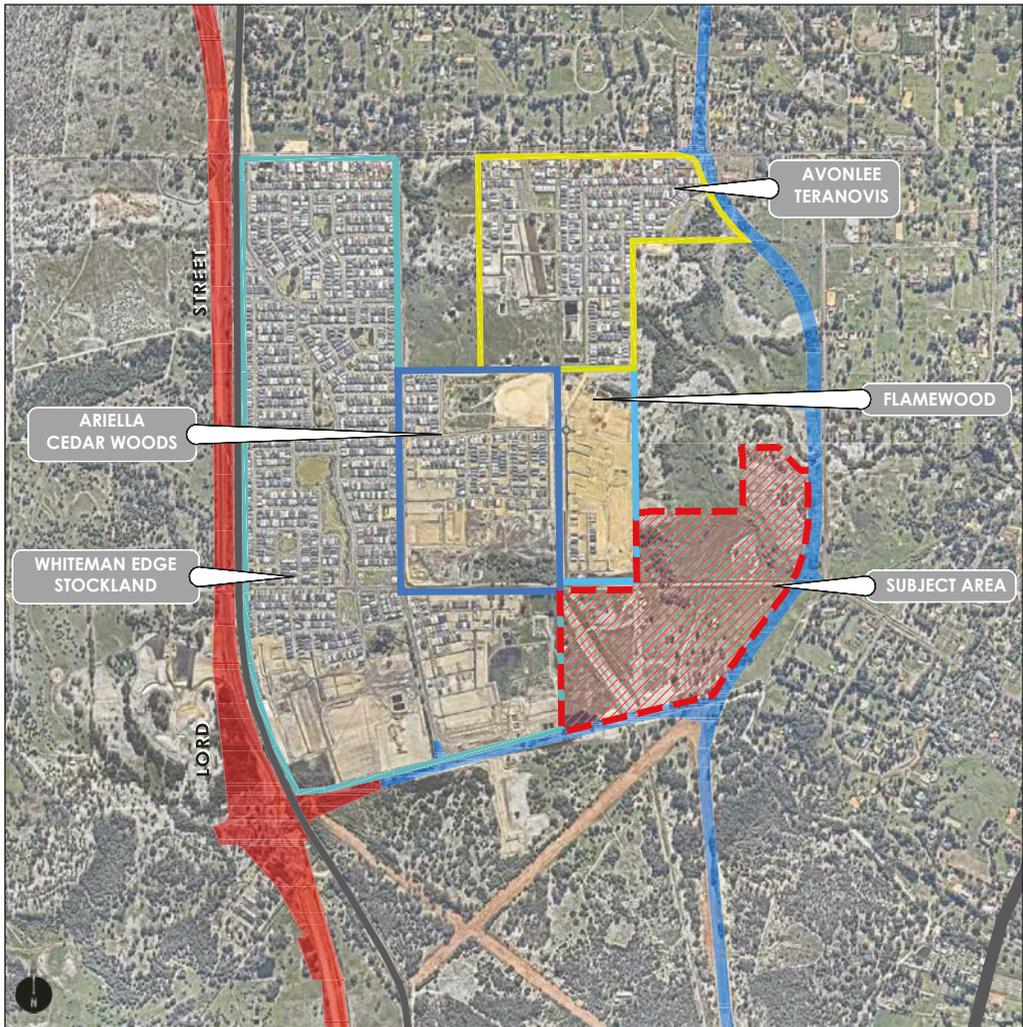


Figure 3 Location Context Plan
Source: Nearnmap

1.3 Planning Framework

1.3.1 Metropolitan Region Scheme Zoning

The LSP area is zoned 'Urban' in the Metropolitan Region Scheme (MRS).

Land set aside for the construction of Henley Brook Avenue and Youle-Dean Road about the eastern and southern edge of the LSP respectively, both being reserved in the MRS as 'Other regional Road' (Figure 4: MRS Zoning).

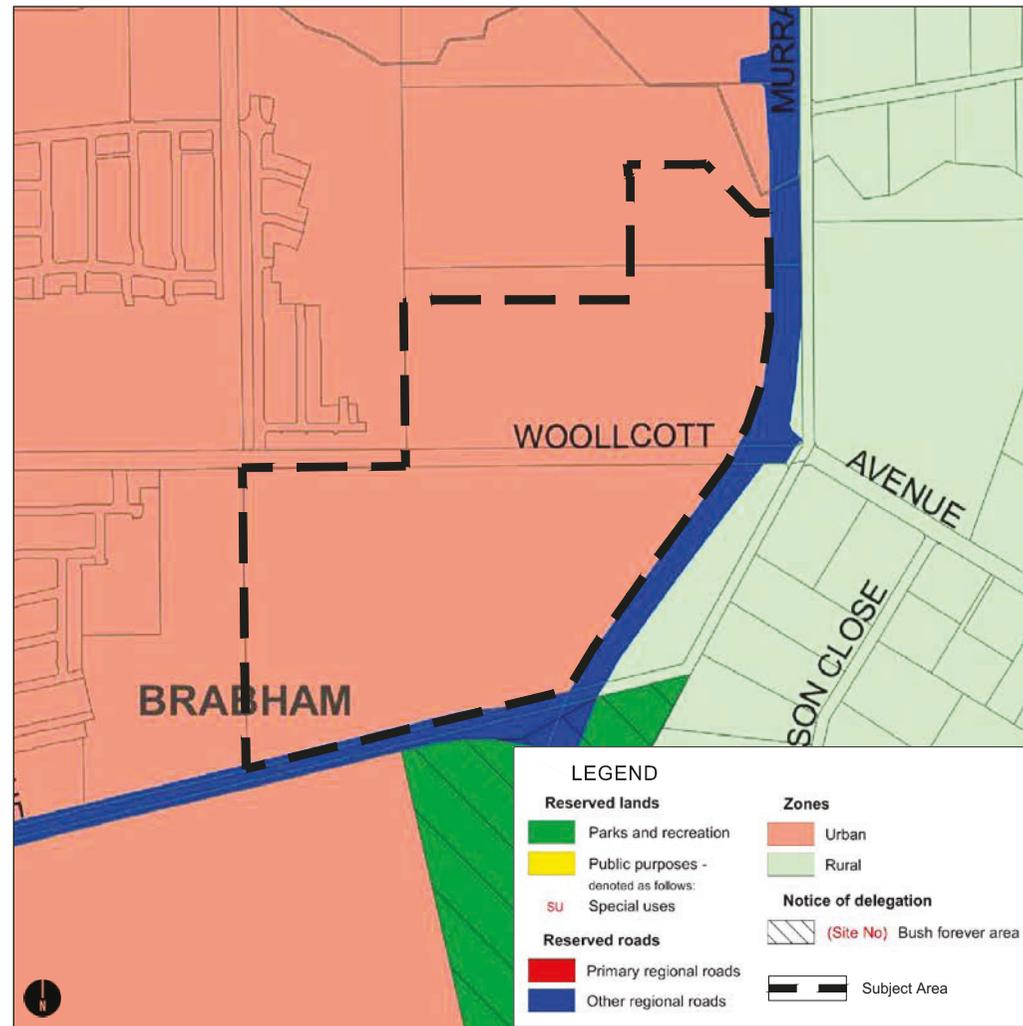


Figure 4 Metropolitan Region Scheme Zoning
Source: WAPC

1.3.2 City of Swan Town Planning Scheme No. 17

The LSP area is currently zoned 'Special Use - Albion' (SU10) in the City of Swan Local Planning Scheme No. 17 (LPS17).

Part 5A and Schedule 4 of LPS17 requires a local structure plan prior to development over all or 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 LSP 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.

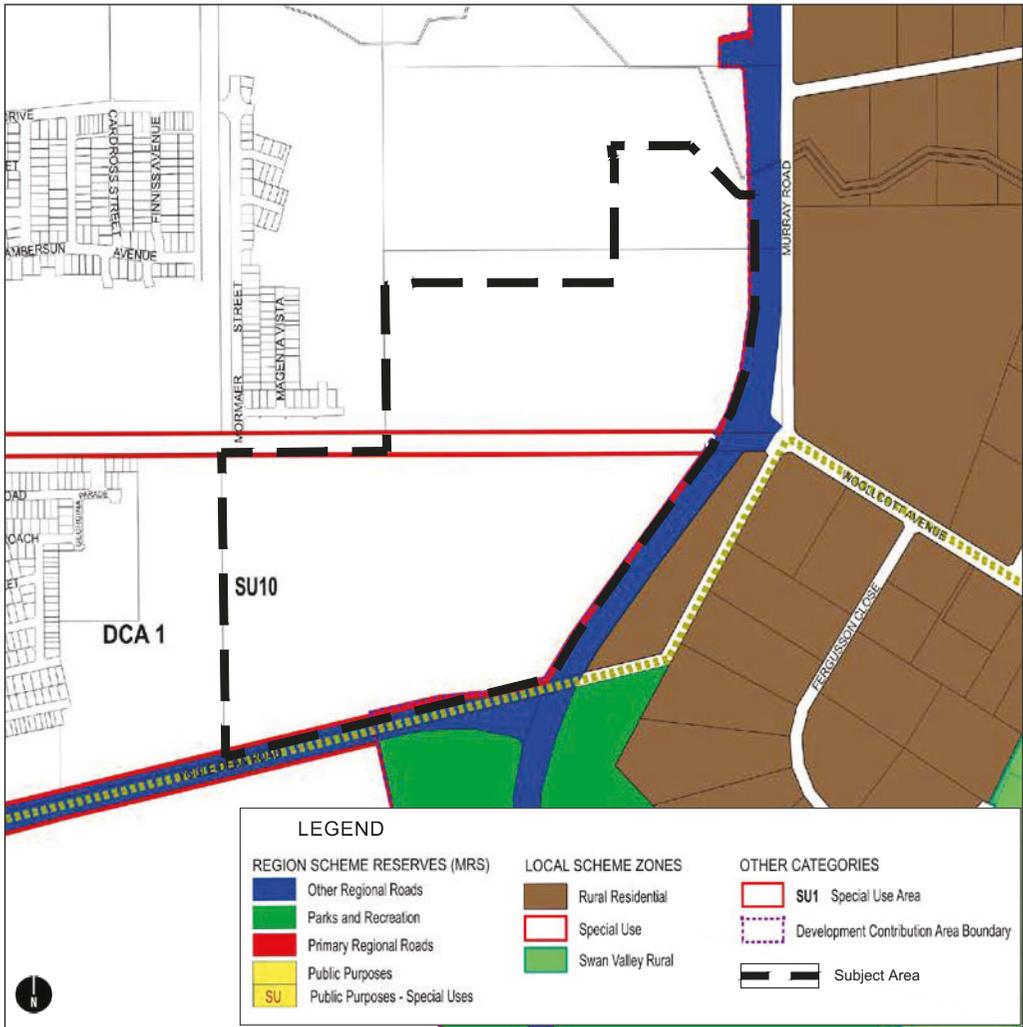


Figure 5 City of Swan Local Planning Scheme No. 17
Source: WAPC

Table 2: Environmental Management Plan (Albion Special Use Zone)

Requirement	Assessed within this report
Acid Sulphate Soils (ASS) Site Assessment Management Plan	Refer Section 2.1 and Appendix 1 – Environmental Assessment and Management Strategy (Emerge Associates)
Water Management Plan	Refer Section 3.7 and Appendix 6 – Local Water Management Strategy (RPS)
Wetland Management Plan	Not applicable, refer Section 2.4 and Appendix 1 – Environmental Assessment and 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 Section 3.4 and Appendix 2 – Bushfire Management Plan (Emerge Associates)

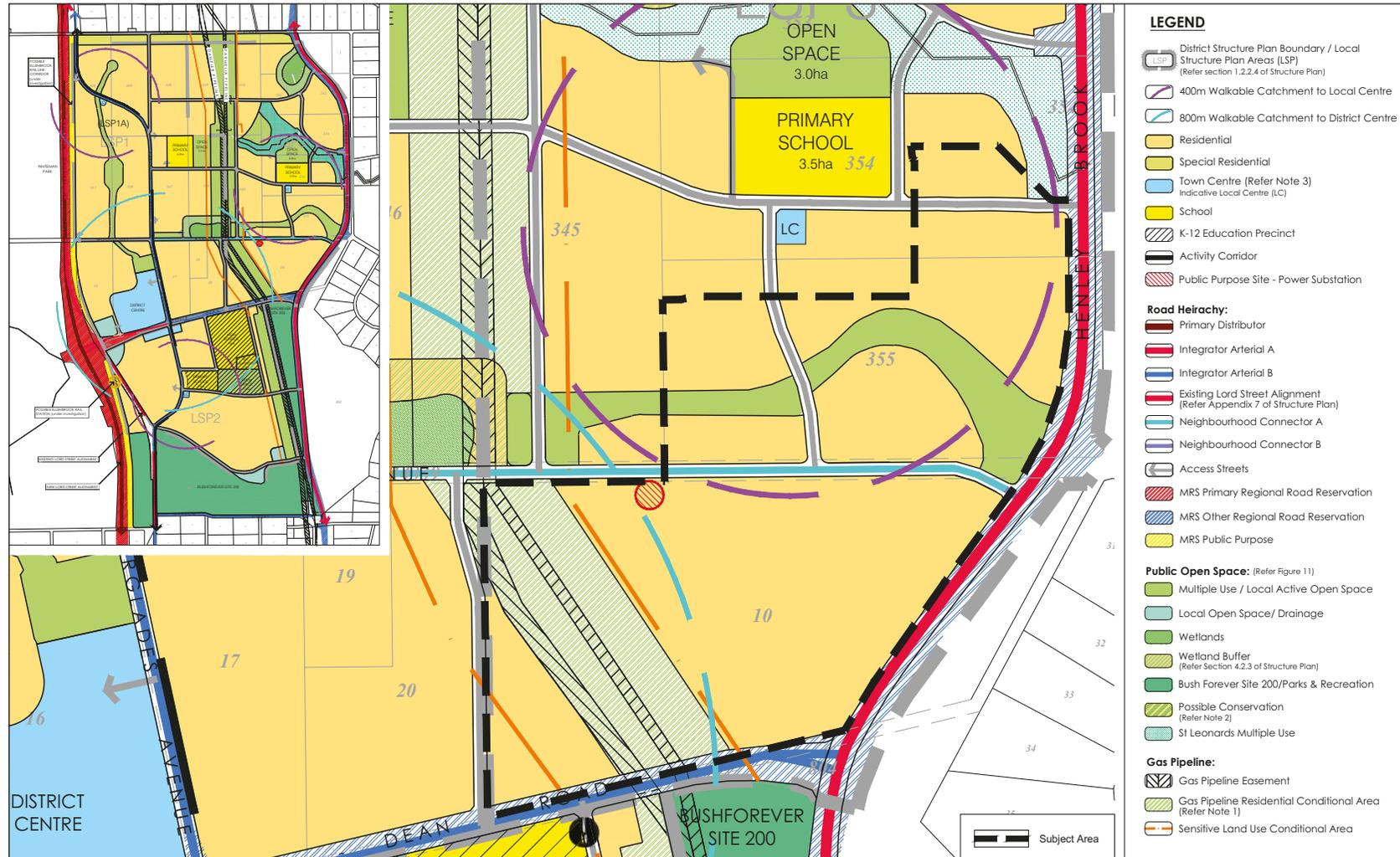


Figure 6 Albion District Structure Plan

[1.3.3 Albion District Structure Plan \(2009\)](#)

The LSP area is located 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).

While the DSP depicts the boundaries of three local structure plan areas, it acknowledges that subsequent local structure plan boundaries will ultimately be guided by land ownership, development intensions 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 set criteria (within the DSP).

The subject LSP has been established based on land ownership, servicing, drainage considerations and water allocation for irrigation.

The LSP satisfies the criteria set out in the DSP as follows:

1. Demonstrate that the local structure plan can address drainage and water management consistent with the approved District Structure Plan (Section 4.2 & Local Water Management Strategy), State Planning Policy 2.9 and Better Urban Water Management to the specification of the Department of Water.

The LSP is supported by a Local Water Management Strategy (LWMS) prepared by RPS which demonstrates how drainage will be managed in accordance with the DSP, State Planning Policy 2.9 (Water Resources) and Better Urban Water Management.

The LSP area forms part of the St Leonards Creek drainage catchment, with the flows heading eastwards to ultimately flow into the Swan River.

The LWMS contains comprehensive drainage modelling, which has been informed by considerable groundwater monitoring undertaken by CRC for Water Sensitive Cities. This has resulted in a thorough understanding of local hydrological conditions ensuring that water quality and pre-development flow rates are maintained, as well as looking towards future alternative water (irrigation) solutions for the wider Brabham locality.

Drainage and water management is discussed in detail in Section 3.7 with a copy of the LWMS provided as Appendix 6.

2. Demonstrate that the local structure plan allows for integrated and staged development with surrounding landowners (including consideration of future road connections and intersections and the coordinated provision of essential services and drainage).

The LSP is a logical expansion to the urban front of Albion, being bound by the Youle-Dean Road and Henley Brook Avenue 'Other Regional Roads' MRS reservations to the south and east, with the residential estates of 'Flamewood' and 'Whiteman Edge' located immediately west. The LSP seamlessly connects into the approved local road network of these estates, along with providing for future connections to land located north. Likewise the advanced state of these adjacent residential estates allows for the straight forward extension of service infrastructure in proximity to the LSP.

3. Management plans and landscape strategies included in the Local Structure Plan are to include the total area of any discrete wetlands, conservation areas and the like and not dissect these environmental features (to ensure protection and management is considered holistically);

The LSP does not contain any conservation wetlands or significant environmental features with Section 2 providing a comprehensive summary of the site conditions and an Environmental Assessment and Management Strategy prepared by Emerge Associates included as Appendix 1.

4. The local structure plan boundaries should generally correspond with features shown on the DSP (such as higher order roads) to coordinate logical integration and should not dissect major non-residential land uses (such as commercial centres and school sites). Local structure plans shall demonstrate the interface with any different land uses contemplated by the DSP which adjoin the proposed local structure plan boundary;

The Youle-Dean Road and Henley Brook Avenue 'Other Regional Roads' MRS reservations provide delineating edges to the southern and eastern LSP boundaries respectively, whilst the residential estates of 'Flamewood' and 'Whiteman Edge' are under construction immediately west. The LSP connects seamlessly into the approved local road network of these estates.

The LSP northern boundary has been carefully selected so as to not dissect any non-residential land uses, with all commercial centres and school sites being located to the north, west or east of the LSP area, as set out in the DSP. The land to the north is owned by the Department of Communities and will be the subject of a subsequent local structure plan.

5. Will result in a POS distribution which is generally consistent with the DSP with POS credits calculated in accordance with Liveable Neighbourhoods; and

The distribution of POS is consistent with the DSP, with a 'green link' located along Woollcott Avenue providing for the necessary drainage function identified in the DSP. Section 3.3 describes the final creditable amount (as per Liveable Neighbourhoods) and functionality of POS, further detailed in the Landscape Masterplan prepared by Plan E Landscape Architects, provided as Appendix 3.

6. The local structure plan boundary will not prejudice the preparation of a local structure plan over adjoining land to achieve the above.

The LSP does not prejudice local structure planning on adjoining land.

Local structure planning and subdivision for the residential estates of 'Flamewood' and 'Whiteman Edge' to the west is complete with the LSP connecting into the approved local road network of these two estates. The southern and eastern boundaries of the LSP are defined by MRS road reservations accommodating Youle-Dean Road and Henley Brook Avenue, providing a logical boundary for the LSP. The land to the north is owned by the Department of Communities and will be the subject of a subsequent local structure plan. A Local Context Plan (refer Figure 7: Local Context Plan) has been prepared showing the LSP area in context with the adjacent (northern) land. This demonstrates how the adjacent land could be developed in an integrated manner that responds to the known environmental features onsite and provides future road connections to its surrounds, including the LSP area.



Figure 7 Local Context Plan

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 LSP 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. It also confirms a residential density target of 26 dwellings per residential site hectare. This is discussed in more detail later in this report.

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 LSP 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 LSP.

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 LSP 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 and activity centres, all in addition to there being no environmental constraints on the site. 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 LSP 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 2.

[WAPC State Planning Policy 5.4: Noise and Rail Transport Noise and Freight Considerations](#)

SPP 5.4 requires consideration of transport noise for sensitive land uses abutting regional transport routes to avoid or mitigate land use conflict between the two.

The LSP encompasses Henley Brook Avenue, a future road that has the potential to carry in excess of 20,000 vehicles per day (VPD). As a consequence, a Transportation Noise Assessment has been undertaken by Lloyd George Acoustics as part of this LSP to assess road noise associated with this key route as set out in SPP 5.4. The assessment concludes that transport noise reaching residential properties could be contained within the thresholds specified by the Policy through the use of interface treatments such as Quiet House Design criteria, and notifications on title to inform future owners of the potential noise impact.

The Transportation Noise Assessment prepared for the LSP is discussed in further detail in section 3.6 and attached in full as Appendix 5.

[WAPC Planning Bulletin 87 High Pressure Gas Transmission Pipelines](#)

The Dampier to Bunbury Natural Gas Pipeline (DBNGP) and the Parmelia Gas Pipeline pass through the western portion of the LSP area, protected by respective service easements.

The LSP has been prepared in accordance with the WAPC's Planning Bulletin No.87 High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region which provides for residential development to abut the easement, subject to demonstrating that any risk from the pipeline is in accordance with AS2885 (Pipelines – Gas and liquid petroleum) and EPA Guidance Statement 2 (Guidance for the Assessment of Environmental Factors). In doing so, the LSP accommodates the pipeline easement to integrate into open space or a service reserve, ensuring that the pipeline is protected whilst also providing a valuable community asset that provides excellent local amenity.

Opportunities relating to the gas pipeline are discussed further in Section 3.10 of this report.

[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 LSP 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 LSP are described in more detail in Section 3.

2.0 Site Conditions and Constraints

The LSP area has been extensively cleared and used for agricultural activities which has resulted in most of the natural environment being removed.

Emerge Associates has prepared a comprehensive Environmental Assessment and Management Strategy which describes the site conditions and constraints within the LSP area. The Strategy demonstrates that the site is relatively unconstrained and that the environmental factors affecting the site, including groundwater, drainage and bushfire management can all be addressed adequately through the planning approval process and through the application of appropriate land use responses and management practices.

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.

2.1 Landform and Soils

The LSP area is generally flat, ranging from approximately 23m Australian Height Datum (AHD) in the east corner up to 28m AHD in the north-western corner.

The Geological Survey of Western Australia shows that the LSP area typically comprises Bassendean Sand and Thin Bassendean Sand over Guildford Formation.

A site specific geotechnical investigation was undertaken by Galt Geotechnics (October 2015) which confirmed that the soil conditions are generally consistent with that shown on the geological mapping, with variable thickness of the Bassendean Sands overlying the clayey soils of the Guildford Formation, making the topography and soils within the LSP area 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 site as 'moderate to low risk' of ASS occurring within 3m of the natural soils surface or as having 'no known risk'. There is only one isolated 'high to moderate' risk area mapped within the north-western portion of the site.

The LSP area is therefore suitable for urban development with an ASS investigation and management plan to be prepared in the usual manner at the time of subdivision works.

2.1.2 Contamination

The LSP area is not located within any DWER listed contaminated sites with past agricultural activities unlikely to raise any significant contamination risks.

2.2 Flora and Vegetation

The majority of the LSP area is cleared of native vegetation, a result of the long period of agricultural activity on the land.

A Flora and Vegetation Survey was undertaken by Emerge Associates on 13 July 2018 which found:

- Historic clearing and past agricultural activity has resulted in the vast majority of the LSP area being identified as 'completely degraded'.
- Only three remnant native vegetation communities were recorded within the site, all identified as being in a 'degraded' condition, heavily disturbed and comprising non-native grasses with occasional native tree and planted vegetation.
- There were no Threatened Ecological Communities and no Threatened or Priority Flora Communities found within the LSP area due to the degraded nature of the vegetation.

2.3 Fauna and Habitat

The LSP forms part of the eastern edge of the Swan Coastal Plain which is characterised by large areas generally cleared of native vegetation for agricultural purposes.

An assessment of the site shows that the LSP area has little native fauna habitat due to the site having been largely cleared for past agricultural use, with the small portions of remnant vegetation being classified 'Degraded'. It is unlikely that the site would provide any quality foraging, breeding or roosting habitat for Carnaby's black cockatoo, Forest red tailed cockatoo or Baudin's black cockatoo.

An inspection of extant trees (DBH > 500mm) within the LSP area found only six contained hollows; however, there was no evidence of roosting or breeding of any of the relevant black cockatoo species, with development of the site posing no significant impact to this species.

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 LSP.

The LWMS clearly demonstrates that hydrology is not a constraint to urban development. The existing hydrological conditions of the LSP area are summarised below, while the key principles of the LWMS are discussed further in Section 3.7.

2.4.1 Ground Water

The Department of Water Perth Groundwater Map shows that groundwater levels range between approximately 22m AHD in the south-eastern portion of the site to 26m AHD in the north-western portion of the site, with a depth to groundwater ranging from approximately 1m to 3m. The groundwater typically flows in a south-easterly direction.

2.4.2 Surface Water

The LSP area is located within St Leonards Creek catchment, a creek located north which drains to the south-east of the LSP area into the Swan River. The site is not affected by the 100 year Average Recurrence Interval floodplain development control area of the Swan River.

The Woollcott Avenue Drain, a man made drain, is located along Woollcott Avenue and conveys water eastwards, connecting to St Leonards Creek approximately 700m north-east of the LSP area.

A number of artificial drains are found across the site, remnants of past agricultural uses on site.

2.4.3 Wetlands

The Department of Biodiversity, Conservation and Attractions (DBCA) geomorphic wetlands database shows that there are no Conservation Category wetlands located within the LSP area.

Two Resource Enhancement wetlands (UFI8805 and UFI8807) are located in the south-western portion of the LSP area; however, these wetlands have been largely cleared of vegetation and their function and value are not representative of a Resource Enhancement wetland.

A Multiple Use management category wetland is located in the central portion of the LSP which is a low management category wetland with little or no ecological value, making it suitable for urban development.

2.5 Heritage

The Aboriginal Heritage Inquiry Systems lists no registered sites within or adjacent to the LSP Area. There are no listed European sites of heritage significance located within the subject site.

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 2 with the manner in which the LSP responds to bushfire hazards, discussed in further detail within Section 3.4 of this report.

2.7 Road Transport Noise

A Transportation Noise Assessment has been undertaken by Lloyd George Acoustics, assessing the impacts of traffic movements along future Henley Brook Avenue, which runs along the eastern edge of the LSP. This Assessment has been prepared in accordance with State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Consideration in Land Use Planning (SPP 5.4).

The Assessment identifies a number of dwellings where noise may exceed the 'noise target', with this impact to be ameliorated through the use of a parallel local road to Henley Brook Avenue as well as the use of interface treatments such as Quiet House Design criteria (if required). Notification would be placed onto titles of affected properties to inform future owners of potential impacts and required treatments.

A copy of the Transportation Noise Assessment is provided in Appendix 5 which is discussed further in Section 3.6.

3.0 Land Use and Subdivision Requirements

3.1 Land Use

The LSP provides for a robust planning framework for the development and delivery of a future residential community within the broader Albion locality. A Development Concept Plan has been prepared for the site to demonstrate how the development could occur based on the LSP principles and requirements (Figure 8: Development Concept Plan).

It needs to be acknowledged that the Development Concept Plan represents only one way development could occur and the concept 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 high quality open space areas that serve both an amenity and local drainage function.
- Deliver a permeable, interconnected road and path network.



Figure 8 Development Concept Plan

- Provide an urban form that responds to the local context and location within the Brabham locality.
- Extend the necessary services and infrastructure in a timely and coordinated manner to support the future development.
- Potential 'lifestyle village' development abutting and surrounding the Parmelia and Dampier to Bunbury Gas Pipelines.

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

- A yield of approximately 825 – 875 dwellings across the LSP area, with residential densities ranging between R20 to R80. Higher density is focused around key access roads and areas of high local amenity. R80 is reserved for a medium density innovation precinct.
- An area of approximately 3.5 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 the existing regional road network, providing for pedestrian and cycling infrastructure, and future public transport services.
- Vehicle connections to the regional roads network via Youle-Dean Road and the future Henley Brook Avenue.
- Appropriate separation between identified bushfire hazards along the northern and southern edges of the LSP area and all future dwellings.

- A comprehensive ground and surface water management strategy for the LSP area, which provides an opportunity to create an alternative water supply solution for irrigation purposes, which will benefit not only the LSP but the wider Albion locality.

A Local Context Plan has been prepared showing the Development Concept Plan in context with the adjacent (northern) land, being land owned by the Department of Communities which will be subject to future local structure planning. This demonstrates how this adjacent land could be developed in a manner that responds to the known environmental features onsite and provides future road connections to its surrounds, including the LSP area. It is important to note the adjacent land north of the LSP area is subject to local structure planning, to be undertaken at a future date and is provided only for context (Figure 7: Local Context Plan).

3.2 Residential

The LSP supports delivery of a diverse range of housing. The density and style of housing across the LSP 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.

The Department of Communities and Peet also intend to draw on Peet’s successful South Australian ‘Lightsview’ Project and the suite of innovative housing that this project offers. Some examples of this product is further discussed in Section 3.2.2, with images provided to demonstrate the streetscape appeal and quality of this product.

The intention is to establish short runs of this ‘Lightsview’ styled housing as a demonstration ‘build out’ within the LSP. This innovative ‘Lightsview’ product will be sited appropriately in areas of amenity, that is adjoining open space areas and in proximity to key roads. This product is to ‘set the scene’ for medium to higher density innovative housing types that can be delivered in proximity to the future METRONET Station (forming part of the Morley – Ellenbrook line), once the final location of this station is announced. More widespread delivery of this housing will be delivered via subsequent local structure planning.

3.2.1 Dwellings Yields and Density Targets

The LSP has the potential to create approximately 825-875 residential lots, set in a density range of R20 to R80 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 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 coded lots are typically fronting 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 cottage style housing (single or double storey) with front or rear laneway access or for the 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.
- 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.
- R80 coded lots will be applied to select locations which will accommodate the above-mentioned ‘Lightsview’ build outs. In addition to being located adjacent to public open space, these cells will also be situated within a walkable distance to key roads ensuring maximum amenity.

Perth and Peel@3.5million recommends a housing density target of 26 dwellings per residential site hectare with the aim of this target to encourage more efficient use of infrastructure and housing. The LSP has the potential to achieve 32.8 dwelling per site hectare, exceeding the target set out in Perth and Peel@3.5million. This figure exceeds the Liveable Neighbourhoods requirement for an average of 22 dwellings per residential site hectare.

Lifestyle Village

The Albion DSP identifies a preferred outcome for land surrounding the Parmelia and Dampier to Bunbury Natural Gas Pipelines as a ‘grouped dwelling’ development, where development is located outside the easement with the easements themselves forming part of communal open space for a strata scheme (Figure 9: ‘Lifestyle Village’ Concept Plan)

An option currently being explored is for the development of the land abutting and in immediate surrounds of the two gas pipeline easements is for a ‘lifestyle village’, aimed at retirement/aged living.

The LSP supports the development of the Lifestyle Village under the proposed LSP, subject to planning approval being obtained by the City of Swan. At that time, appropriate interface to the pipelines will need to be demonstrated, and will need to include a Pipeline Risk Management Plan, discussed further in Section 10.11.



Figure 9 Lifestyle Village Concept Plan

3.2.2 Local Development Plans

Local Development Plans (LDPs) will be required where specific variations to the Residential Design Codes are needed to deliver a contemporary built form response. The suite of Lightsview product, for example, has been assessed in terms of R-Code compliance and in terms of delivery will require product specific variations implemented via an LDP. These LDPs will be required as a condition of subdivision approval, and be approved by the City of Swan.

The following outlines the key provisions that will be addressed in these LDPs and the principles that support these variations.

Variations to the Residential Design Codes

Variations to the R-Codes are essential to the delivery of housing types that meet density targets as well as deliver innovative and affordable housing options at medium densities. These proposed variations are to be confirmed with the City, as part of future LDP's.

The possible variations relate to setbacks, parking, visual privacy, outdoor living areas, building height, solar access and fencing.

Setbacks

Street setbacks

Principles

- Ensure dwellings address and engage with the street via reduced front setbacks to dwelling, porch / verandah and avoiding garage domination.
- Allow 'tight' urban streetscape, consistent with the urban context for laneway lots.

Possible Variations

- Buildings shall be setback a minimum of nil to 1m from the primary street.
- Porches, balconies, verandas or the equivalent may have a nil primary street setback.
- Buildings shall be setback a minimum of 1m from the secondary street.
- Buildings shall be setback a minimum of 0.5m from Laneways.



Urban Garage 1 Streetscape

Garage setbacks

Principles

- To provide tight urban streetscapes that are safe for pedestrians and not dominated by garages.

Possible Variations

- Garages accessible from the primary street shall be setback a minimum of 0.5m behind the building alignment.
- Garages shall be setback a minimum of 1.5m from the secondary street.
- Garages shall be setback a minimum of 0.5m from a laneway.
- Lots less than 10.5m in width shall be provided with a single garage.
- A 1.5m x 1.5m visual truncation shall be provided adjacent to the garages accessed from the primary or secondary street.



Terrace 201/202 Streetscape

Side Setbacks

Principles

- Promote the efficient use of the land by allowing for boundary to boundary development thereby removing the unusable 'dead' space within side setback areas and consolidating this space into useable outdoor living areas.

Possible Variations

- Boundary walls are permitted behind the street setback line to both side boundary with no maximum length and a maximum wall height of 9m.
- For walls where a side setback is proposed, the lot boundary setback provisions of the R-Codes do not apply.



Terrace 262 Streetscape

Car Parking

Principles

- To provide adequate car parking on site to respond to lot size, lot location and urban form.
- On-site parking will be supplemented by on-street parking in the surrounding street network.

Possible Variation

- A minimum of one on-site parking shall be provided per dwelling.

Visual Privacy

Principles

- To provide flexibility and encourage the provision of major openings to habitable rooms on upper floors and maximise residential amenity.
- To respond to expected lot sizes and housing typologies.

Possible Variations

- The visual privacy provisions of the R-Codes do not apply.

Solar Access

Principles

- Encourage the provision of two and three-storey housing and recognise the constraints of current R-Code requirements for medium density housing.

Possible Variations

- The solar access provisions of the R-Codes do not apply.

Building Height

Principles

- To enable three storey development and provide a greater diversity in housing product.

Possible Variations

- Maximum building heights shall be in accordance with Category C of the R-Codes as follows:
 - Top of external wall (roof above): 9m
 - Top of external wall (concealed roof): 10m
 - Top of pitched roof: 12m



Loft 38 Streetscape



Urban Garage 1 Streetscape

Street walls and fences

Principles

- To achieve open and activated streetscapes with maximum permeability between the dwellings and the street.

Potential Variations

- Street walls and fences located within the street setback areas shall have a maximum height of 900mm above natural ground level, measured from the primary street side of the fence.



Terrace 62 Streetscape



Loft 238 Streetscape

Outdoor Living Area

Principles

- Allow efficient siting and sizing of the private open space / outdoor living areas for various dwelling typologies, maximising the use of land and reducing unusable open space.
- Allow for greater flexibility in home design whilst still ensuring that adequate outdoor living space is provided.
- Recognise and respond to the trend toward smaller, more affordable front and rear loaded lot product in medium density areas.
- Encourage the activation of street frontages above the ground floor.
- Enable alternative outdoor living options for small lot medium density development currently restricted by the R-Codes.

Possible Variations

- Outdoor living areas are permitted in the street setback area;
- Outdoor living areas may be provided via either a ground floor courtyards or an upper floor balcony subject to compliance with the following criteria:
 - Where outdoor living areas are located on the ground floor, they shall provide the following –
 - A minimum dimension of 2.0m to 2.4m;
 - A minimum area of 16m²;
 - Directly accessible from an adjoining habitable room;
 - A maximum of 1/2 permanent roof cover.
 - Where outdoor living areas are located on balconies, they shall provide the following:
 - A minimum dimension of 2.0m to 2.4m;
 - A minimum area of 10m²;
 - Located adjacent to the primary or secondary street;
 - Directly accessible from an adjoining habitable room; and
 - May include permanent roof cover.
- The site cover requirements of the r-codes do not apply subject to the provision of a compliant outdoor living area.



Terrace 62 Floor Plan



Terrace 62 Outdoor Living Area

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 abuts 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.
- Design strategies to promote surveillance and delineate public and private realm.

3.3 Public Open Space

The LSP establishes a framework for the delivery of public open space that can serve a range of functions within the LSP 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.

The LSP provides for approximately 3.0ha of local open space which (when Liveable Neighbourhoods credits are applied) represents approximately 6.8% POS as shown in Table 3 (Public Open Space Schedule) and Figure 10: Landscape Masterplan. This 6.8% should be considered within the broader context of POS provision and with regard to the Albion District Structure Plan.

In summary the LSP provides -

- 3.5ha (gross) of open space is distributed across the LSP, accommodating both active and passive uses and in part performing a multi use drainage function.
- Approximately 0.5ha 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 from the net site area, as set out in Liveable Neighbourhoods). This stormwater will be infiltrated close to source, using bio-retention areas within areas of open space.



Figure 10 Landscape Masterplan

Source: Plan E

Table 3: Public Open Space Schedule (all areas in hectares)

Site Area		48.8
Deductions		
Parmelia Gas Pipeline Easement	0.92	
Dampier to Bunbury Natural Gas Pipeline	1.24	
Youle-Dean Road Widening	0.4	
Woollcott Avenue Road Reserve (existing)	1.62	
Net Site Area		4.18
Other Deductions		
1:1 Drainage within POS	0.49	
Gross Subdivisible Area		44.13
POS @ 10%		4.41
Public Open Space Requirement		
May comprise:		
Min 8% unrestricted POS	3.53	
Max 2% restricted POS	0.88	
Public Open Space Provided	Unrestricted POS Area	Restricted POS Area
Northern Pocket Park (POS 1)	0.41	Nil
Woollcott Avenue Multi Use Corridor West (POS 2)	0.27	Nil
Woollcott Avenue Multi Use Corridor East (POS 3)	0.45	Nil
Central Park (POS 4)	1.50	Nil
Southern Open Space (POS 5)	0.40	Nil
Total	3.03	Nil
Revised Public Open Space Contribution		
Min 8% unrestricted POS	3.03	
Max 2% restricted POS	Nil	
Total Creditable POS Provided	3.03	6.8%

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: 3074-15P-01).
2. In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrence 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 recurrence interval up to the five year recurrence interval is restricted open space up to 20%, the area greater than 20% is a deduction (LN R26 & Table 1); areas for the detention of stormwater for a greater than five year average recurrence interval is within unrestricted open space (LN R25).
3. Drainage areas are based on the RPS modelling and EPCAD Landscape Masterplan.
4. All POS areas are indicative only and are subject to refinement and detailed design at subdivision stage.

3.3.1 Albion District Structure Plan Public Open Space Principles

The principles of open space provision as outlined in the Albion DSP include:

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

The LSP provides 6.8% POS provision in accordance with an LN calculation. The provision of the balance of the open space requirement as per the DSP is part of a longer term strategy and has been agreed and discussed with the City of Swan. The LSP only represents part of the land owned by the Department of Communities and a commitment to the future provision of open space to the minimum 10% within surrounding landholdings has been made. It is also important note that the provision of open space is responsive to the limited availability of water. This is further discussed in Section 3.7. Essentially given the limited availability of ground water, careful consideration of the total area of open space provided in the LSP area has been made. This provision has regard to existing and future planned open space consistent with the Albion DSP. In proximity to the site open space is provided as follows:

- 3ha of co-located open space (with a future primary school) immediately north of the LSP boundary. This open space is located with a future LSP (land owned by the Department of Communities) supporting active recreation.
- 5ha of co-located open space (with the future K-12 school immediately south of Youle-Dean Road also supporting active recreation. This land is likewise owned by the Department of Communities.

- St Leonards Multiple Use Open Space to the north of the LSP boundary, providing an opportunity for passive recreation.
- Bush Forever immediately south of the LSP area offering passive recreation and conservation and a valuable public amenity.

There are also existing areas of POS provided in surrounding LSP areas in accordance with the DSP which offer immediate amenity and recreation opportunities for future residents. Given the extensive planned and existing open space and the longer term strategy to deliver open space in future LSP' s developed over Department of Communities landholdings, the provision of 6.8% open space is entirely appropriate. The areas of open space provided for in the proposed LSP are described in the following section.

3.3.2 Description of Public Open Space

The LSP identifies a number of distinct areas of open space which are described in the Landscape Masterplan prepared by Plan E and attached as Appendix 3 to this report. The following provides a brief overview of each area of open space within the LSP area.

Northern Pocket Park

- Total area of approximately 0.4ha.
- Accommodates drainage (first 15mm) within landscaped bio-retention swales.
- Supports retention of existing vegetation (marri and jarrah habitat) and will include additional tree planting.

Woolcott Avenue Multiuse Corridor

- Total area of approximately 1ha.
- Identified as open space areas located adjoining / within Woolcott Avenue.
- Forms an extension of the adjacent 'Flamewood' Estate drainage POS.
- Accommodates drainage via swales and basins (first 15mm) and will include retained and additional tree planting.

- Interconnected paths and retained / mature shade trees to encourage walking.
- Woolcott Avenue to include a tree planted median and verges and in conjunction with tree planting in open space areas, will create an avenue of shade trees.

A cross-section has been prepared for the Woolcott Avenue Drain POS to demonstrate an indicative street section showing location of planting, services, carriageways, footpaths and integration of adjoining open space. This cross-section is shown at Figure 11.

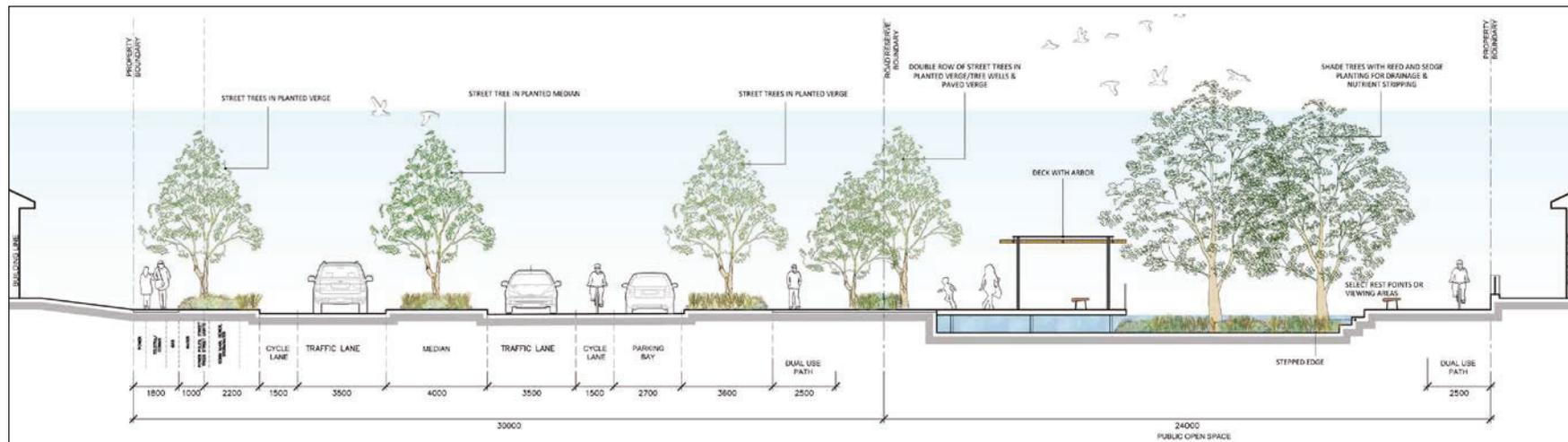


Figure 11 Woolcott Avenue POS Cross Section Concept

Source: Plan E

Central Park

- Total area of approximately 1.5ha.
- Accommodates drainage (first 15mm) within landscaped bio-retention swales.
- Includes large grassed kick-about spaces with retained trees and new shade tree planting.
- Integrated pathways to encourage pedestrian activity through the open space area and into the adjacent residential development.

Southern Open Space

- Total area of approximately 0.4ha.
- Accommodates drainage (first 15mm) within landscaped bio-retention swales.
- Includes small grassed kick-about spaces.

3.3.3 Streetscapes

A street tree masterplan has been prepared to support the LSP landscape concepts. Street trees have been carefully selected to deliver quality street scapes which will provide a sense of place and distinct character to this new residential area. Street trees have been selected with regard to the width of reserves and the role particular roads will serve. Woolcott Avenue provides the opportunity for a higher standard of landscaping within a central median and verges. Local roads will also provide opportunities for a high level of streetscape design, and the detailed engineering and landscaping schedule of the key streets will be determined in consultation with the City at subdivision stage.

3.3.4 Public Open Space Provision and Schedule

Based on a gross area of 3.5ha, the LSP provides approximately 6.8% of public open space. As previously noted, the balance of the 10% open space provision (as per the requirements of LN and the Albion DSP) are part of a longer term strategy and shall be provided as part of future structure planning areas (all within the DSP boundary).

A public open space (POS) schedule calculated in accordance with the WAPC's Liveable Neighbourhoods has been prepared for the LSP, refer Table 3. The key aspects of the public open space provision based on LN requirements is as follows:

- The LSP provides 3.5ha of gross open space, accommodating both active and passive recreational uses and in part performing a multi use drainage function.
- Approximately 0.49ha 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 from the net site area, as set out in Liveable Neighbourhoods).

3.4 Bushfire Management

The LSP 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:

- Grassland within the rural residential lots located to the eastern side of the Henley Brook Avenue reserve.
- Grassland and native shrubland located to the south of Youle-Dean Road, as a temporary hazard;
- Grassland associated with the natural gas pipeline easements and open space; and
- Grassland located to the north of the LSP area, albeit with this identified as a temporary hazard, to be removed as development progresses north.

The Assessment requires that an Asset Protect Zone (APZ) of 30m 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 LSP creates this APZ through the locating streets and managed public open space areas between the identified bushfire risk and any future dwellings, ensuring BAL-40 and BAL-FZ construction standards are not required.

A copy of the Emerge Associates BMP is provided as Appendix 2.

3.5 Movement Network

A comprehensive Transport Impact Assessment has been prepared by GTA Consultants which forecasts traffic volumes and sets out a recommended road network hierarchy to accommodate expected traffic flows. The following section discusses the key elements of the Assessment, 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 4.

3.5.1 Existing Movement Network

The LSP 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 LSP area are:

Lord Street (New Lord Street) is reserved as a Primary Regional Road under the MRS and is classified in the network as a Primary Distributor, under the control of Main Roads WA. It is the main district and regional road connection for the site and works are currently underway to construct this road as a dual carriageway between Reid Highway and Gngara Road.

Woollcott Avenue runs east-west through the LSP, connecting to West Swan Road to the east but terminating prior to Lord Street to the west. Presently categorised as a local distributor and constructed to a rural standard (within the LSP area), upgrades works to Woollcott Avenue are underway to the west where that portion has been categorised as a Neighbourhood Connector A.

Youle-Dean Road runs east-west, abutting the southern edge of the LSP area. Previously constructed between Lord Street and Everglades Avenue to the west, construction works are currently underway to upgrade this portion of Youle-Dean Road as an Integrator A. This includes a roundabout connecting to Lord Street.

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

Harrow Street runs east-west to the south of the LSP area, connecting Lord Street and West Swan. Currently constructed as a local rural road, the Albion DSP is planning for Harrow Street to be upgraded as an Integrator B.

West Swan Road runs north-west, approximately 1.5km east of the LSP. West Swan Road is categorised as a Distributor A, connecting to Reid Highway to the south.

3.5.2 Proposed Movement Network

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

Road Network

The planned road network shown on the Development Concept Plan (Figure 8) provides a robust and permeable layout throughout the LSP area, with strong, direct linkages in both an east-west direction and in a north south direction. This provides both a seamless connection to the adjacent residential estates of 'Flamewood' and Whiteman Edge' as well as facilitating excellent connections to future Henley Brook Avenue and Youle-Dean Road, providing accessibility to local, district and regional destinations.

The Road Hierarchy Plan shows the hierarchy of the movement network planned for the area and the external connections to the existing network (Figure 12: Road Hierarchy Plan).

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

- **Henley Brook Avenue**, whilst falling outside the LSP area, is planned to be constructed as a four-lane dual 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. Land reserved under the MRS (Other Regional Roads) within the LSP area will be ceded to the local government at the time of subdivision.

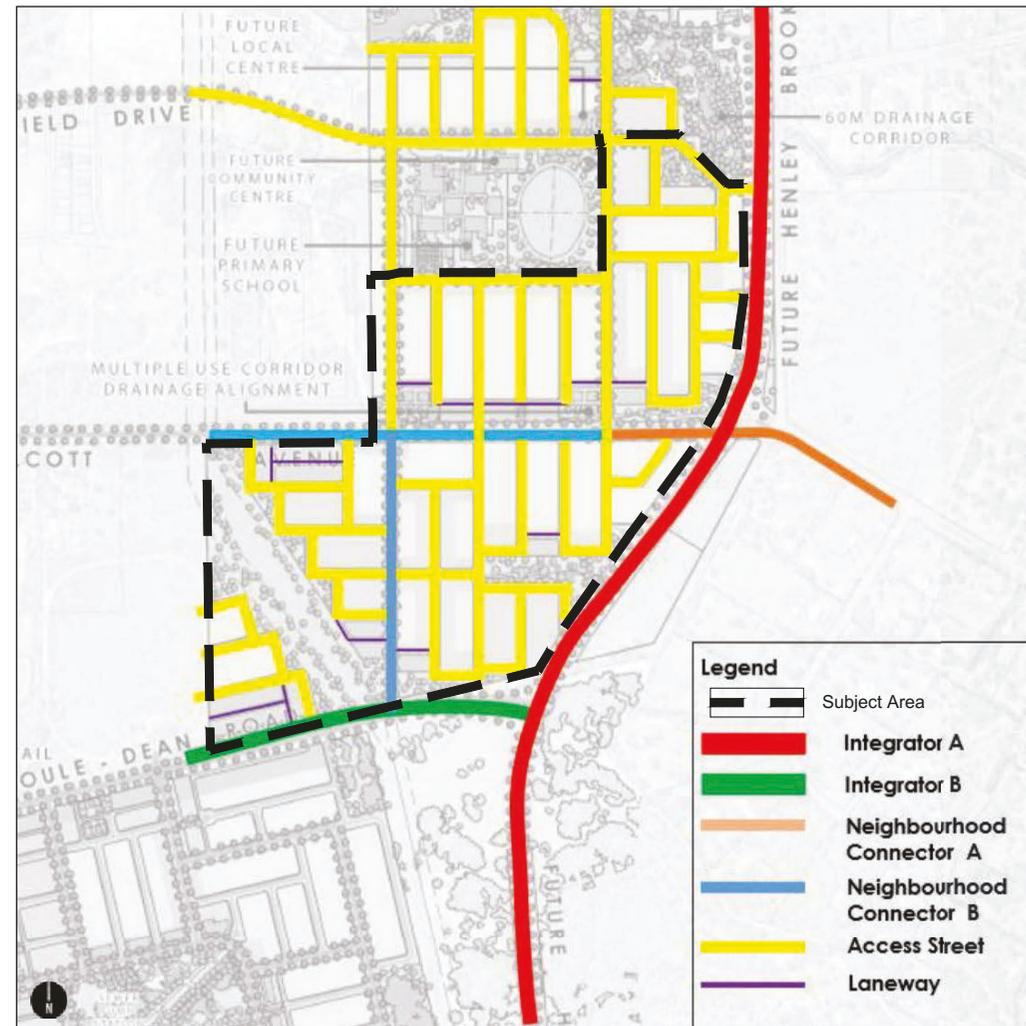


Figure 12 Road Hierarchy Plan
Source: GTA Consultants

- **Youle-Dean Road**, which also falls outside the LSP area, is to be categorised as an Integrator B road, constructed as a two-lane separated road.
- **Woollcott Avenue**, while situated within an existing 30m road reserve, will be categorised as a Neighbourhood Connector B with the exception of the eastern most portion which will be categorised as a Neighbourhood Connector A (adjacent to the Henley Brook Avenue intersection). Woollcott Avenue will be constructed as a two-lane separated road to match into the adjacent 'Flamewood' development (west).
- **Access Streets** are typically proposed to contain a pavement width of 6m with a reserve width ranging from 14.2 to 16m with the majority to be constructed as 15m road reserves, to be reduced by 1m when adjacent to public open space.
- **Laneways** shall be a minimum width of 6m to accommodate two way movements and rubbish collection.

The Albion DSP planned for a number of intersections along Henley Brook Avenue, connecting the LSP 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', 'NorthLink WA' and METRONET (Morley-Ellenbrook Line) projects.

As a result, the following is proposed:

- **Henley Brook Avenue / Youle-Dean Road Roundabout**, shown in the DSP as a four-way signalised intersection, is proposed as 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**, shown as a four-armed roundabout which is again shown in the aforementioned design drawings prepared by the City of Swan.
- **Henley Brook Avenue / Local Access Road**, (immediately south of St Leonards Creek) is shown as a full movement intersection. This is consistent with the Albion DSP.

Pedestrian and Cyclist Networks

The LSP delivers a safe and legible pedestrian and cycle movement network, both within the LSP area and through connections to planned urban development in the surrounding areas.

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

- Dual use paths will be provided to all Neighbourhood Connector and Integrator roads.
- Footpaths on at least one side of all access roads.
- On-street cycle lanes to be included on all Neighbourhood Connectors and Integrator roads (where applicable), in accordance with City of Swan standards.

The key principles and the final location of 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 LSP is planned to be located in proximity to one of the State's key public transport networks which will provide future residents with

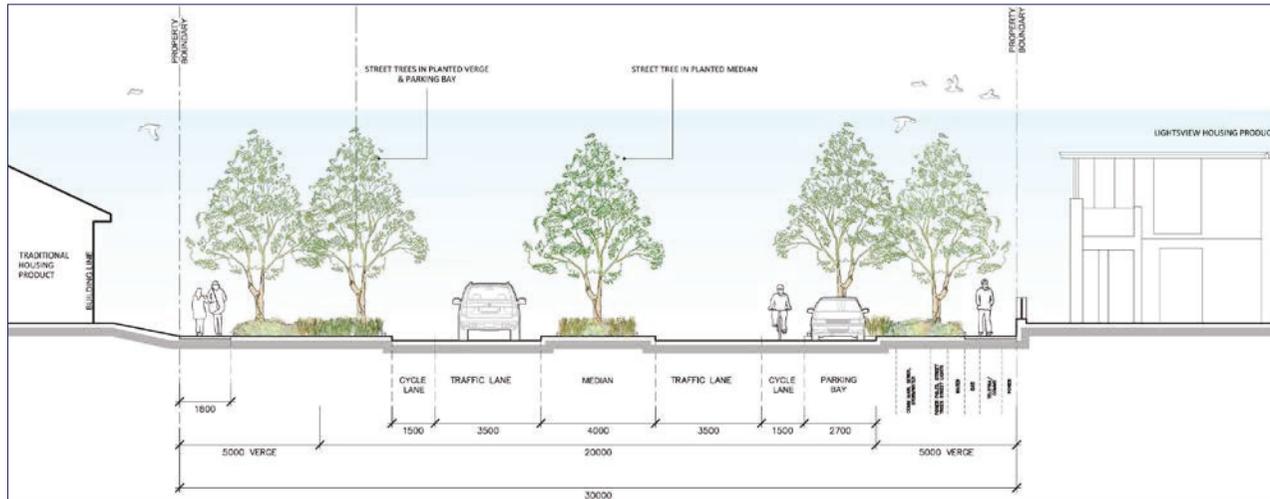


Figure 13 Woollcott Avenue Cross Section Concept

Source: Plan E

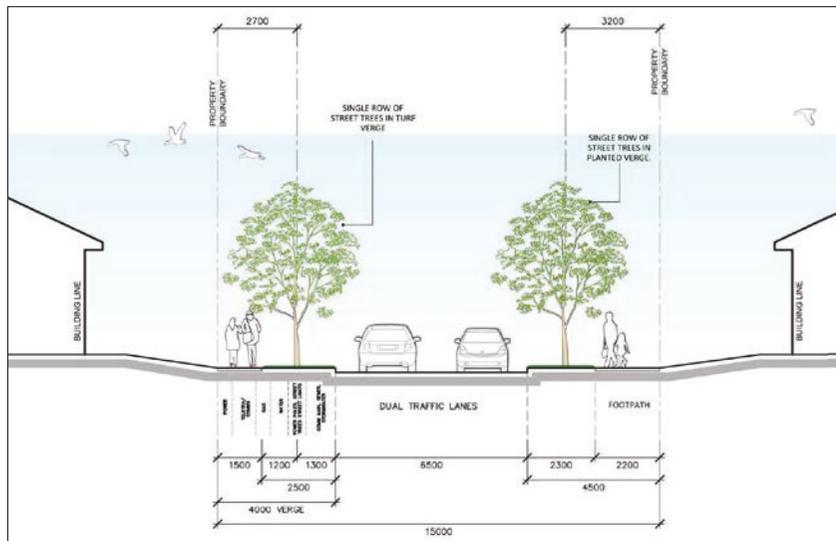


Figure 14 Access Street Cross Section Concept

Source: Plan E

outstanding public transport options.

Presently the nearest bus service (route 353) connects the Bassendean Train Station with the Ellenbrook Transfer Station, stopping at the corner of Youle-Dean Road and Everglades Avenue (approximately 860m west of the LSP); however, the future public transport network is currently being reviewed in context of the State Government’s METRONET project with the Public Transport Authority planning to dramatically improve bus services throughout the Albion locality.

The METRONET Morley-Ellenbrook Line is planned to be constructed in proximity to the western edge of the Albion DSP area and will provide a critical piece of public transport infrastructure for not only the Albion community but the broader north-east growth corridor. Further, as part of the ‘New Lord Street’ project, this transport corridor is planned to remain as a priority bus corridor with new bus stations and stops provided, including a bus ‘park and ride’ station between Gnangara Road and Park Street, Henley Brook.

3.5.3 Analysis of the Transport Network

GTA have undertaken comprehensive traffic modelling for the movement network proposed by the LSP. It demonstrates that the proposed network and associated reserve widths have the capacity to accommodate expected traffic volumes in the year 2031. This is generally consistent with the Main Road’s regional operational model and strategic transport modelling undertaken by the City of Swan.

It is important to note that the traffic modelling undertaken incorporates all planned development surrounding the LSP area, including the ultimate development of the entire Albion DSP area. This has ensured a transparent and robust model.

The LSP is expected to generate approximately 6,800 vehicles per day, with all vehicle movements falling within the acceptable limits outlined by Liveable Neighbourhoods for the respective road categories proposed by the LSP and will not compromise the broader Albion DSP network.

The precise nature and function of all internal intersections will be determined once the location and alignment of access 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 Traffic Noise Assessment

A Transportation Noise Assessment has been prepared by Lloyd George Acoustics in support of the LSP, prepared in accordance with State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Consideration in Land Use Planning (SPP 5.4).

The assessment modelled and assessed potential road traffic noise impacts upon the LSP area from vehicles travelling along Henley Brook Avenue, a road that may potentially carry in excess of 20,000 vehicle per day.

The assessment concludes that noise received at future residences located adjacent to Henley Brook Avenue may exceed acceptable noise limit targets outlined in SPP 5.4 but that traffic noise will be alleviated through the positioning of a parallel local road to Henley Brook Avenue with facade protection treatment (Quiet House Design packages) for affected properties (if required), with these properties also required to have notifications on title to inform landowners of the necessary construction standards, subject to further refinement during the subdivision stage.

The Lloyd George Transportation Noise Assessment is provided as Appendix 5.

3.7 Water Management

The LSP has been designed to accommodate the principles of best practice urban water management principles by integrating stormwater detention and infiltration within areas of public open space and developing the Woollcott Avenue Drain as a multiple use corridor.

A Local Water Management Strategy (LWMS) has been prepared by RPS in support of the LSP, 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), prepared in support of the Albion DSP. 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.

3.7.1 Irrigation

Presently the Department of Communities have a 16,000 kL/yr groundwater licence to extract from the Leederville Aquifer for the purpose of irrigating the public open space areas and street landscaping within the LSP. Nonetheless, it is generally understood that the aquifers are fully assigned and no further groundwater allocation will be available for the entire Brabham locality.

As a consequence, an alternative and innovative water supply strategy is being considered which involves the use of subsoil drainage water discharge which will facilitate supply for future LSPs.

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 harvest this subsoil drainage for irrigation purposes. This entails grading subsoil drainage to what is presently a multiple use wetland (the natural low point in the landscape, located approximately 200m east of the LSP area) where this drainage can be directly harvested for irrigation purposes, 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 wetland will be reconstructed and landscaped with native nutrient stripping vegetation to allow for the primary treatment of this drainage prior to its harvesting or storage within the aquifer.

This strategy is a total water cycle management solution with the aim of the residential development becoming its own water supply catchment.

Reconstructed Wetland

The wetland associated with the alternative water solution is located on Lot 359 Murray Road, which places it within Area A of the Swan Valley Planning Act 1995. Lot 359 is owned by the Department of Communities.

Development approval for the final configuration of the wetland has been obtained from the City of Swan, on the advice of the Swan Valley Planning Committee, where it was shown that reconstructing this wetland meets the relevant planning objectives for development within 'Area A', being:

- Maintain the rural character of the area.
- Encourage viticulture, horticulture, hobby farming, and rural activities compatible with rural residential uses in the area.
- Encourage tourism that complements the rural character of the area.
- Avoid overstocking, of clearing of natural vegetation, of activities causing pollution or degradation of the environment and of any other land management practices detrimental to the amenity of the area.

In addition to facilitating an alternative water solution, the benefits in which the proposal offers are:

- Provides for a water source which has the potential to be used for viticultural and horticultural irrigation.
- Facilitates the rehabilitation of what is presently a degraded multiple use wetland to a fully functional native wetland with considerable environmental and aesthetic value.
- Removes the risk of potentially polluting land uses, such as stock grazing and agistment.
- Provides the mechanism to improve surface water quality, both for irrigation purposes and for that used in maintaining pre-development flows downstream.
- Allows for the wetland to be offered as an educational facility, focused on both the natural environment and as an alternative water solution.

As indicated above, this alternative water solution offers a rare opportunity for a total water cycle management solution which will benefit not only the current LSP area, and potentially the wider Brabham locality.

3.7.2 Stormwater Management

Stormwater management will be based around water sensitive design principles and best management practices to effectively manage water quality and quantity. The LWMS refines the stormwater strategy set out in the approved Albion Local Water Management Strategy which was prepared as part of the Albion DSP.

The key objectives of the drainage system will be:

- Maintain the existing hydrological regime and minimise imported fill.
- Improve stormwater quality, as compared to a development that does not actively manage stormwater.
- Maintain the pre-development hydrological regime for the small rain events by encouraging infiltration close-to-source.

The LWMS refines the stormwater strategy set out in the approved Albion Local Water Management Strategy as follows:

- Stormwater from the first 15mm (1 year ARI) will be collected and infiltrated as close to source as possible, using soakwells, lot connections pits and bio-retention areas within areas of open space providing for water quality treatment.
- A piped system will cater for stormwater flows up to the minor event (20% AEP / 5 year ARI)
- Flows from events greater than 20% AEP will be conveyed via overland via the local street network.
- Storm events greater than the first 15mm will be allowed to overtop bio-retention areas in POS, to be conveyed to the reconstructed wetland located east of the LSP.

3.7.3 Groundwater Management

Groundwater will be controlled via a system of subsoil drains located within road reserves and beneath areas of POS. The depth that these subsoil drains are to be installed - the Controlled Groundwater Level (CGL) - will be in accordance with the (former) Department of Water's 'Water Resource Considerations when Controlling Groundwater Levels' which requires the following to be accounted:

Free Flowing Drainage Outlet will be through subsoil drainage being set at 0.3m above the relevant drainage feature, in this case being the Woollcott Avenue drainage culvert at the south-eastern corner.

Infrastructure Protection with finished lot levels to be 1.2m above subsoil drains, with estimate clearance to groundwater levels to exceed IPWEA guidelines.

Groundwater Quality to improve as urban subsoil drainage quality has been shown to be better than pre-development groundwater quality, with nutrient export rates reduced due to harvesting subsoil drainage water.

Protection of water dependant ecosystems via the CGL to be set to maintain the base flow of surface drainage features.

Catchment and nearby land uses constraints, with subsoil drainage to be diverted for the benefit of the Brabham locality. The volume of subsoil drainage is consistent with DWER's allocation planning and their in-principle support for the harvesting of subsoil drainage flows.

3.7.4 Implementation and Monitoring

An extensive pre-development monitoring programme has been completed via 24 bores located throughout the Albion DSP area, providing a sound understanding of current groundwater levels and quality.

The LWMS sets the overall water management strategy for development within the LSP area. It will be the responsibility of the developer to construct and maintain the stormwater drainage system in accordance with UWMP(s) to be prepared at subdivision stage. This includes the reconstruction and landscaping of the wetland located east of the LSP area.

Post-development monitoring of groundwater levels and quality will be carried out over a five year period; with it proposed that after an initial three year period, a review is undertaken in consultation with DWER and the City of Swan. Samples will be undertaken on a quarterly basis for the duration of the post-development monitoring period with results to be submitted annually to the City of Swan.

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

- Further soil amendment in infiltration dedicated areas.
- Increased planting of nutrient stripping vegetation in infiltration areas.
- Reintroduce public awareness programs.

3.8 Activity Centres

The LSP 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 LSP and the Ellenbrook Town Centre located 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 LSP is located approximately 1km from the planned centre located at the corner of Partridge Street 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).

The Albion DSP does identify one of three local centres immediately to the north of the LSP area, within Department of Communities land, with this local centre to accommodate between 300m² and 500m² of retail floor space (NLA) to meet the local convenience needs of future residents. This local centre will be delivered via a future local structure plan.

The LSP responds to these existing and planned centres in providing a future residential population and ensuring vehicle and pedestrian access to these centres which improves the retail catchment and commercial viability for these centres

3.9 Education

There are no educational facilities planned or required within the LSP area, with the area well serviced by a number of planned educational facilities.

The Albion DSP establishes a number of primary and high schools distributed across the DSP area, including a public primary school located immediately north of the LSP area and a 12ha public high school site located within Lot 822, south of Youle-Dean Road. Both these school sites are located on land owned by the Department of Communities and will be provided as part of a subsequent local structure planning.

In accordance with Liveable Neighbourhoods and based on the estimated yield of 825-875 lots, the LSP does not constitute a complete school catchment.

3.10 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.

3.10.1 Earthworks Strategy

A preliminary earthworks strategy has been prepared for the LSP with key considerations being:

- Match into existing levels where the LSP area abuts developed areas.
- Ensure adequate separation to sub-soil drainage infrastructure.
- Achieve minimum separation between finished levels and controlled groundwater levels.
- Create finished levels that provide minimum cover over sewer infrastructure and achieve minimum grades for gravity-reliant infrastructure (sewer and drainage).
- Provide for adequate separation between areas with underlying clayey soils to obtain a 'Class A' soil classification.
- Achieve appropriate contouring to deliver drainage catchment areas consistent with the associated Local Water Management Strategy.

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

[3.10.2 Sewer Reticulation](#)

The LSP will be serviced by the existing Type 90 pumping station located immediately south in Lot 801 Youle-Dean Road. Sewer from the LSP area will be gravity fed to a DN225 sewer extension which will be constructed in the LSP area which will connect back to a DN225 sewer stub located within the Youle-Dean Road reserve, in turn feeding to the aforementioned pumping station.

[3.10.3 Water Reticulation](#)

Development of the LSP area has been accounted for in the Water Corporation's water supply scheme planning. The LSP will be provided with a reticulated water supply via extensions to an existing DN200 water main located in the Woollcott Avenue reserve and a DN250 main located in the Youle-Dean Road reserve.

[3.10.4 Underground Power](#)

The existing high voltage network presently located immediately west within Lot 19 Woollcott Avenue will be extended to provide power to the LSP, with all power infrastructure within the development to be underground and fed from transformers strategically located within the site. Western Power confirmed that the power network has capacity to service the LSP without the need for any infrastructure upgrades.

[3.10.5 Gas Reticulation](#)

ATCO Gas has confirmed that the LSP can be supplied with reticulated gas via an extension from exiting mains located in the Woollcott Avenue reserve.

[3.10.6 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 provider.

[3.10.7 Staging and Timing](#)

It is anticipated that the LSP will be implemented to match market demand. Initially, development will be focused around Youle-Dean Road to facilitate the construction of the estate entry off this key road and to provide for easy extension of necessary services. Development will then typically proceed in a northerly fashion, providing for a progressive and logical extension to the estate.

3.11 Natural Gas Pipelines

As discussed in Section 3.1.5, the Dampier to Bunbury Natural Gas Pipeline (DBNGP) and the Parmelia Gas Pipeline run through the western portion of the LSP area, protected within respective service easements.

The Albion DSP and WAPC's Planning Bulletin 87: High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region (PB87) establishes that residential development may abut the DBNGP easement but must be setback 70m from the Parmelia Gas Pipeline easement. Reductions in setbacks are permitted if it can be demonstrated that the risk from the pipeline is in accordance with AS2885 (Pipelines – Gas and liquid petroleum) and EPA Guidance Statement 2 (Guidance for the Assessment of Environmental Factors).

Recent communications with the pipeline operators has confirmed that the DBNGP is constructed to an 'urban' standard and that no reinforcing or upgrade works are required to support residential development abutting the pipeline easement, whilst the Parmelia Gas Pipeline is presently a 'rural' standard pipeline meaning that pipeline reinforcing will be necessary in order to reduce the 70m setback.

A Pipeline Risk Management Plan is presently underway which will identify necessary reinforcing works (to the DBNGP), with this Plan to be finalised prior to subdivision or development.

3.12 Developer Contributions

The LSP 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.