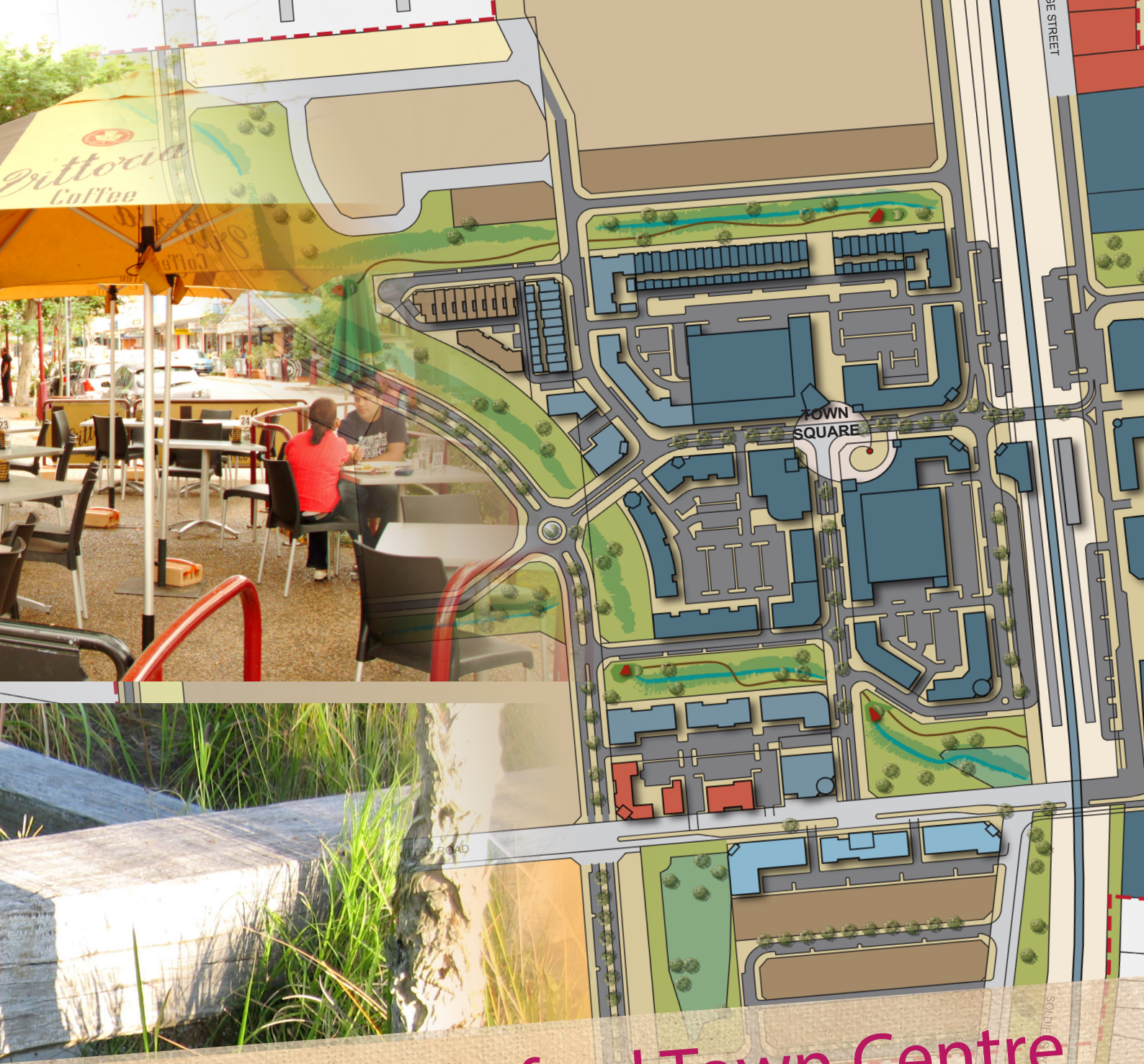

Byford Town Centre

LOCAL STRUCTURE PLAN
DECEMBER 2015

Shire of Serpentine Jarrahdale

Sustainable Connected Thriving

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SSJ HPRM - IN18/15524; Technical Appendices - IN15/26233

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Ray Haeren
Associate Director	Simon Wilkes
Job Code	PA0922
Report Number	AMENDMENT No. 1 – DECEMBER 2015 (Lot 4, No. 829 South Western Highway, Byford – from Public Open Space to Town Centre) AMENDMENT No. 2 – 15 NOVEMBER 2017 (Lot 2 Abernethy Road – from R30 to R60) (as prepared by Taylor Burrell Barnett for LWP Byford Syndicate Pty Ltd) AMENDMENT No. 3 - 15 FEBRUARY 2022 (Modification to road layout in accordance with Byford District Structure Plan; redistribution of density (R-Code allocations); and additional Commercial land use). **Amendment documentation found in Schedule 1.**

1 Operative Part 6
1.1 Introduction 6
1.2 Formal Title 6
1.3 Contents of the Local Structure Plan 6
1.4 Statutory Status 6
1.5 Byford Town Centre Concept Plan 6
1.6 Relationship with the Byford District Structure Plan 6
1.7 Local Structure Plan Area 7
1.8 Objectives 7
1.9 Land Use Classifications and Development Control Provisions 7
1.9.1 Town Planning Scheme No.2 Zones and Reserves 7
1.9.2 Highway Commercial and Town Centre 8
1.10 Residential Densities 8
1.11 Residential Development Interface with the Byford Trotting Complex 8
1.12 Town Centre 8
1.12.1 Town Centre (Retail Core) 8
1.12.2 Town Centre (Mixed Use) 8
1.13 Local Planning Policy – Byford Town Centre Design Guidelines 9
1.14 Detailed Area Plans 9
1.15 Byford Townsite Detailed Area Plan 9
1.16 Town Square 9
1.17 Lot 4 South Western Highway
1.18 Retail Net Lettable Area 10
1.19 Priority Frontages for Activated and Sleeved Development 10
1.20 Parking 10
1.21 Park and Ride 11
1.22 Multiple-use corridors and Public Open Space 11
1.23 Water Management 11
1.24 Development Contributions 12
1.25 Noise 13

2 Introduction 2
2.1 Background 2
2.2 Purpose 2
2.3 Local Structure Plan Objectives 3
2.4 Location 4
2.5 Land Tenure 5
2.6 Existing Land Use and Development 6

3 Community and Stakeholder Consultation 7
3.1.1 Visioning Workshop 7
3.1.2 Agency Consultation 7
3.1.3 Landowner Workshop 7
3.1.4 Community Open Day 7

4 Planning Background 8
4.1 Regional Context 8
4.1.1 Metropolitan Region Scheme 8
4.1.2 Directions 2031 and Beyond – Metropolitan Planning Beyond the Horizon 9
4.1.3 Outer Metropolitan Sub-Regional Strategy 9
4.1.4 Liveable Neighbourhoods 9

4.1.5 State Planning Policy No.4.2 - Activity Centres for Perth and Peel 10
4.1.6 State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning 10
4.1.7 Development Control Policy No 1.6 – Planning to Support Transit Use and Transit Orientated Development 11
4.2 Local Context 11
4.2.1 Shire of Serpentine-Jarrahdale Town Planning Scheme No.2 11
4.2.2 Byford District Structure Plan 13
4.2.3 Local Planning Policies 15
4.2.4 Byford Townsite Detailed Area Plan 17
4.3 Other Relevant Documents 18
4.3.1 Shire of Serpentine-Jarrahdale Strategic Community Plan 2013 – 2022 18
4.3.2 Byford Community Facilities and Services Plan to 2010 18
4.3.3 Green Towns Study 19
4.3.4 Byford Townsite Drainage and Water Management Plan 19
4.4 Key Considerations 20

5 Site Analysis 21
5.1 Environmental Features and Constraints 21
5.1.1 Topography and Landform 21
5.1.2 Geology and Soils 21
5.1.3 Wetlands 21
5.1.4 Vegetation 22
5.1.5 Acid Sulphate Soils 22
5.1.6 Surface Water 22
5.1.7 View Corridors 22
5.2 Heritage Sites 22
5.3 Built Environment 23
5.3.1 Built Form 23
5.3.2 Other Centres 23
5.3.3 Surrounding Residential Land Use 23
5.3.4 Schools 24
5.3.5 Equestrian Precinct 24
5.4 Development Proposals 24
5.5 Movement Network 26
5.5.1 Railway Line 26
5.5.2 Roads 26
5.5.3 Public transport 28
5.5.4 Pedestrians and Cyclists 28
5.6 Services 29
5.6.1 Power 29
5.6.2 Water 29
5.6.3 Drainage 29
5.6.4 Wastewater 29
5.6.5 Telephone 30
5.6.6 Gas 30
5.7 Summary of Key Considerations 30

6 The Local Structure Plan 31
6.1 Design Intent 31
6.2 Guiding Principles 32
6.3 Land Use 32

6.3.1 Town Centre (Retail Core and Mixed Use) 33
6.3.2 Residential 38
6.3.3 Dwelling Yields and Population 39
6.3.4 Highway Commercial 40
6.3.5 Commercial 40
6.3.6 Public Open Space 41
6.3.7 Wetlands 45
6.3.8 Public and Community Purposes 45
6.4 Retention of Existing Vegetation 45
6.5 Heritage 45
6.6 Movement Network 45
6.6.1 Transit Station and Rail Crossings 46
6.6.2 Bus Public Transport 47
6.6.3 Road Network 47
6.6.4 Parking 51
6.6.5 Park and Ride 51
6.6.6 Pedestrians and Cyclists 52
6.7 Traffic Investigations 52
6.8 Transport Noise Attenuation 52
6.9 Urban Water Management 52
6.9.1 Local Water Management Strategy 54
6.10 Utilities 56

7 Implementation 57
7.1 Adoption of Local Structure Plan 57
7.2 Town Centre Strategy 57
7.3 Staging 57
7.4 Implementation Project 58
7.5 Cost Sharing and Development Contributions 58

Appendix A Context Analysis 59

Appendix B Design Considerations 60

Appendix C Movement Network Plan 61

Appendix D Byford Town Centre Local Water Management Strategy 62

Appendix E Byford Town Centre Environmental Management Plan 63

Appendix F Byford Town Centre Transport and Traffic Analysis 64

Appendix G Byford Town Centre Retail Demand Analysis 65

Schedule 1 Byford Town Centre Local Structure Plan - Amendment 3

FIGURES:

Figure 1 – PLANNING FRAMEWORK DIAGRAM 3
Figure 2 – PLANNING FRAMEWORK DIAGRAM 57

TABLES:

Table 1 – LANDOWNERSHIP DETAILS (As at 2010) 5
Table 2 – RETAIL FLOORSPACE CALCULATIONS 14
Table 3 – MINOR ROADS 28
Table 4 – LAND USE TABLE 33
Table 5 – DWELLING YIELDS AND POPULATION* 40
Table 6 – PUBLIC OPEN SPACE SCHEDULE 43
Table 7 – SUMMARY OF ROAD HIERARCHY 48

PART 1 – STATUTORY PROVISIONS

1 Operative Part

1.1 INTRODUCTION

This document shall be read in conjunction with the Byford Town Centre Local Structure Plan (LSP) Map. Pursuant to the provisions of the Shire of Serpentine Jarrahdale Town Planning Scheme No. 2 (TPS 2), this document forms part of the LSP.

Please note the Amendment area displayed within the Byford Town Centre Local Strucutre Plan. The amendment documentation can be found below in Schedule 1. The land within the amendment area is subject to the provisions of Schedule 3 (amendment document). The existing provisions (2015 LSP) will apply to the whole structure plan including the Amendment 3 area. Where an inconsistency exists within the structure plan, the more recent provisions will generally prevail.

1.2 FORMAL TITLE

This LSP shall have the formal title of the Byford Town Centre Local Structure Plan.

1.3 CONTENTS OF THE LOCAL STRUCTURE PLAN

Pursuant to Clause 5.18.2 of TPS 2, the LSP is comprised of the following:

- The LSP Map; and
- The LSP Operative Part.

Supporting documentation shall inform the planning and development for the Byford Town Centre LSP area but shall not form part of the LSP nor any future amendments. This will be referred to as the Justification Report.

Any additional studies and/or investigations that are required to inform the planning and development of the LSP area are to assume the status of supporting documentation therefore informing the planning outcomes.

Due regard shall be paid to the justification report and any supporting documentation.

1.4 STATUTORY STATUS

Pursuant to Clause 5.18.6 of TPS 2, the provisions of the LSP Operative Part and Map are to have the same force and effect as if they were a provision, standard or requirement of the Scheme.

1.5 BYFORD TOWN CENTRE CONCEPT PLAN

A Concept Plan for the Byford Town Centre has been prepared and forms part of the LSP Operative Part.

The Concept Plan sets out key development and design elements for the area and seeks to graphically explain the development vision for the LSP. The Concept Plan shall be read in conjunction with the LSP Map, LSP Operative Part, Local Planning Policy 73 (Byford Town Centre Strategy) (LPP73) and Local Planning Policy 31 (Byford Town Centre Design Guidelines)(LPP 31).

The Concept Plan shall be given due regard in the preparation and assessment of subdivision and development applications, and detailed area plans (DAPs).

1.6 RELATIONSHIP WITH THE BYFORD DISTRICT STRUCTURE PLAN

The Byford District Structure Plan (DSP), adopted in August 2005, provides a district level framework to guide more detailed planning for Byford.

Pursuant to Clause 3 of Schedule 1 – Operative Part of the Byford DSP and Appendix 15 – DA 3 (2(a)(b)) of TPS 2, the LSP has been prepared to provide the level of detailed planning required to facilitate subdivision and development within the DSP area.

1.7 LOCAL STRUCTURE PLAN AREA

The area to which this LSP applies is identified on the LSP Map.

1.8 OBJECTIVES

The general objectives of the LSP are to:

- Facilitate an appropriate mix of retail, commercial, residential and mixed-use development within the Byford Town Centre.
- Provide for increased densities of residential development within proximity of the Byford Town Centre and proposed Byford metropolitan railway station/transit node.
- Provide land for public purposes.
- Provide for an appropriate distribution of active and passive public open space.
- Provide for a permeable, efficient and effective movement network throughout the LSP area.
- Facilitate the development of street blocks to provide for appropriate lot orientation and accessibility, whilst facilitating the intended use and form.
- Provide for efficient and effective urban water management addressing water quality and quantity.
- Facilitate and coordinate the progressive subdivision, development and redevelopment of land within the LSP area.
- Provide a framework to achieve certain land use and development outcomes within defined precincts.
- Provide a framework to coordinate the adequate and timely provision of common infrastructure for the LSP and provide for the reasonable and equitable sharing of costs of common infrastructure between landowners.
- Provide a framework for the establishment of a mechanism for the Shire to recover contributions for the provision of common infrastructure from landowners within the LSP area.
- Create a mixed use, well defined Town Centre comprising medium to high density residential and offering facilities of local and district value.
- Provide a range of dwelling types, allowing for medium and high residential densities to create density and choice.
- Provide a “Main Street” that creates the environment for mixed-use, day and night activity.
- Provide for a transition of land use over time, including robust and durable building design and site planning to accommodate change in future use, density and form.
- Provide for the sensitive incorporation of cultural heritage and rural character elements.

1.9 LAND USE CLASSIFICATIONS AND DEVELOPMENT CONTROL PROVISIONS

1.9.1 TOWN PLANNING SCHEME NO.2 ZONES AND RESERVES

Where the LSP imposes a classification on the land which is the same as a zone or reserve of TPS 2, and/or a Residential Density Code contained within the Residential Design Codes of Western Australia (R-Codes), subdivision, development and detailed area plans will be assessed pursuant to the requirements of TPS 2, the Byford Town Centre LSP, the Design Guidelines LPP 31 and/or the R-Codes. Where there is any inconsistency between the provisions of TPS 2 and those of the LSP and Design Guidelines LPP 31, the provisions of TPS 2 prevail to the extent of that inconsistency.

1.9.2 HIGHWAY COMMERCIAL AND TOWN CENTRE

The land use and development control provisions of the Highway Commercial and Town Centre (including Retail Core and Mixed-Use) classifications are to be in accordance with those stipulated in the LSP, the Byford Town Centre Design Guidelines LPP 31 and Local Planning Policy No. 19 – Byford Structure Plan Area Development Requirements. Where there is any inconsistency between the provisions of the LSP, the Design Guidelines LPP 31 and LPP 19, the provisions of the LSP prevail. Where there is any inconsistency between the Design Guidelines LPP 31 and LPP 19, the provisions of the Design Guidelines LPP 31 prevail.

1.10 RESIDENTIAL DENSITIES

The LSP proposes residential densities ranging from R15 through to R60 on residential zoned land.

A preferred R-Coding of R80 is set for the Town Centre. Medium to high densities of residential development and mixed-use development are sought. Residential and mixed-use proposals within the Town Centre classifications will be assessed pursuant to the requirements of TPS 2, the Residential Design Codes of Western Australia, the Byford Town Centre Design Guidelines and any applicable DAP.

This range of densities is required to facilitate the development of a variety of dwelling types as well as ensuring the establishment of an appropriate catchment population for the Town Centre.

Should an application for subdivision or development be submitted which proposes a lower density of development than the maximum density identified by the LSP, the applicant will be required to demonstrate that the form and function of the development will allow for the maximum residential density to be achieved in the future.

To this extent, the Shire may require DAPs to be prepared and accompany subdivision and/or development applications prior to the Shire providing a recommendation on subdivision or determining development.

1.11 RESIDENTIAL DEVELOPMENT INTERFACE WITH THE BYFORD TROTTING COMPLEX

Residential densities on lots adjacent to the Trotting Complex are set to a maximum of R15. Detailed planning of interface treatments will occur at the subdivision and development stages to set building envelopes and ensure appropriate buffers and other treatment methods.

To this extent, the Shire may require DAPs to be prepared and accompany subdivision and/or development applications prior to the Shire providing a recommendation on subdivision or determining development.

1.12 TOWN CENTRE

The Town Centre classification of the LSP is divided into two categories; Retail Core and Mixed-Use.

1.12.1 TOWN CENTRE (RETAIL CORE)

The Retail Core area will be the priority area for retail and commercial development. Complimentary residential development, in the form of mixed-use development, is encouraged to assist with surveillance and after-hours activation.

1.12.2 TOWN CENTRE (MIXED USE)

The Mixed-Use portion of the Town Centre is located at the periphery of the Retail Core, where development will be focussed on the provision of a mix of residential and commercial development in an integrated manner. This area will have less of a focus on pure retail development to avoid detraction from the consolidated Town Centre core. Residential development may be considered where a future mixed-use capacity can be demonstrated.

1.13 LOCAL PLANNING POLICY – BYFORD TOWN CENTRE DESIGN GUIDELINES

Pursuant to Clause 9.1 of TPS 2, the Byford Town Centre Design Guidelines, progressed as LPP 31, have been prepared to provide additional detailed guidance on land use and development within the LSP area.

LPP 31 defines precincts within the LSP area to achieve certain land use and development outcomes.

Applications for subdivision and development, and proposed DAPs, are to comply with the provisions of the Policy.

1.14 DETAILED AREA PLANS

Pursuant to Clause 5.18.5 of TPS 2, the LSP Map identifies sites which require DAPs to be prepared and approved to guide and facilitate subdivision and development.

Additional DAPs may be required to be prepared and accompany subdivision and/or development applications for Town Centre, Highway Commercial, Commercial and Residential classified land, land abutting major distributor roads, arterial roads, laneways and public open space, prior to the Shire providing a recommendation on subdivision or determining development.

1.15 BYFORD TOWNSITE DETAILED AREA PLAN

The Byford Townsite DAP has a minor overlap with the area covered by the Byford Town Centre LSP. Where there is any inconsistency between the provisions of the LSP and those of the Townsite DAP, the provisions of the LSP shall prevail to the extent of that inconsistency.

1.16 TOWN SQUARE

A Town Square is proposed within the Byford Town Centre, as indicated on the Concept Plan. Through the development process, the Shire will require, as a condition of approval, the development of the Town Square. The landowner will also be required to enter into a legally binding agreement to ensure that the site remains publicly accessible.

Siting and design of the Town Square shall have regard to the following principles:

- The Town Square is situated at an important Town Centre corner of the north-south Main Street and the east-west linkage to the future Train Station. This location is easily accessible from both the transit hub and the existing Town Centre area.
- The Town Square is oriented towards the north to benefit from climatic conditions (solar access). This encourages the usability of the square, in particular for al fresco dining. It is located on the east side, so developments around it can offer protection from easterly winds.
- The location is central to major pedestrian linkages, ie. recreation centre and high school to the south, residential to the east and the pedestrian/cycle link to the northern residential and primary school.
- The Town Square is a central space with a high level of finishes and facilities, high levels of lighting and good street surveillance.
- The minimum dimensions of the town square should be 25m by 30m.

1.17 LOT 4 SOUTH WESTERN HIGHWAY

Any subdivision or development applications pertaining to the site must provide the following:

(i) An Urban Water Management Plan will be required to be submitted with the application/s and must ensure peak flow rates and floodplain storage are maintained consistent with the Byford Town Centre Local Water Management Strategy (GHD, 2014);

(ii) Setbacks of 10 metres from the north and south of the existing creekline are required from any development which will affect water flow. Incidental development may be supported within this setback providing a community need and benefit is demonstrated and in accordance with an approved Urban Water Management Plan;

(iii) Restrict access to and from South Western Highway in accordance with Main Roads Western Australia Access Strategy for this section of South Western Highway;

(iv) A plan which identifies and protects any significant vegetation worthy of retention, particularly in proximity of the creekline, to the satisfaction of the local government; and

(v) Any drainage easement on the site as required by the local government.

1.18 RETAIL NET LETTABLE AREA

Pursuant to State Planning Policy No.4.2 – Activity Centres for Perth and Peel (SPP 4.2), a Retail Demand Analysis was undertaken to inform an appropriate amount and distribution of retail net lettable area (NLA) within the Byford Town Centre. The analysis concludes that the Town Centre will support between 8,962m² and 15,538m² of retail NLA to 2031. To monitor this provision, the Shire is seeking to establish and maintain a database of retail NLA and other floorspace within the LSP area.

The requirements of the LSP, Byford Town Centre Design Guidelines LPP 31 and any applicable DAP perform the function of a centre plan for the Byford Town Centre, as required by the draft SPP.

1.19 PRIORITY FRONTAGES FOR ACTIVATED AND SLEEVED DEVELOPMENT

In seeking to create a Town Centre environment and in acknowledgement of the transitional arrangements associated with the evolution of the Town Centre, priority frontages for activated and sleeved development have been identified on the Byford Town Centre Concept Plan. The preference is for sleeving of large format retail development and parking areas.

Sleeving involves the bordering of land uses such as car parking or larger “box” supermarkets with commercial development to create active street frontages and to enhance visual and pedestrian amenity. This concept is explained in further detail in the Byford Town Centre Design Guidelines LPP 31. Where sleeving is not provided in the initial development, proponents must demonstrate that the form and function of the development will allow for sleeved development to be achieved in the future. The ultimate development scenario is for all streets to be activated.

To this extent, the Shire may require DAPs to be prepared and accompany subdivision and/or development applications prior to the Shire providing a recommendation on subdivision or determining development.

Active frontages include entrances, ground floor shop windows or transparent frontages so that the activity within the building is visible from the street. Ideally, they should also include opportunities for activity to spill out onto pavements through street cafes and shop displays. These active frontages could include ground floor retail spaces, cafes, restaurants and bars, and may also include civic and cultural facilities and include public artwork. The Byford Town Centre Design Guidelines LPP 31 should be referred to for detailed provisions.

1.20 PARKING

The minimum parking requirement for non-residential uses within the LSP is one bay for every 20m^2 gross leasable area (GLA), less any on-street parking adjoining the site.

This is a variation from the standard TPS 2 provisions, which currently require 1 car bay for every 12.5m^2 GLA for a Shopping Centre land use. This variation is proposed to support the development vision of a mixed-use transit oriented Town Centre as opposed to a traditional suburban shopping centre; making better use of car parking areas while maintaining car parking provision.

As part of any commercial or mixed-use proposal, a parking and access management strategy has been prepared and approved. This strategy addresses:

- Peak parking requirements;
- Shared parking and access arrangements;
- Access rationalisation on South Western Highway;
- Timing limits and management;
- Accessibility and amenity;
- Parking for people with disabilities; and
- Loading areas.

The parking and access management strategy will need to have regard to any overarching access and parking management strategy prepared for the Byford Town Centre.

1.21 PARK AND RIDE

The Byford Town Centre Concept Plan identifies proposed park and ride facilitates within the Byford Town Centre.

In proposing the park and ride facilities, it has been necessary to ensure that land is not sterilised from development in the short to medium-term and at the same time, the opportunity to provide a park and ride facility in the long-term is retained. To this extent, proponents will be required to demonstrate, through detailed area plans and development applications, that the ability for a park and ride facility to be established in the long-term will not be prejudiced.

1.22 MULTIPLE-USE CORRIDORS AND PUBLIC OPEN SPACE

Within the LSP area, multiple-use corridors (MUCs) perform an urban water management, recreation, open space, amenity and conservation role. Design of MUCs will be in accordance with a MUC engineering/landscaping Policy to be developed by the Shire. In the absence of a Policy, compliance with Element 5 and other applicable requirements of Liveable Neighbourhoods is required.

Given the nature of the land and topography of the area, the drainage requirements for the LSP area are significant resulting in a total creditable public open space provision in excess of the standard 10 percent requirement

1.23 WATER MANAGEMENT

Unless otherwise required by the Shire, a conceptual water management plan is required to be submitted with applications for subdivision and development.

The conceptual water management plan will be required to:

- Address consistency with the Local Water Management Strategy;
- Provide a conceptual surface water plan;
- Provide conceptual plans for stormwater infrastructure that managed the 1:1, 1:5 year and 1:100 year ARI storm events (including top water levels and areas of inundation); and

- Identify post-development fill requirements (including existing and final surface levels).

As a condition of approval, the Shire will require the preparation and implementation of an Urban Water Management Plan (UWMP).

1.24 DEVELOPMENT CONTRIBUTIONS

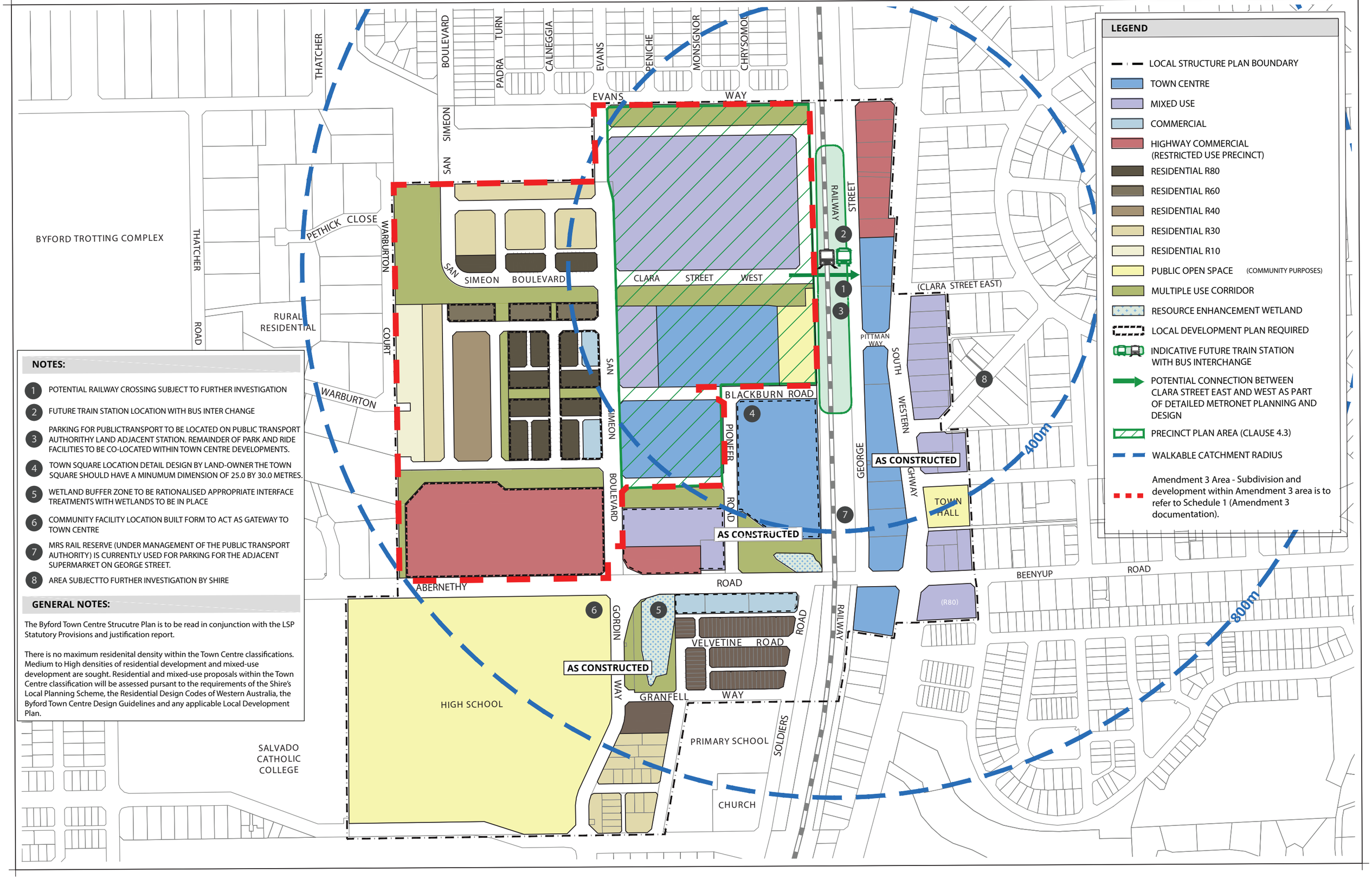
A development contribution arrangement (DCA) is currently being established for the greater Byford DSP area. Development contributions will be required pursuant to the provisions of TPS 2, and any relevant development contribution plan.

The Shire is currently investigating the preparation of a precinct-specific DCA for the Byford Town Centre LSP area.

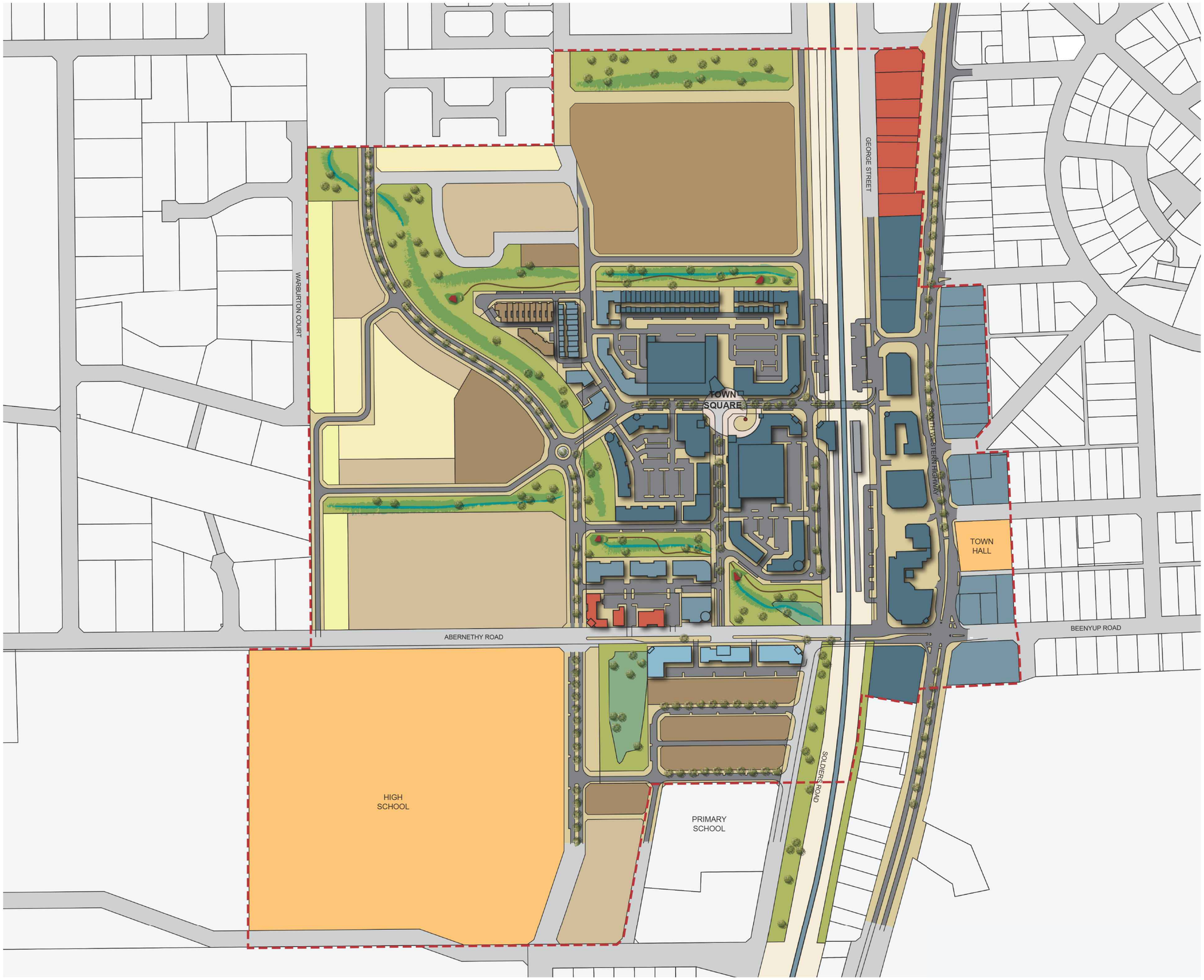
1.25 NOISE

The existing rail reserve and any future extension to the metropolitan passenger rail service to Byford are classified as current or future sources of noise under State Planning Policy No. 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning. The LSP proposes that sensitive land uses (ie. residential) can be considered adjacent to the railway line. As such, due regard will be required for the provisions of SPP 5.4 in the preparation and assessment of development applications, and a noise assessment may be required.

The Shire may impose conditions of development approval requiring noise attenuation in response to the provisions of *State Planning Policy No.5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning.* This may include the requirements for Precinct Development Area Plans to delineate areas affected by unacceptable noise levels on the site and specific methods of design to reduce the effects of noise on residential areas.



BYFORD TOWN CENTRE LOCAL STRUCTURE PLAN



LEGEND:

- BYFORD TOWN CENTRE LSP BOUNDARY
- TOWN CENTRE (RETAIL CORE)
- TOWN CENTRE (MIXED-USE)
- COMMERCIAL
- HIGHWAY COMMERCIAL
- RESIDENTIAL R60
- RESIDENTIAL R30
- RESIDENTIAL R25
- RESIDENTIAL R15
- PUBLIC AND COMMUNITY PURPOSES
- PUBLIC OPEN SPACE
- RESOURCE ENHANCEMENT WETLAND

Please Note:
This plan is for conceptual purposes only. Where the plan is inconsistent with Amendment 3, the provisions of Amendment 3 will prevail.

AS MODIFIED BY TAYLOR BURRELL BARNETT FOR LWP BYFORD SYNDICATE PTY LTD

BYFORD TOWN CENTRE CONCEPT PLAN

PA 0922 - BYFORD TOWN CENTRE UPDATE OF LSP

DATE 15/11/2007 | DWG NO 001 | REV C | SCALE NTS

Level 1, 55 St Georges Tce, Perth, WA 6000 Australia
Tel +618 9346 0500 Fax +618 9221 1779
info@urbis.com.au www.urbis.com.au
Urbis Pty Ltd ABN 50 105 256 288 Australia . Asia . Middle East

urbis

PART 2 – JUSTIFICATION REPORT

2 Introduction

This LSP has been prepared to guide the development of the Byford Town Centre and its growth into a vibrant and sustainable Town Centre, comprising a mix of land uses centred on a "main street", reflecting the historical and rural setting of the Byford township. The LSP area includes the existing retail and commercial development on South Western Highway, and a significant area of mostly vacant land to the west of the railway line, identified for Town Centre expansion. This land is currently in fragmented ownership, requiring a coordinated and integrated approach to planning and development. The potential extension of the metropolitan electric rail network to Byford provides the impetus for transit oriented development, and LSP is designed on this basis.

Part 1 of this document contains the statutory planning provisions applicable to the LSP area.

Part 2 of this document (this section) provides a descriptive analysis of the LSP, including site description, project background, opportunities and constraints, the existing statutory planning framework, a description of the LSP and its proposals, and addresses implementation matters.

2.1 BACKGROUND

The Shire of Serpentine-Jarrahdale is experiencing rapid urban growth, particularly in the area of Byford. The Byford Town Centre requires the preparation of a LSP and DAPs for specific sites. Due to the multiple ownership of the subject land, the LSP will provide a framework to guide subdivision and development and ensure a functional and vibrant Town Centre based on the principles of transit oriented development. The LSP will provide the basis for coordinating and assessing subdivision plans to be prepared by landowners in the area. This will provide a form of certainty to landowners in terms of major development and land use elements.

On the 13 February 2007, the Shire of Serpentine Jarrahdale Council resolved to commence structure planning for the Byford Town Centre, with the Council taking the leading role and working in collaboration and partnership with the affected landowners. The council resolved to:

> *'Retain the Town Centre Zone and size as per BSP 2005, however include a notation on the Plan to require the preparation and completion of a Local Structure Plan, complete with Detailed Area Plans and Design Guidelines. The Local Structure Plan to include, inter alia, an investigation into increased residential densities within the 800 metre walkable catchment and its relation with transit oriented urban design; the location, nature, role, relationship and distribution of different activities within the Town Centre including the 800 metre walkable catchment area.'*

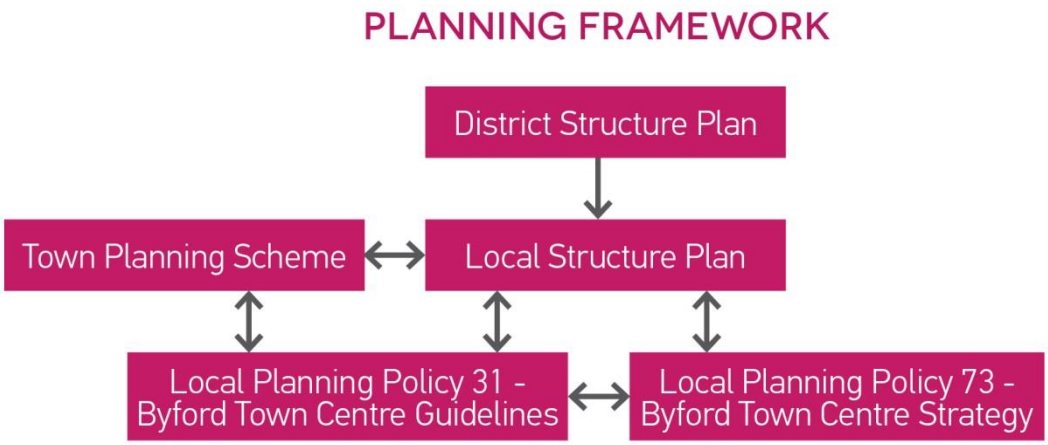
2.2 PURPOSE

The Byford Town Centre LSP is intended to establish the broad structure, layout, appropriate land uses and key infrastructure networks required for the expansion of the Byford Town Centre into a district centre, as identified in the Byford DSP. The LSP will facilitate the future development of the Town Centre in a co-ordinated manner.

The LSP has been prepared in conjunction with Design Guidelines (to be adopted as a LPP 31) and a Town Centre Strategy, dealing with treatment of the public realm and its interface with development sites.

A diagram explaining this planning framework is contained below.

FIGURE 1 – PLANNING FRAMEWORK DIAGRAM



2.3 LOCAL STRUCTURE PLAN OBJECTIVES

The general objectives of the LSP are to:

- Facilitate an appropriate mix of retail, commercial, residential and mixed-use development within the Byford Town Centre.
- Provide for increased densities of residential development within proximity of the Byford Town Centre and proposed Byford metropolitan railway station/transit node.
- Provide land for public purposes.
- Provide for an appropriate distribution of active and passive public open space.
- Provide for a permeable, efficient and effective movement network throughout the LSP area.
- Facilitate the development of street blocks to provide for appropriate lot orientation and accessibility, whilst facilitating the intended use and form.
- Provide for efficient and effective urban water management addressing water quality and quantity.
- Facilitate and coordinate the progressive subdivision, development and redevelopment of land within the LSP area.
- Provide a framework to achieve certain land use and development outcomes within defined precincts that includes appropriate development criteria for each precinct. Staging of development for these precincts should be clearly defined.
- Provide a framework to coordinate the adequate and timely provision of common infrastructure for the LSP and provide for the reasonable and equitable sharing of costs of common infrastructure between landowners.
- Provide a framework for the establishment of a mechanism for the Shire to recover contributions for the provision of common infrastructure from landowners within the LSP area.
- Create a residential and mixed use, well defined Town Centre offering facilities of local and district value.
- Provide a range of dwelling types and densities accommodating a diverse residential community.
- Provide a “Main Street” that creates the environment for mixed-use, day and night activity.
- Provide for a transition of land use over time, including robust and durable building design and site planning to accommodate change in future use, density and form.

- Provide for the sensitive incorporation of cultural heritage and rural character elements.

2.4 LOCATION

Byford is located in the Shire of Serpentine Jarrahdale, approximately 45km southeast of Perth and west of the main Darling escarpment. Its origins as a rural town outside the Perth metropolitan area is evidenced in the existing Town Centre structure and relationship to the adjacent residential area (see Figure 2).

The Byford Town Centre LSP area incorporates Abernethy Road as the major east-west link and South Western Highway as the major north-south linkage. The Byford Trotting Complex neighbourhood abuts the western boundary of the study area. Land to the southwest of the study area is identified for future urban development, including "The Glades" development. A future high school site forms the boundary between this residential area and the Town Centre. Approved residential subdivisions and the Marri Grove Primary School abut the northern boundary of the LSP. The LSP area includes existing development on the eastern side of South Western Highway.

The study area can be described based on two identifiable parts separated by the Perth to Bunbury railway line; the existing retail and commercial development fronting South Western Highway (the existing Town Centre) and the Town Centre expansion area to the west of the railway line.

The LSP area is presently zoned "Urban" under the Metropolitan Regional Scheme. The majority of the LSP area is zoned "Urban Development" under the Shire's TPS 2.

2.5 LAND TENURE

There are currently 14 major landholders within the existing Byford Town Centre and 7 major landholders in the Town Centre expansion area to the west. This expansion area is largely made up of two major landholdings; LWP Byford Syndicate Pty Ltd (Lots 1 and 52 Abernethy Road) and Peet Byford Syndicate Ltd (Lot 1 Abernethy Road).

Landownership and legal description of the land within the LSP area is provided below.

TABLE 1 – LANDOWNERSHIP DETAILS (AS AT 2010)

LOT	ADDRESS	LANDOWNER	AREA
52	Abernethy Road	LWP Byford Syndicate Pty Ltd	24.04ha
1	Abernethy Road	Peet Byford Syndicate Ltd	19.72ha
2	20 Abernethy Road	LWP Byford Syndicate Pty Ltd	19.27ha
5	34 Abernethy Road	Seaport Pty Ltd	1.8157ha
4	30 Abernethy Road	Van Dijk, Carolyn	1661m²
15	Abernethy Road	Gangemi, Nino and Paul	4.047ha
61	20 Soldiers Road	Free Reformed School Association Ltd	1.7078ha
21	28 Abernethy Road	Westate Hotel Group Pty Ltd	4267m²
3	837 South Western Hwy	Universal Property Pty Ltd	2006m²
5	843 South Western Hwy	Byford & Districts Country Club	2130m²
7	849 South Western Hwy	Byford & Districts Country Club	2171m²
51	857 South Western Hwy	Byford & Districts Country Club	2118m²
50	855 South Western Hwy	Carle & Co Pty Ltd	2167m²
2	859 South Western Hwy	Lenz Corp Pty Ltd	2387m²
1	746 South Western Hwy Cnr Abernethy Rd and South Western Hwy	Lenz Corp Pty Ltd	2735m²
3	2 Clifton Street	Ierace, Cosimo Antonio	803m²
444	4 Clifton Street	APO Pty Ltd	1962m²
850	South West Highway	Crown Reserve number 21500	4004m²
2	868 South Western Highway	Ierace, Cosimo Antonio	971m²
14	Cnr South Western Highway and Beenyup Rd	Commissioner of Main Roads	166m²
15	872 South Western Highway	Bosma, Bernard Jacob & Jennifer Dawn	989m²

2.6 EXISTING LAND USE AND DEVELOPMENT

The predominant land uses within the LSP area are retail and other commercial uses, residential development and rural pursuits. The existing Town Centre is currently confined to the two blocks north of Abernethy Road between South Western Highway and the railway line and consists of a small supermarket, post office, newsagents, food premises, green grocers, liquor shops, other specialised shops and a tavern.

Existing residential development is located to the east of South Western Highway, with new residential suburbs being developed closer to the historic township. The portion of the study area between the railway reserve and the Byford Trotting Complex contains a variety of rural land uses, with the predominant actives use being grazing and horse agistment. The balance of the land is used for rural residential lifestyle lots and hobby farm pursuits.

3 Community and Stakeholder Consultation

The community consultation that was undertaken for the Byford Town Centre LSP provided an insight into community and landowner attitudes toward future development within the Town Centre and expansion areas. This consultation included a visioning workshop, agency consultation, landowner workshop, community open day and formal advertising. Community feedback received through the consultation process undertaken as part of the preparation of LSP expressed sentiments which were taken into consideration and reflected in the final Plan.

3.1.1 VISIONING WORKSHOP

A community visioning workshop was run by the Shire in 2007 to determine the community's aspirations for the Town Centre. The main aim of the visioning exercise was to engage the community and key stakeholders in the beginning of the LSP process and to generate ideas and options for the Town Centre. Some of the key themes that emerged include:

- Retain mature vegetation and natural landscape features.
- Include public art and meeting places.
- Provide recreation facilities for young people including a BMX track/skate park.
- Create a water themed town around the Creek.
- Provide suitable shade trees and consider edible street trees.
- Provide a bridle path through the Town Centre to capture the rural feel.
- A positive colour scheme that takes inspiration from the environment.

3.1.2 AGENCY CONSULTATION

An agency workshop was undertaken in November 2008. The purpose of the workshop was to brief key Government agencies on the core elements of the LSP. An opportunities and constraints map was presented to outline the parameters of the LSP. Participants were then encouraged to provide feedback through a round table discussion of key issues that require consideration in the preparation of the LSP. The following key issues emerged from the discussion:

- Identification of an appropriate drainage and urban water management strategy.
- Clarification of the role and function of Abernethy Road and South Western Highway
- Identification of a preferred railway station location and implications for additional rail crossings.
- Environmental assessment and quality of stands of remnant vegetation.
- Servicing requirements and infrastructure works programme.

3.1.3 LANDOWNER WORKSHOP

A landowner workshop was held at the Shire offices in January 2009 to gain feedback on specific design considerations of the LSP and provided an opportunity for landowners to provide input at the conceptual stage of the project. Landowners voiced concerns particularly on the location of drainage, environmental principles (wetland buffers and retention of mature trees) and achieving a land use mixture in the Town Centre.

3.1.4 COMMUNITY OPEN DAY

An informal community open day was held in February 2009 at the Shire Council offices. The purpose of the open day was to inform the community about the LSP. Opportunity and constraints mapping, including design considerations and associative imagery, was displayed (see Appendices A and B). The community could discuss the design intent of the Town Centre with consultants and Council staff. Observations on the day suggested the community were generally pleased with the Byford Town Centre concept presented and the concerns voiced were of a minor nature.

4 Planning Background

This section describes the planning context and framework which has guided the preparation of the LSP. Key aspects of the State, Regional and Local planning frameworks are identified and discussed in the context of the Byford Town Centre area.

4.1 REGIONAL CONTEXT

4.1.1 METROPOLITAN REGION SCHEME

The Metropolitan Region Scheme (MRS) is the statutory planning Scheme for the Perth Metropolitan Region.

Under the MRS, the majority of the LSP area is zoned Urban. A Railways reserve passes through the LSP area from north to south and the South Western Highway is reserved as a Primary Regional Road (see Figure 3).

4.1.2 DIRECTIONS 2031 AND BEYOND – METROPOLITAN PLANNING BEYOND THE HORIZON

Directions 2031 and Beyond was adopted in August 2010 as the regional planning framework for Perth and Peel. Directions 2031 recognises the benefits of a more consolidated city, and sets achievable goals that will promote housing affordability in the long term. Directions 2031 addresses urban growth needs a

Directions 2031 recognises the benefits of a more consolidated city while working from historic patterns of urban growth. Importantly, the framework sets achievable goals that will promote housing affordability over the longer term. Directions 2031 addresses urban growth needs and also takes into consideration the need to protect our natural ecosystem. Byford is included within the 'south-east' sub region of the Strategy. Under the connected city model, it is estimated that by 2031, the population of the south-east sub-region will have grown by 34%, with an increase in the employment self-sufficiency target by 13%. The Byford Town Centre LSP aims to bring online additional residential supply to cater for this growth.

4.1.3 OUTER METROPOLITAN SUB-REGIONAL STRATEGY

The Outer Metropolitan Sub-Regional Strategy (the Strategy) provides a framework for delivering the objectives of Directions 2031. The Byford Town Centre is located within the south-east outer sub-regional area of the Strategy, and is recognised as a 'district centre'.

Under the connected city model, the Sub-Regional Strategy indicates that approximately 30,000 dwellings will be required within the Shire of Serpentine-Jarrahdale by 2031, to cater for the projected demand. The residential land proposed as part of the Byford Town Centre LSP will assist in catering for this demand.

4.1.4 LIVEABLE NEIGHBOURHOODS

Liveable Neighbourhoods is an operational development control policy which guides the design and assessment of regional, district and LSPs, DAPs and subdivision applications for new development areas in metropolitan and country areas. It is an implementation tool; working towards the establishment of new urban areas built around networks and centres. The policy generally applies to all greenfield and large urban infill sites. Development of the Byford Town Centre LSP is in accordance with Liveable Neighbourhoods

The LSP adopts the urban structuring principles defined in the Liveable Neighbourhoods Community Design Code. The Liveable Neighbourhoods design solution aims to achieve a compact, better defined and more sustainable urban community.

Liveable Neighbourhoods encourages:

- A wide variety of housing types and sizes, including medium density residential development in close proximity to centres, and medium to high density residential and mixed-use development within centres.
- A wide variety of local employment opportunities.
- A sense of community focused on walkable neighbourhoods and towns.
- Support for public transport.

Liveable Neighbourhoods aims to achieve better environments that are more sustainable and more liveable.

In terms of structuring the urban environment, Liveable Neighbourhoods uses the neighbourhood unit as the fundamental building block. The neighbourhood unit is an area of approximately 50ha defined by a 400m radius circle. The 400m radius represents a theoretical five minute walk to the neighbourhood centre, where daily needs are located.

Liveable Neighbourhoods identifies the requirement to link the neighbourhoods and Town Centres with a clearly legible road network. The road network should be highly interconnected to allow traffic to

permeate through the urban fabric and hence reduce the need for large, expensive and highly engineered arterial roads. With lower levels of traffic, the arterial roads are then able to provide access to the centres of neighbourhoods and deliver the economic benefits of the "movement economy" to local businesses.

These key development and design principles of Liveable Neighbourhoods have guided the preparation of the LSP.

4.1.5 STATE PLANNING POLICY NO.4.2 - ACTIVITY CENTRES FOR PERTH AND PEEL

State Planning Policy No.4.2 – Activity Centres for Perth and Peel (SPP 4.2) has been prepared to specify broad requirements for the planning and development of new activity centres and the redevelopment and renewal of existing centres in Perth and Peel. It is mainly concerned with the distribution, function, broad land use and urban design criteria of activity centres, and with coordinating their land use and infrastructure planning.

Compared to the previous Metropolitan Centres Policy, the Policy relaxes the emphasis on floor space limits, recognising the variable and unique attributes to individual activity centres and accepting that a standard numerical approach will not adequately respond to the specific context and setting.

The Policy also has an increased focus on the spatial form of the centre, rather than reliance on numeric controls. The Policy intends to foster innovation and creative design solutions to suit the specific characteristics of individual activity centres. In order to achieve these site-specific outcomes, the policy requires the development of a Centre Plan that outlines both the spatial structure and form of the centre as well as the distribution of land uses thorough the centre.

The quantum of floor space to be provided will be based on an economic impact assessment, which will test the need and demand as well as the impact on surrounding activity centres.

Byford is identified as a District Town Centre in the Policy; a focal point for the passenger rail and/or bus network, having diverse land use including retail development, district level office development, local professional services, community facilities and mixed use development.

Pursuant to the requirements of the Policy, an economic impact assessment (in the form of a retail demand analysis) has been undertaken. The requirements of the LSP, Byford Town Centre Design Guidelines LPP 31 and any applicable DAP perform the function of a centre plan for the Byford Town Centre, as required by the Policy.

4.1.6 STATE PLANNING POLICY 5.4 – ROAD AND RAIL TRANSPORT NOISE AND FREIGHT CONSIDERATIONS IN LAND USE PLANNING

State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning (SPP 5.4) is primarily concerned with how the planning system can be used to minimise the adverse impact of transport noise without placing unreasonable restrictions on development or adding unduly to the cost of road and rail infrastructure.

Specifically, the policy:

- Establishes criteria to be used in the assessment of proposals involving noise sensitive development in the vicinity of major transport corridors.
- Identifies measures that can be adopted to reduce road and rail traffic noise.
- Describes the circumstances when such measures are required.

Generally, the policy intends to keep noise levels at 55 to 60 decibels (dB) during the day (6am and 10pm) and 50 to 55 dB at other times. These limits are put in place to maintain local amenity and protect the health and wellbeing of current and future residents.

The existing rail reserve and any future extension to the metropolitan passenger rail service to Byford are classified as current or future sources of noise. The Byford Town Centre LSP proposes that sensitive land uses (i.e. residential) can be considered adjacent to the railway line. As such, due regard will be required for the provisions of SPP 5.4 when undertaking development.

4.1.7 DEVELOPMENT CONTROL POLICY NO 1.6 – PLANNING TO SUPPORT TRANSIT USE AND TRANSIT ORIENTATED DEVELOPMENT

Development Control Policy No. 1.6 – Planning to Support Transit Use and Transit Orientated Development (DC 1.6) has been prepared to facilitate increased residential densities in proximity to high frequency public transport routes. For the most part, this includes passenger rail stations.

The basic concept behind the Policy is that increased intensities of development in proximity to railway stations increases the number of people residing near such stations. This provides additional opportunities for public transport usage.

The LSP responds to this contemporary principle of transit orientated development through identifying medium and high residential densities in proximity to the proposed Byford passenger railway station.

4.2 LOCAL CONTEXT

This section sets out the key statutory documents and plans which have facilitated and guided the preparation of the Byford Town Centre LSP.

4.2.1 SHIRE OF SERPENTINE-JARRAHDALE TOWN PLANNING SCHEME NO.2

The Shire of Serpentine-Jarrahdale TPS 2 forms the statutory basis for land use and development control within the Shire.

Objectives

The specific objectives of the Scheme are based around:

- Securing the amenity, health, safety and convenience of the inhabitants of the District.
- Zoning land for the purposes described in the Scheme so as to promote the orderly development of the land by making suitable provisions for land use.
- Reserving land for future and present public use.
- Making provision for the conservation and preservation of places of natural beauty, historic buildings and objects of historic or scientific interest.
- Creating a pedestrian and vehicular circulation system together with landscape environment which complements the wide range of activities carried on and proposed to be carried in the District.
- Encouraging coordinated development of the District in accordance with the guidelines set out in the planning studies adopted by the Council for particular areas or the District as a whole.
- Making provision for other matters incidental to town planning and land use management.

Zoning

The predominant zones within the existing Byford Town Centre are Commercial and Showroom/ Warehouse, with large expanses of land zoned Urban Development located both east and west of the South Western Highway. The Urban Development zoned land to the west of the Railway will accommodate future Town Centre expansion, whilst land to the east will be subject to some infill development and redevelopment (see Figure 4).

The purpose and intent of the Commercial zone is to encourage the establishment of a commercial centre in each of the four towns in the Shire and to maximise the public benefit and amenity in the towns

in respect of retail, office and entertainment facilities. The purpose of the Showroom/Warehouse zone is to provide for a range of commercially oriented uses with low traffic generating characteristics and dealing in goods of a bulky nature.

The purpose of the Urban Development zone applies to most of the LSP area and is to provide for the orderly planning of large areas of land in a locally integrated manner and within a regional context, whilst retaining flexibility to review planning and changing circumstances. The zone is specifically broad so that detailed planning can be progressed through the LSPs. TPS 2 states that this zone will allow for the following:

- Development of functional communities consistent with orderly and proper planning and the establishment and maintenance of an appropriate level of amenity.
- Variety in the range of lot sizes and dwelling types within communities, consistent with a cohesive and attractively built environment.
- Provision of retail, commercial, industrial and mixed use facilities to service the needs of residents within the communities; and integration of these facilities with social and recreational services, so as to maximise convenience.
- Provision of retail, commercial, business park and industrial facilities to provide local employment opportunities.
- Provision of open space and recreation networks, appropriate community services, school sites and other recreational facilities.
- Establishment of multiple-use corridors for drainage, nutrient control and recreational purposes, in association with the development of communities based on the principles of water sensitive urban design.
- Optimisation of convenience in respect of rail, road, cycleway and other transportation means, to and within the communities.

Local Structure Planning

Clause 5.18 of the Scheme sets out detailed provisions facilitating the preparation, approval and operation of LSPs and DAPs, while Development Contribution Arrangements are outlined in Clause 5.19.

Appendix 15 of TPS 2 identifies Development Areas within the Shire which are affected by or require structure planning. Byford is contained within Development Area No. 3 which requires the preparation of a detailed LSP for specific precincts within the Development Area prior to the Shire considering subdivision.

The preparation of the Byford Town Centre LSP will meet this requirement of Development Area 3 and facilitate future subdivision.

A detailed LSP is required to comply with the relevant provisions of the Byford DSP and the Byford Urban Stormwater Management Strategy (recently replaced by the Byford Townsite Drainage and Water Management Plan).

4.2.2 BYFORD DISTRICT STRUCTURE PLAN

The Byford DSP was prepared in response to continued pressure from landowners within the study area to develop their land for urban purposes and was adopted by the WAPC in March 2005. The Structure Plan report provides a broad assessment of planning, environmental and engineering issues affecting the study area and the formulation of the Structure Plan. It also includes an Implementation Strategy to ensure that the vision is realised at the development stage.

The LSP provides a framework to guide the design of further detailed LSPs, detailed area plans and subdivision designs over land holdings within the area. The DSP identifies an area for Town Centre development along Abernethy Road to the west of the railway line. The existing Town Centre along South Western Highway is also identified as Town Centre development in the LSP (see Figure 5).

Key Provisions from the Byford District Structure Plan

The DSP requires the preparation and completion of a LSP for the Byford Town Centre, together with DAPs and Design Guidelines. The LSP is required to include an investigation into increased residential densities within the 800 metre walkable catchment and its relationship with transit oriented urban design; the location, nature, role, relationship and distribution of different activities within the Town Centre. Any change to residential densities or uses within the 800 metre walkable catchment of the Town Centre will require a separate modification to the DSP and associated community consultation.

A summary of other specific provisions of the DSP, as relevant to the Town Centre, are set out as follows:

- The High School site will be a prominent landmark.
- The existing waterway in the Town Centre will be subject to water sensitive urban design principles.
- Thomas Road, Abernethy Road and Orton Road to be widened to accommodate stormwater.
- The future construction of Abernethy Road should include dense landscaping, appropriate fencing or bunding.
- The final alignment of the Town Centre district distributor road through Lot 1 Abernethy Road will be determined during detailed structure planning.
- Detailed Area Plans are required for land abutting major distributor roads, public open space, reserves, multiple-use corridors and arterial roads to ensure the built form reflects the rural character of the area.

Movement Network

The DSP identifies Tonkin Highway as a Primary Distributor road, providing for arterial through traffic oriented north-south through the area and existing as the primary route to the Perth Central Area. The South Western Highway is classified as a District Distributor Integrator A road, serving as the principle north-south connector road feeding into the Byford Town Centre and serving as the primary link to the sub-regional centre of Armadale.

Thomas Road, Orton Road and Soldiers Road are all classified as District Distributor Integrator B roads within the DSP area. Thomas and Orton Roads perform similar functions in that they provide an important link to South Western Highway. Soldiers Road provides an important link to Mundijong to the south.

Abernethy Road is Byford's key neighbourhood connector route and its major role is to act as the feeder route for the residential and rural precincts to the west of the Byford Town Centre. The DSP proposes several neighbourhood connectors to extend north-south and east-west to link the Town Centre, neighbourhood centres or neighbourhood nodes.

Retail Floorspace

According to the DSP, the projected population of the LSP area generates a need for approximately 27,900m² net lettable area (NLA) of local/neighbourhood and district level shopping. The Byford Town Centre has been allocated 10,000-14,700m² NLA floorspace by the DSP, as highlighted in the table below.

TABLE 2 – RETAIL FLOORSPACE CALCULATIONS

RETAIL FLOORSPACE CALCULATIONS	
30,015 persons x 0.93m² NLA Distributed as:	
District Centre*	14,700m²
Neighbourhood Centre (5,000m² x2)	10,000m²
Neighbourhood Nodes (100m² - 200m² x16)	3,200m²
Total	27,900m²

** Reference to the retail demand analysis and its key findings to a range of floorspace be retained. Further the NLA range should be used for guidance purposes and not viewed as any form of cap.*

This shopping floorspace net lettable area figure for the Byford Town Centre is generally consistent with SPP 4.2, which identifies the Town Centre as having 15,000m² of net lettable area.

Employment

Employment areas are identified and distributed throughout the DSP area, particularly in mixed business land along South Western Highway and the railway, the Town Centre, the neighbourhood centres, and mixed-use areas around their respective "frames". Mixed-use development is proposed within and surrounding the Neighbourhood and District Centres and will promote the concept of "live-work"; to encourage a higher provision of local employment opportunities.

Town Centre Precinct

The DSP assumes the future extension of the electrified railway, with a station being located within the Town Centre, and highlights the opportunities it has for the introduction of a diversity of land uses within the Town Centre area. The Plan envisages an intense mix of retail, commercial and residential development in a transit orientated manner surrounding the train station.

An area of Mixed Business Development is proposed to the south east of the Town Centre, extending north and south of the proposed Orton Road, between the railway line and South Western Highway. This precinct will accommodate larger business types together with compatible service commercial and light industrial uses.

In recognition of the commercial potential of the western side of South Western Highway, the LSP proposes an area of Highway Commercial both north and south of the Town Centre. This area will be less intensive than the Town Centre, and will include showrooms, bulky goods, offices, medical centres and consulting rooms.

Public Open Space

The location of public open space in the DSP area has been determined in consideration of the following specific factors:

- Multiple-use corridors incorporating drainage.
- The protection of areas of notable remnant vegetation and wetland areas.
- The provision of passive and active spaces.
- Locating sufficiently sized active areas for organised sports.
- Achieving a geographic distribution to maintain acceptable walkable catchments for all residential areas.

The DSP proposes a 10 percent minimum provision of public open space and a partial credit towards open space for some areas identified for drainage.

Urban Stormwater

The DSP proposes the urbanisation of a large area of land, which will generally result in increased rates and volumes of stormwater runoff. The Byford Townsite Drainage and Water Management Plan has therefore divided the DSP into sub-catchments and made recommendations with respect to specific waterway widths and flood storage basins for each catchment.

The DSP recommends a generic width of 50 metres to either side of key drainage lines. As a result, these areas have been identified as multiple-use corridors. However, variations in the MUC width are allowed subject to further assessment of drainage needs.

4.2.3 LOCAL PLANNING POLICIES

Local Planning Policy No. 6 – Water Sensitive Design

This policy has been prepared in accordance with the Shire's TPS 2 and is intended to assist the Shire's consideration of LSPs and to guide Council advice to the Western Australian Planning Commission regarding the fulfilment of subdivision conditions.

The objectives of this policy are as follows:

- Assist in enhancing the beneficial uses of all watercourses and wetlands in the Shire.
- Ensure water sensitive design best management practices are implemented for all new proposals in the Shire.
- Improve water quality in the Shire and quality of water entering receiving water bodies.
- Develop a network of multiple-use corridors.

The policy identifies multiple-use corridors as important linear reserves which integrate the multiple purposes of water quality and management, nature conservation and ecological functions, as well as recreational and educational opportunities. They exist as major spines of stormwater management and wildlife corridor systems as well as provide a route for equine trails.

The LSP will be required to facilitate best practice water sensitive design through catchment based approaches to stormwater management, stormwater retention and water sensitive design management practices.

A Local Water Management Strategy (LWMS) has been prepared as part of the LSP in accordance with best practice water sensitive urban design.

Local Planning Policy No. 9 – Multiple Use Trails within the Shire of Serpentine Jarrahdale

The Shire has prepared this policy to assist developers and Council officers with the inclusion of trails within subdivisions and developments throughout the Shire. A major contributor to the growth of development within the Shire is the equine industry, with trails being identified as the single most important unifying element of the horse community. The Shire has a vision to provide a trail network that expands on existing trails, allows for the interlinking of suburbs and communities, and permits a range of user groups, including cyclists, pedestrians, horse riders and wheelchairs.

In summary, the Policy objectives are to:

- Guide recreational trail development activities within the Shire.
- Develop an integrated network, which generate symbolic and physical unity between rural towns.
- Focus on the development of strategic trail projects which to attract visitors to the Byford region.
- Provide guidelines on issues that need to be taken into consideration when assessing subdivision and rezoning proposals.
- Outline specifications for the construction of trails.
- Identify existing and potential trails within the Shire.
- Implement the Shires vision to provide a trail network which expands on the existing trails, and interlinks suburbs and communities.

The Policy has identified the route between the Byford Trotting Track complex and the Town Centre as an important trail route within the Shire as it provides a wide range of facilities, however is currently under-utilised, and has the potential for multiple equine uses. A strong focus should be given to the development and upgrading of trail linkages between this site and nearby subdivision estates, and ensure it addresses the above objectives, without compromising the amenity and useability of the existing and expanded Byford Town Centre area.

Local Planning Policy No. 19 – Byford Structure Plan Area Development Requirements

LPP 19 was prepared by the Shire to address several matters regarding the implementation and operation of the DSP.

More specifically, the objectives of the Policy are:

- To clearly define the permissibility of various land uses within the zones contained in the DSP and the Byford Townsite DAP.
- To identify the circumstances in which planning approval is required to be obtained for development within the policy area.
- To identify the relationship between this policy and:
  - Town Planning Scheme No. 2.
  - The Residential Design Codes of Western Australia.
  - Other policies lawfully adopted by the Council.

- To set guidelines for the net lettable retail floor area of land within the DSP area and the Byford by the Scarp residential estate designated Neighbourhood Centre and Neighbourhood Node.

LPP 19 has been adopted on an interim basis pending the consideration of an Amendment to the Shire's TPS 2. This matter is discussed in the following section.

4.2.4 BYFORD TOWNSITE DETAILED AREA PLAN

The Byford Townsite DAP was prepared to coordinate subdivision and development within an area of highly fragmented landownership to the east of the railway line. The DAP establishes guidelines for the subdivision of land, and guidelines for residential, commercial and light industrial development.

The key objectives of the guidelines are to:

- To minimise the impact of subdivision and development on the existing character, natural environment and amenity of the area.
- To, as much as possible, enable individuals to subdivide and develop their land consistent with the principles of the DSP, with minimum reliance on other landowners.
- To ensure the provision of adequate infrastructure to each created lot.
- To create a sustainable community.
- To create a community where people feel safe and engage with each other.
- For subdivision and development to improve the visual quality of the area through good design, and protect and enhance the natural environment (in accordance with the DSP and the Byford Urban Stormwater Management Strategy – recently replaced by the Byford Townsite Drainage and Water Management Plan).

The DAP has been considered in the drafting of the LSP as there is an area of overlap between the two planning frameworks (see Figure 6).

4.3 OTHER RELEVANT DOCUMENTS

4.3.1 SHIRE OF SERPENTINE-JARRAHDALE STRATEGIC COMMUNITY PLAN 2013 – 2022

The Shire of Serpentine-Jarrahdale Strategic Community Plan 2013-2022 has been developed in consultation with the community, Shire staff and Councillors, outlining key actions for implementation over the next decade, relating to governance, financial sustainability, built environment, local economy, natural environment and community wellbeing,

The various strategies and actions detailed within the Strategic Community Plan are considered to be generally in accordance with contemporary planning principles and practices. These matters will be reflected in the preparation of the LSP.

4.3.2 BYFORD COMMUNITY FACILITIES AND SERVICES PLAN TO 2010

The Byford Community Facilities and Services Plan to 2010 suggests that Byford residents have relatively high levels of dissatisfaction with community safety and policing services, outdoor recreation, arts and cultural facilities and parklands.

The community workshops indicated that there was an immediate need was for:

- A hydrotherapy pool and aquatic facilities.
- A high school and library adjacent to the recreation centre.
- Housing diversity.
- Kindergartens and childcare centres.
- More neighbourhood parklands.
- Youth job opportunities.
- An expanded and interconnected network of paths and cycle ways.
- A consolidation of sporting facilities.

Longer term demands included aged care, additional medical services, restaurants/cafes and an extension of the Armadale rail line. In addition, the literature review undertaken as part of the study identified the following needs:

- An upgrade of amenities and facilities at Brickwood Reserve/Briggs Park.
- An extension to the Serpentine Recreation Centre.
- Potential for Byford to act as tourism gateway for the Shire.
- Improved streetscapes.
- The establishment of produce markets and other events.
- A secondary high school.
- Industrial land for employment.
- Business start-up support.
- The re-invention of the Byford Hall and its uses.

As such, the Byford locality should have an emphasis on district level sport (indoor and outdoor), entertainment, professional services, health and medical services, shopping and tourism. These facilities should be co-located with the Town Centre, where possible.

4.3.3 GREEN TOWNS STUDY

The Green Towns Study continued the vision of the South East Corridor Structure Plan for compact and sustainable development based on the Urban Villages Concept. Significant work has been undertaken by the community, Council and consultants in the preparation of the Green Town Studies. This has formed the basis of the preparation of the DSP.

Many of the principles employed in the preparation of the Green Town Study are integral to the DSP and Byford Town Centre LSP. These design principles include:

- Environmental sustainability.
- Social sustainability.
- Landscape.
- Roads.
- Neighbourhood development.
- Town centre development.

The Byford Town Centre LSP reflects the DSP and assists in the implementation of the original green town vision of the South East Corridor while recognising recent planning provisions requiring more efficient and effective use of urban land as per *Directions 2031 and Beyond.*

4.3.4 BYFORD TOWNSITE DRAINAGE AND WATER MANAGEMENT PLAN

To successfully implement the intention of the Byford DSP, a technical investigation was prepared to determine how stormwater and shallow groundwater should be managed in the Byford region. The Byford Townsite Drainage and Water Management Plan was endorsed by the Department of Water in 2008 and is integral to the implementation of the DSP. The Strategy addresses stormwater management issues for the Byford area and provides a framework for more site specific water management plans. The Strategy sets out how water quality and quantity should be managed in accordance with water sensitive urban design principles.

Key findings of the Plan are detailed below:

- Groundwater is typically shallow across the site (between 0 and 6m in depth when measured during the project to develop the Strategy).
- There are approximately 100 private ground water bores within the study area, the majority of which target groundwater in sand lenses at the base of the Guildford Clay at 17.5 to 25m in depth.
- The Ridge Hill Colluvium is found to the east of the study area (e.g. east of the South Western Highway). The Guildford Clay inter-fingers with the Ridge Hill Colluvium and is found to the west of the study area. The Bassendean Sand overlies the Guildford Clay.
- Limited shallow groundwater quality monitoring indicated groundwater contained low levels of phosphorus and a very small proportion in a form that can easily move with groundwater.
- Soils on the site were found to have a highly variable capacity to retain phosphorus (i.e. to bind phosphorus and prevent it from being leached into ground and/or surface waters).

The Plan makes recommendations on the modifications that need to be made to the Byford DSP as a consequence of undertaking the investigation and also makes recommendations on how it should be implemented. These recommendations relate to:

- The width of waterways, taking into consideration the recreational, environmental and stormwater management values.
- Open space credits based on the modified alignment of the waterways and proposed detention basins.

- The need to widen Thomas Road, Orton Road and a section of the South Western Highway to accommodate swales and bio-retention systems within their road reserves.

A Local Water Management Strategy (LWMS) has been prepared as part of the Byford Town Centre LSP. The principles and approaches put forward in the Strategy will be implemented through the preparation of Urban Water Management Plans (UWMPs) at the subdivision and development stages.

4.4 KEY CONSIDERATIONS

As detailed above, there are many elements of the local statutory planning framework which have implications for the preparation of the Byford Town Centre LSP.

The Shire is currently undertaking a review of many of the statutory planning documents affecting the area to ensure a consistent approach and process. The intention of this review is to ensure effective implementation of the proposals of the Byford DSP.

Matters that require attention include:

- The extent of the Urban Development zone under TPS 2.
- Consistency between land use classification of the DSP and TPS 2 zonings and reserves.
- Land use and development control within the DSP area.
- The role and status of the Byford Townsite DAP and LPP 19 in the context of the DSP and TPS 2.
- Clarifying inconsistencies and relationships between the various planning tools.

As the Byford area is rapidly expanding, addressing these matters is a priority for the Shire in ensuring the efficient and effective implementation of the DSP.

The Byford Town Centre LSP is being prepared concurrently with this review and amendment process. The LSP will therefore need to respond to any changes proposed to the wider planning framework for Byford.

5 Site Analysis

This section describes the existing physical characteristics and conditions of the LSP area. Potential opportunities and constraints to future development of the Town Centre have been identified and form the basis for the determination of the preferred design and layout of land uses and the movement network of the LSP. These opportunities and constraints are visually represented in **Appendix A – Context Analysis** and **Appendix B – Design Considerations.**

5.1 ENVIRONMENTAL FEATURES AND CONSTRAINTS

5.1.1 TOPOGRAPHY AND LANDFORM

The topography of the LSP area is characterised by steep slopes in the foothills of the Darling Range which is located to the east of the Byford Town Centre. The elevation varies across the project area between 120m the east to 55m at South Western Highway. To the west of the highway the terrain is relatively flat and is seasonally inundated due to run-off from the escarpment.

While the majority of the landscape in the area can be described as rural, some individual natural features stand out as being worthy of protection and enhancement in the future planning of the area. These individual features include the foothills of the Darling Scarp to the east, and the creek valley running east to west almost through the centre of the LSP area as part of the Beenyup Brook flood plain. Aside from its environmental significance, the creek is a key feature of the area and, as such, is an important consideration in any future development.

Future planning should allow for the sensitive integration of significant features into the urban form as key character components.

5.1.2 GEOLOGY AND SOILS

The LSP area is located towards the eastern edge of the Perth coastal plain. The site is underlain by the Darling Fault which forms the eastern boundary of the rifted Perth basin. The fault separates the granites and gneiss of the Darling Plateau and the shales sandstones of the Perth Basin. These bedrock materials are in turn overlain by colluvial deposits and later marine and coastal sand dune deposits.

The geology and geomorphology of the area, consisting of hard bedrock overlain with poor draining soils, results in water logging within the low lying floodplain of the Beenyup Brook during major storm events. This impacts on a significant portion of land within the Town Centre expansion area on the western side of the railway line, requiring a holistic and integrated approach to urban stormwater management in the LSP area.

Earthworks consisting of sand fill will be needed for drainage purposes to lift low lying land to the required 1.1m above the Average Annual Maximum Groundwater Level (AAMGL) and 100 year flood level as determined by the 2003 Byford Urban Stormwater Management Strategy, the 2005 Developer Guidelines by Parsons Brinkerhoff, and the Byford Subdivision Design Guidance document 2007 of the Shire of Serpentine Jarrahdale. Specific fill requirements will need to be identified within UWMPs prepared at the subsequent subdivision and development stages.

A Local Water Management Strategy (LWMS) has been prepared for the LSP area and is included in **Appendix D**.

5.1.3 WETLANDS

Two resource enhancement classified wetlands are located within the LSP area on land in private ownership. The first wetland is located adjacent to the rail reserve and north of Abernethy Road. The second is located to the South of Abernethy Road adjacent to the future high school site. Development in proximity to the wetlands will be required to respond to the buffer, environmental management and other associated requirements of the Department of Environment and Conservation.

5.1.4 VEGETATION

Due to the historic rural use of the land and more recently due to the progress of urban development, there is little remnant vegetation within the LPS area. Accordingly, any remaining significant and mature stands are of particular environmental and social significance.

The area contains remnants of what would have been substantial vegetation. Some of the more botanically significant areas, although limited and isolated in nature could, in many instances, be readily incorporated into the public ream design of the Town Centre, and more particularly, the development of the open space network. Given that farming practices in the area have removed much of the riparian vegetation around Beenyup Brook, what remains warrants special attention and protection. Other strands of mature vegetation that may have conservation values exists within the rail reserve.

There are opportunities to retain significant vegetation along the Beenyup Brook multiple-use corridor, and along the rail reserve. The ability to retain trees in other areas may be constrained by fill requirements, which will need to be identified in UWMPs at the subsequent subdivision stage.

No parts of the study area are covered under Bush Forever provisions, or contain Threatened and Endangered Communities or Declared Rare Flora.

5.1.5 ACID SULPHATE SOILS

The Western Australian Planning Commission's Planning Bulletin No.64 – Acid Sulphate Soils indicates that the potential for the acid sulphate soils occurring within 3m of the natural surface across the Byford Town Centre is of moderate to low risk in the west of the project area and low to no risk in the eastern portion of the study area.

The soils within the Byford LWMS area to the west of the South Western Highway have a moderate to low risk of actual acid sulphate soils or potential acid sulphate soils occurring generally at greater than a three (3) metre depth. No risk to the east of South Western Highway is identified.

5.1.6 SURFACE WATER

The Byford area is known to experience regular water logging in the low-lying areas to the west of the LWMS study area. This inundation is due to a combination of persistent winter rainfall elevating the shallow water table, which rises to the surface and inundates vast areas of the flat terrain, as well as poor drainage with insufficient capacity that does not allow runoff to leave the area. There is also potential for wetlands within the study area to receive additional flood water from outside their natural catchment by overtopping of drains and watercourses.

There are several local depressions east and west of the South Western Highway, which result in local perching of surface water after a large rainfall event. There are also two natural streams which pass directly through the study area.

5.1.7 VIEW CORRIDORS

The steep slopes in the foothills of the Darling Scarp and low lying areas to the west of the South Western Highway provide important view sheds. Significant views east to the Darling Scarp can be seen from the Byford Town Centre. These view corridors have particular cultural significance to the Shire and the local community, and contribute to the rural and bushland setting.

5.2 HERITAGE SITES

Indigenous Heritage Sites

There are no existing registered Aboriginal Heritage Sites in the LSP area, however due to the existence of natural creek areas, there is the possibility that these areas may be of significance to Aboriginal people.

The discovery of any artefacts at later development stages will need to comply with the requirements of the Aboriginal Heritage Act (1972), which details specific responsibilities related to the management and protection of heritage sites.

European Heritage Sites

Heritage in Western Australia is protected under the Heritage of Western Australia Act (1990), administered by the Heritage Council of Western Australia. The Heritage Council maintains the State Register of Heritage Places, an extensive list of places which should be conserved for future generations.

A search of the State Register of Heritage Places was undertaken for study area. The Byford Hall was identified on the State register (Place 13058), and is located within a Public Purpose reserve on South Western highway. Other State heritage listed places in the vicinity of the study area but not within its boundaries include the Byford Uniting Presbyterian Church on Clifton Street and the Byford War Memorial on South Western Highway.

5.3 BUILT ENVIRONMENT

The Byford Town Centre is currently the largest centre in the Shire but its capacity to serve the existing population is limited. This will be exacerbated by future growth of the Shire. The full development of the DSP area will result in a population of around 38,000 people; placing increased demands on the Town Centre.

The existing Town Centre structure reflects the rural base of the Shire, and in particular the settlement patterns which have historically accommodated a small population at relatively low densities. The linear pattern of retail and commercial development along South Western Highway reflects the history and evolution of development being a market response to the relatively high visibility and access afforded by the highway.

The Town Centre is currently confined to the two blocks north of Abernethy Road between the South Western Highway and the railway line. Within this area, retail and commercial activities have developed with varying setback distances, and incorporate off-street car parking areas. There are currently limited residential uses within the Town Centre.

5.3.1 BUILT FORM

The built form in Byford is characterised by the predominant suburban scale and form of the existing township development east of the railway line and low-rise functional structures in the Town Centre. Housing and other developments are uniformly set back from the property boundary with varying patterns of native and other landscape treatments.

Recent development along George Street and South Western Highway reflects the Council's desire to create a traditional main street environment, with zero setbacks, buildings addressing the street, wide footpaths and verandas.

5.3.2 OTHER CENTRES

Other centres within the Shire include the Mundijong Town Centre and a number of other local centres including Jarrahdale, Serpentine and Oakford. The Armadale Strategic Regional Centre provides the high order retail and community service functions. Given that it is some 9 km from Byford, there is an identified need to expand the Byford Town Centre in order to increase its retail and commercial offer.

5.3.3 SURROUNDING RESIDENTIAL LAND USE

Byford has evolved to the point where a particular sense of place exists within the centre and broader township. The established residential areas east of the highway reflect a "Garden City" character with circular road layouts with diagonal axial connections and a central parkland/recreation space. New residential suburbs are being developed close to the historic township, and are clearly separated by

open space corridors. This pattern of development contributes to Byford's rural setting and sense of place.

5.3.4 SCHOOLS

Three primary schools are within the vicinity of the Town Centre, two of which are public schools. These are located on the corner of Larson Road and Alexander Street and on Clifton Street. The private primary school is located on the corner of Soldiers Road and Mead Street. One primary school is proposed outside the LSP area to the east and south of Nettleton Road.

One public high school is proposed on the northern side of Abernethy Road immediately south of the Town Centre, and within walking distance of the railway station.

The schools, recreation areas and public open space reserves in the vicinity of the Town Centre are key activity nodes that require connectivity to the Town Centre. Opportunities to provide connectivity via dual use paths within a district open space network or adjacent to key road linkages are identified.

5.3.5 EQUESTRIAN PRECINCT

The Byford Trotting Complex is to the west of the study area and is surrounded by land zoned Special Rural, for the keeping of horses.

Providing connections to the existing bridle path network within the area is an important consideration identified by the community, and will need consideration in the development of an open space network for the area.

5.4 DEVELOPMENT PROPOSALS

The following is a brief description of proposals for development within or adjacent to the LSP area that have been formally been submitted to the Shire:

Lot 22 (867) South Western Highway

A development application for the redevelopment and expansion of the Byford Village Shopping Centre on Lot 22 (867) South Western Highway has been approved by the Shire. The proposal seeks to expand the existing IGA development from less than 300m² of net lettable retail floorspace to over 1,400m². Parking provision and management along George Street, built form interface to the street and pedestrian access are key elements for the proposal to address. A building licence has been issued and construction has commenced.

131 Abernethy Road

The Glades is a 460 hectare new master planned community which proposes 3,500 home sites to the south west of the Byford Town Centre, along Abernethy Road. The Glades proposes to provide several facilities including a primary school, high school, village centre, community/recreation centre and a shopping centre. A draft LSP for the area is being progressed through the statutory process and subdivision and development works are being rolled out in stages.

Lot 2 Nettleton Road

A LSP is being progressed for this area to the south-east of the Byford Town Centre LSP area. The proposal includes a retirement village, lifestyle village, a central multiple use corridor and limited commercial development.

Lot 15 Abernethy Road

A Shopping Centre development has been proposed for this site including a supermarket (possibly discount department store), speciality shops, a community forum and significant car parking areas fronting Abernethy Road. This site is impacted by a Resource Enhancement wetland, which will require management and buffer investigations to be undertaken prior to development of the site.

Lot 101 Beenyup Road

A development application for a fast food outlet and commercial building on Lot 101 Beenyup Road was refused by the Shire, however the applicant has appealed this decision and is now is currently going through a mediation process with the Shire at the State Administrative Tribunal. Both the applicant and the Shire are working towards a revised concept which demonstrates consideration of the fundamental design, configuration, scale and street activation principles that the Shire is seeking to achieve in the Byford Town Centre.

Other

Several development applications have been received by the Shire for showroom development along South Western Highway.

5.5 MOVEMENT NETWORK

5.5.1 RAILWAY LINE

The Perth to Bunbury regional rail service extends north-south between George Street and Alexander Street, west of South Western Highway. The railway line creates a physical barrier between the existing commercial development on the Highway and the Town Centre expansion area to the west of the railway line. This situation is exacerbated by the limited number of rail crossings within the centre, which are currently located at Abernethy Road and some distance north at Larsen Road. Addressing the physical and visual connections between the two areas is an important issue for the LSP to address in order for the Town Centre to function effectively.

The existing Byford rail station for the Perth to Bunbury service is located south of the existing Town Centre in the vicinity of Mead Street. The station is dislocated from the Town Centre and presents a significant constraint to the achievement of transit oriented development within the centre, in particular if the metropolitan rail network is extended to Byford and additional passenger services introduced. The identification of a suitable site for the potential relocation of the rail station has been undertaken as part of the structure planning process. Relocation needs to consider interim land uses as well as possible land take to accommodate station infrastructure and park and ride requirements.

5.5.2 ROADS

South Western Highway

South Western Highway is a Primary Distributor under the control of Main Roads. The road is a dual carriageway with two lanes in each direction with a posted speed of 60km/h. The median south of Abernethy Road is landscaped, preventing right hand movements. There is a footpath on the west side of South Western Highway south of Abernethy Road and on both sides through the town site north of Abernethy Road.

Beenyup Road/Abernethy Road currently forms a four-way intersection with South Western Highway. Both have a right turn pocket on South Western Highway. The width of the road is considered substandard for a crossing vehicle or vehicle turning right from the side road. There are commercial premises on the northwest, southwest and northeast corners, which generate regular traffic activity. Based on the nature of and current/proposed activity at this intersection, traffic signals have recently been established.

In 2007, the section of South Western Highway south of Thomas Road recorded an average weekday traffic volume of 20,400 vehicles per day and 1515 vehicles per hour in a peak hour period (3-4pm). The section of South Western Highway south of Abernethy Road recorded 12,850 vehicles per day and 980 vehicles per hour in a peak hour period (4-5pm) in the previous year (2006).

Abernethy Road

Abernethy Road is an arterial road that connects the South Western Highway in the east to Thomas Road in the west (via Nicholson Road). Abernethy Road is not classified under the MRS but is classified as a Local Distributor under the Functional Road Hierarchy. Abernethy Road leads straight into the centre of the Byford town site, and is an important local link. It provides an at grade crossing of the railway line and is the only existing crossing within the study area.

In 2007, the section of Abernethy Road where it meets at the rail crossing recorded an average weekday traffic volume of 4,500 vehicles per day and 418 vehicles per hour in a peak hour period (4-5pm). This number is expected to significantly increase in response to new residential developments to the west.

Abernethy Road currently has a 20m road reserve including a 6m wide pavement in average condition. A footpath currently exists along the south side between Soldiers Road and Thatcher Road and on the north side between Soldiers Road and South Western Highway. The DSP identifies a 40 metre wide road reserve for Abernethy Road to accommodate drainage. Connell Wagner have completed a design for Abernethy Road up to the point where it enters the study area. The road is proposed as a dual-carriageway with one carriageway designed so that the road surface becomes part of the stormwater catchment drain.

The ability for Abernethy Road to perform the role and function of a main street is limited based on significant road reserve requirements, impacting on the ability to deliver a fine grained and intimate street environment. The 40 metre reserve width compromises safe pedestrian access to both sides of Abernethy Road, and impacts on good integration between these areas.

Investigations into the future of Abernethy Road are continuing and will lead to detailed designs for the upgrade.

Tonkin Highway

While not within the study area, the proposed Tonkin Highway extension will result in a significant reduction in through and heavy vehicle traffic on South Western Highway, allowing for the road to be downgraded. Main Roads have prepared an indicative carriageway design for the ultimate development scenario, which will result in the reduction of the road carriageway from its current two lanes in each direction to a single lane in each direction from Nettleton Road to Clara Street. This will allow for the streetscape improvements and the widening of footpaths to improve amenity and safety for pedestrians.

Investigations into the future of Tonkin Highway and South Western Highway are continuing.

Pitman Way

Pitman Way is located on the west side of South Western Highway and intersects with the Highway. The intersection has recently been upgraded to include a right turn pocket on South Western Highway. Pitman Way links South Western Highway to George Street and is approximately 50m long. Two 3.7m lanes are provided with parking embayment on each side.

George Street

This road runs parallel to the rail line and connects with Abernethy Road to the south. It is sealed between Pitman Way and Abernethy Road, then unsealed for approximately 470m to the north; the road connects to Thomas Road to the north. The intersection with Abernethy Road is located approximately 60m from the Abernethy Road/South Western Highway intersection.

There is a footpath on the east side between South Western Highway and Pitman Way. The rail reserve to the west side of George Street is currently used for informal parking associated with the commercial area.

George Street has provided the opportunity to establish a western development frontage for the existing Town Centre. The redevelopment of a shopping centre at the southern end of George Street has

capitalised on this opportunity; providing shop fronts to George Street, Abernethy Road to the south and South Western Highway.

Beenyup Road

Beenyup Road is a Local Distributor Road and is under the control of the Shire of Serpentine Jarrahdale. The road is approximately 7.3m wide and has a footpath on the north side between South Western Highway and Bradshaw Road.

Mead Street

Mead Street is currently a predominantly residential street, 6m wide; east-west orientated and has a footpath on the south side. The road intersects with Soldiers Road to the east while to the west provides access to the Recreation Centre and parking. It is proposed to be extended west to major residential development south of Abernethy Road.

Soldiers Road

This is a residential street, 6 metres wide; north-south oriented and has a footpath on the west side. The road runs parallel with the rail line to the west of South Western Highway and intersects with Abernethy Road at its northern end and links to Cardup Siding Road to the south.

The road is classified as a District Distributor ~~A~~ **B** in the Main Roads Perth Metropolitan Area Functional Road Hierarchy and connects Byford to the Mundijong Town Centre.

Minor Roads

The following minor roads within the LSP area are described in the table below:

TABLE 3 – MINOR ROADS

ROAD	DESCRIPTION
Clifton Street	This is a residential street; 6 metres wide east-west oriented and has a footpath on the north side between South Western Highway and Amy Street. The road intersects with South Western Highway and is left in/out only.
Blytheswood Avenue	This is a residential street, 6 metres wide; northeast-southwest oriented and has a footpath on the east side. The road intersects with South Western Highway which has a right turn pocket.
Clara Street	This is a residential street, 6 metres wide; east-west oriented and has a footpath on the north side. The road intersects with South Western Highway which has a right turn pocket.
Jessie Street	This is a residential street, 6 metres wide; east-west oriented and has a footpath on the north side.

5.5.3 PUBLIC TRANSPORT

Three Transperth bus services currently operate between Armadale Train Station and the Byford townsite and beyond. Route 251 terminates at Soldiers Road and Bateman Street, Byford. Route 252 terminates in Mundijong. Route 253 terminates in Jarrahdale. The DSP proposes two new bus routes to service new residential areas to the south and the north of the Town Centre. It is intended that these services converge at a transit hub in the Town Centre.

5.5.4 PEDESTRIANS AND CYCLISTS

The climate and generally flat terrain off the study area is conducive to cycling and walking.

In terms of the relationship between the Town Centre and the existing residential areas, access is somewhat constrained by the railway line and the Highway. Much of the existing residential

development within the township is relatively close to the Town Centre and accessible by foot however, the newer suburban developments to the north are beyond the walkable pedestrian catchment of the Town Centre.

Key pedestrian destinations in the vicinity include the primary schools, future high school, and the recreation areas of Briggs Park and Brickwood reserve. The future public transport hub will also be a key destination and increase pedestrian activity within the Centre.

5.6 SERVICES

A Servicing Report has been prepared as part of the development of the LSP. Below is a summary of the existing condition and extent of infrastructure in the study area.

5.6.1 POWER

An existing High Voltage line runs underground in the eastern verge of George Road, crossing Abernethy Road and South Western Highway and continuing on in the eastern verge of South Western Highway.

There are no existing overhead transmission lines in the road reserves of the subject study area. Overhead distribution lines provide connections for the existing properties within the study area are contained in the road reserves and are not crossing private land.

5.6.2 WATER

The existing built up sections of the study area are well connected to the existing potable water reticulation network. A 205 cast iron (CI) main in the eastern verge of the South Western Highway north of Abernethy/ Beenyup Road operates as a distribution main and has connections to a number of DN 100 and DN 150 reticulation mains that serve the existing residential area to the east of the Highway. The main also provides connections to the properties adjoining South Western Highway immediately to the west.

A 150 mm nominal diameter cast iron main in the northern verge of Abernethy Road connects to the DN 205 CI main at the Abernethy Road/South Western Highway intersection. The existing DN 100 CI reticulation main provides connections for the properties abutting Soldiers Road to the west.

There are no existing water mains in the part of the study area west of the railway reserve and north of Abernethy Road. All existing water mains are located on standard alignment in the verges of existing road reserves, 2.1 m from the respective lot boundaries.

5.6.3 DRAINAGE

With the general nature of the soils in the area being clayey and high groundwater levels, stormwater infiltration on the site is problematic. Localised ponding and flooding, even during minor and medium storm events, indicate that current drainage structures are insufficient. The network is poorly documented, and it has been assumed that some underground springs occur within the area. Major drainage corridors include the Beenyup Drain and Oakford Drain.

A detailed investigation into the capacity of the existing drains is required to determine drainage requirements. This has been addressed as part of a Local Water Management Strategy (**See Appendix D).**

5.6.4 WASTEWATER

The portion of the study area east of the railway reserve and north of Beenyup Road is connected to the Water Corporation gravity sewer network. Existing DN 150 mains in the verges of the existing residential area discharge into a DN 225 sewer main in the eastern verge of South Western Highway that conveys sewerage to collection centres located north of the Byford Town Centre.

A further DN 225 main runs in the verges of George Street and Soldiers Road north and south of Abernethy Road and provides sewer connection to the adjoining properties. The majority of the existing sewer gravity mains are contained in the road reserves of existing roads. The main in Soldiers Road cuts through lot 21 at the Soldiers Road – Abernethy Road intersection.

5.6.5 TELEPHONE

Telstra has existing main cables running along the verges of all existing and constructed road reserves within the Byford Town Centre. There are no foreseen problems with Telstra connections due to the availability of surrounding infrastructure.

5.6.6 GAS

There are existing medium pressure gas mains of various diameters in the existing road reserves east of the South Western Highway. A DN 150 high pressure gas main runs adjacent to the railway line. Due to the proximity of existing gas services no issues in regards to any new connections of lots within the subject site to the WestNet Energy gas network are anticipated.

5.7 SUMMARY OF KEY CONSIDERATIONS

The following key issues and constraints have defined the LSP area and design response:

- The low lying land, subject to periodic flooding around the Beenyup Brook is a constraint to future development that will need to be managed.
- The existing railway line presents a significant barrier between the existing Town Centre and Town Centre expansion area that will need to be addressed in the planning for the movement network.
- There are limited redevelopment and infill opportunities within the existing rural-residential area to the west of the study area, in the vicinity of the Trotting Complex.
- A street network that considers the vistas to the escarpment and the prevailing easterly winds that are dry and hot in summer, results in a grid pattern with the preferred orientation for a main street to be north-south.
- The assessment of future floorspace requirements has found that significant additional retail, commercial and other floorspace will be required in the Byford Town Centre. The projected demands combined with future government public transport investment provides an opportunity to refocus the Town Centre along the lines of transit oriented development.
- Future expansion of the Town Centre on the western side of the railway line will need to consider the implications for the existing Town Centre development. Providing visual and physical connections and consideration of a sympathetic built form interface will be important.

6 The Local Structure Plan

Section 4 of the report describes the existing features and characteristics of the study area compiled from environmental and engineering investigations, as well as information sources which are presently available. The DSP broadly identifies the area for the Town Centre. Detailed opportunities and constraints investigations have further refined this area, and the LSP area extends beyond the area identified in the DSP.

This section of the report describes the LSP prepared in response to the agreed strategic objectives, site context and constraints.

This section of the Justification Report should be read in conjunction with the Byford Town Centre Concept Plan.

6.1 DESIGN INTENT

Based on Council's objectives and the input of the various stakeholders during the consultation process the following Design Statement and Principles were developed to guide the development of the LSP.

Design Statement

> ***The Byford Town Centre is a mixed use destination comprising retail services, public spaces, community and educational facilities, commercial activity, residences and recreational amenities and tourist facilities - all integrated into a compact, diverse, interesting and dynamic place, reflective of the areas rural and cultural values.***

The approach taken in the LSP is based on an agreed planning objective that future urban development should be sympathetic to the local environmental and cultural features of the area and at the same time strive to be socially and economically sustainable.

The LSP builds on the existing rural character of Byford, while allowing the development of a level of urbanity within the Town Centre which is sensitive to the rural context.

The form of the Town Centre is a combination of a traditional town Main Street overlayed with a contemporary mix and configuration of uses. The LSP applies the design and spatial layout principles consistent with transit oriented development, consolidating higher residential density and a mix of uses within the walkable catchment of the future rail station and transit interchange.

Through the location of appropriate land uses, active street frontages are created along the identified Main Street and principal streets leading to the future transit hub. Presence of residential uses within the Town Centre is critical to its activation and safety.

Multiple-use corridors are defined on the plan based upon the principles of wetland and vegetation protection, recreation function, water conveyance, and amenity. These corridors are to perform an active and passive recreation function while simultaneously managing urban stormwater flows, improving water quality, ecological health and habitat value. Inclusion of these elements provides future urban areas with a sense of place. The corridors provide the amenity to support pockets of higher density residential development on the periphery of the Town Centre.

In addition to these principles, it has been necessary to appropriately site the corridors to accommodate integrated growth of the Town Centre. The design proposed is considered to respond to site specific context and the need for a functional Town Centre, whilst meeting the environmental, drainage and recreation principles described above.

6.2 GUIDING PRINCIPLES

Development within the LSP area is guided by the following principles:

- **A Vibrant and Integrated District Centre**
  - A vibrant Town Centre containing a mix of retail, commercial, civic, recreation, residential uses consistent with its role as a District Centre.
  - The existing and expansion areas of the Town Centre are seamlessly integrated and connected, and demonstrate historical and contemporary reflections of the local rural character.
  - The location of major store anchors, high quality shopfront environments and car parking areas contribute to an active main street environment.
- **Identifiable Character and Distinct Sense of Place**
  - Natural, cultural and heritage features, landmarks and public art within the public realm, contribute to sense of place.
  - A network of public space and open space corridors contribute to the rural and bushland feel of the area.
- **A Safe Pedestrian and Transit Oriented Place**
  - There are many streets and pedestrian routes leading to a transit hub.
  - Open space areas are provided with passive surveillance.
  - The street network and urban environment provides high levels of connectivity and legibility.
- **A Place that Capitalises on its Environmental Assets**
  - Existing natural assets such as mature and remnant vegetation and streams are central to public realm theming.
  - The main street environment is sheltered from strong easterly winds.
  - Existing views and vistas to and from the centre are maintained.
- **A Water Integrated Place**

Living streams and swales are a feature of the Town Centre and contribute to sense of place as well as perform a drainage, bio-retention and recreation role.

6.3 LAND USE

The LSP area is to contain a mix of uses with a priority for retail and shopfront development along the main streets within the core of the Town Centre area, with mixed-use and residential areas located to the periphery. Multiple-use corridors are used as a transition between the urban edge of the Town Centre and adjacent residential areas

The major land uses proposed in the LSP area include:

- Town Centre (Retail Core).
- Town Centre (Mixed Use).
- Residential.
- Highway Commercial.
- Commercial.
- Wetlands.
- Public Open Space.

Public and Community Purposes.

TABLE 4 – LAND USE TABLE

LAND USE	AREA (HA)
Town Centre (retail core)	8.42
Town Centre (mixed use)	4.67
Commercial	1.44
Highway Commercial	1.55
Residential R60	9.40
Residential R30	7.69
Residential R25	2.44
Residential R15	1.35
Public and Community Purposes	13.46
Public Open Space	6.78
Resource Enhancement Wetland	0.68
Rail Reserve	5.40
Roads	15.25
TOTAL	**78.53**

6.3.1 TOWN CENTRE (RETAIL CORE AND MIXED USE)

The Town Centre classification of the LSP will incorporate a mixture of uses including:

- Retail shops.
- Restaurants and cafes
- Leisure and entertainment.
- Commercial offices.
- Civic and community uses, including a Town Square.
- Child care facilities.
- Consulting rooms and medical suites.
- Residential development.
- Open space.

Residential Development

The diversity and integration of residential accommodation is to be encouraged throughout the Town Centre. In seeking to maximise the potential for a high density of residential development in the Town Centre, and hence establish a strong case for the extension of electrified passenger rail to Byford, there is no residential density limit in the Town Centre classified land. Medium to high densities are also sought to facilitate after hours activation and to assist in creating a catchment population for the Town Centre.

The absence of a density limit does not necessarily mean there is no limit on building height or scale. These matters remain subject to control through TPS 2, the R-Codes and the Byford Town Centre Design Guidelines.

It is considered essential that the ultimate development capacity is not compromised by under-development in the initial stages. Should an application for subdivision or development be submitted which proposes a low density of residential development, the applicant will be required to demonstrate that the form and function of the development will allow for a medium to high residential density to be achieved in the future.

In order to promote mixed use outcomes, medium to high densities can be accommodated within the Town Centre provided they are associated with a mixed use development which includes ground floor commercial, including retail, with active frontages. Although the ideal scenario would result in all streets having active frontages, it is acknowledged that this is unlikely to occur in the initial development of the site. Both the LSP and the associated Design Guidelines indicate where active frontages are mandatory and preferred.

It is expected that one third of the Town Centre Retail Core and 75 percent of the Town Centre Mixed Use Classification will include a residential component to meet the level of activity required to support the Town Centre.

The Town Centre classification of the LSP is divided into two categories; Retail Core and Mixed-Use.

Town Centre (Retail Core)

The Retail Core area will be the priority area for retail and commercial development. Complimentary residential development, in the form of mixed-use development, is encouraged to assist with surveillance and after-hours activation.

Town Centre (Mixed Use)

The Mixed-Use portion of the Town Centre is located at the periphery of the Retail Core, where development will be focussed on the provision of a mix of residential and commercial development in an integrated manner. This area will have less of a focus on pure retail development to avoid detraction from the consolidated Town Centre core, as recommended by the retail demand analysis. Residential development may be considered where a future mixed-use capacity can be demonstrated.

Main Street

The LSP adopts the principles of main street design for the Town Centre expansion area. South Western Highway has facilitated the initial growth and development of the Byford Town Centre. However, the scale of future Town Centre development needs to be provided within a compact framework focused on high quality public transport (such as a new railway station or bus port). The extrapolation of the current pattern along the South Western Highway would compromise the highway function and would not achieve an amenable shopping environment or a safe and attractive pedestrian environment.

The preferred location of main streets is usually perpendicular to a major arterial, with a significant anchor at either end of the street. The central north-south road has been identified as the priority for main street development. This orientation captures cooling south westerly breezes and provides shelter

from the prevailing dry, hot easterly winds. The main east-west road also performs a main street function and a direct connection to the proposed railway station.

“Big box” development and internally focused shopping centres are not a preferred design outcome for the Town Centre. Developments requiring large floor plates such as supermarkets are to be configured such that they are consistent with achieving a vibrant and active street frontage. This can be achieved through sleeved commercial development fronting the street with numerous entry points from the street.

Detailed development requirements are provided in the Byford Town Centre Design Guidelines.

Priority Frontages for Activated and Sleeved Development

Priority frontages for activated development are identified in the Byford Town Centre Concept Plan along the north-south and east-west main street areas, including the George Street commercial area. These frontages are to be activated by entrances and ground floor commercial development fronting the street. The Byford Town Centre Design Guidelines LPP 31 provides additional guidance in relation to this form of development.

Town Centre Design Principles

The design of the Town Centre precinct will be in accordance with the following principles:

- A Town Square is located at the intersection of the Main Street and east-west link from the Train Station;
- Logical and efficient street network and priority is given to maximising pedestrian access and circulation throughout the area;
- The preferred location for retail premises (including large scale retail) is along the north-south Main Street and fronting the Town Square;
- Built form and function to support the creation of a sense of place, vibrancy and identity for the town centre.
- Development addresses the street and is adjacent to public open space areas to create an “urban edge”;
- Parking is provided in an efficient manner, with an emphasis on shared parking arrangements. Parking areas are located behind buildings away from street view, or where this is not possible are adequately screened from public view. It is acknowledged that there is a need for a certain level of parking, therefore the emphasis is on the location and impact;
- Main Street is a slow traffic environment and contributes to an active and attractive streetscape;
- Building design contributes to the creation of a safe public environment by avoiding dead-end spaces and all public areas are subject to casual surveillance from surrounding properties;
- Commercial uses are orientated to the street to encourage active street frontages. Buildings must be designed with an adaptable ground floor to allow maximum flexibility in accommodating different (including non–residential) uses in the future;
- Urban markers that have a distinctive presence are at the ends of the Main Street and at the future train station. There is an entry statement or feature at the approach of the Town Centre on Abernethy Road;
- The intersection of roads/lanes/pedestrian access ways play a special role in defining the quality of the adjoining public space and provide landmarks which assist people’s understanding of the local environment; and
- Restaurant, retail and café uses provide active ground level frontage and lend the private and public spaces within the Town Centre.

Lot Layout

The proposed Town Centre development sites are robust and have been tested to accommodate internal parking, sleeved development and large floor plate development such as supermarkets, as demonstrated through the Byford Town Centre Concept Plan.

Defining Retail Elements

The Town Centre will be the primary focus of commercial/retail development. It is therefore important to consider the amount and configuration of development which should be housed within the Town Centre, having regard to State Policy, Shire objectives and detailed investigations.

There are limited opportunities for substantial redevelopment within the existing commercial area along South Western Highway, thus any significant increases in retail floor space, required to meet the demands of the growing community will be provided in the Town Centre expansion area on the western side of the railway line.

The Byford Town Centre is identified as a district centre in the Byford LSP. Shopping floor space requirements to be in accordance with SPP 4.2. The extent of retail development and provision of higher level services should not undermine the role of the Armadale Strategic Regional Centre as the major activity centre in the region.

More recently released and set to supersede SPP 4.2, draft SPP – Activity Centres for Perth and Peel provides less of an emphasis on floor space limits, and promotes a focus on design outcomes and responding to the site specific and surrounding context. The draft Policy seeks an economic impact assessment to identify floorspace requirements and a centre plan to reflect the findings of the assessment as well as address design matters.

In light of the more recent State Policy position, the Shire has progressed an economic impact assessment in the form of a retail demand analysis (attached at **Appendix G**). The analysis was required to take into consideration the Shire's objectives for the Town Centre, which include:

- The establishment of a traditional main street centre based around the future railway station;
- Ensuring that the Town Centre did not detract from the smaller centres proposed for Byford; and
- Ensuring that the Town Centre did not detract from the proposed expansions to the Mundijong Town Centre.

Based on detailed retail demand modelling, key findings and recommendations of the analysis are summarised below:

- Given projected growth in adjacent centres, the Byford District Centre will support between 8,962 and 15,538m² NLA of retail floorspace in 2031.
- Staging of development within the Town Centre will however be important for the long-term viability of the centre – it is not considered appropriate that this amount of development be provided in the short-term.
- To ensure effective spatial activation, a majority of the retail offer of the Town Centre, along with community, residential, office land uses, should be focussed upon a defined core in proximity to the proposed train station.
- The provision of convenience retail within this core is particularly important given the high frequency of transactions that such uses generate.
- Park and ride facilities for the railway station should not be located immediately adjacent to or adjoining the station. Adequate separation should be provided to facilitate additional pedestrian traffic flow and funnelling through the Town Centre.

The LSP generally reflects these recommendations of the retail analysis. To monitor the provision of retail NLA, the Shire is seeking to establish and maintain a database of retail NLA and other floorspace within the LSP area.

Based on the findings of the retail analysis, the Shire's objectives for the Byford Town Centre and the provisions of State Policy, it has been determined that the retail floorspace allocation can accommodate the following:

- Two full line supermarkets;
- One limited line supermarket;
- Smaller specialty comparison retail stores;
- Smaller daily service convenience stores; and
- Home based businesses and drive through outlets to be located on the periphery of the Town Centre and along South Western Highway. Where home based businesses can be supported in the town centre development area, then this should be encouraged.

The above recommended retail facilities are believed to be adequate for the needs of Byford and are likely to result in an economically and socially viable Town Centre designed in a traditional main street manner, without detracting disproportionately from surrounding centres.

Town Square

Community visioning undertaken as part of the structure planning process identified the aspiration for a civic place within the Town Centre for the purpose of holding community events, markets or for more casual social gatherings. The Town Square within the Byford Town Centre will become the hub of the community, with numerous groups taking advantage of the open space to hold events. Adjacent commercial and mixed use residential development will benefit from the increased passing trade and vibrancy that these types of civic places create.

Priority is for the establishment of the Main Street, and associated retail development (including cafés), with other commercial development and services determined by population growth/ demand, competition and demographics. This means that uses currently in demand and those planned are focussed around the Town Square and Main Street to create an intensity of use and Town Centre presence. This will enable the Main Street to become the central node of development and the spine from which all other activities link into.

The siting and design of the Town Square will be in accordance with the following principles:

- The Town Square is situated at an important Town Centre corner of the north-south Main Street and the east-west linkage to the future Train Station. This location is easily accessible from both the transit hub and the existing Town Centre area.
- The Town Square is oriented towards the north to benefit climatic conditions (solar access). This encourages the usability of the square, in particular for al fresco dining. It is located on the east side, so developments around it can offer protection from easterly winds.
- The location is central to major pedestrian linkages, ie, recreation centre and high school to the south, residential to the east and the pedestrian/cycle link to the northern residential and primary school.
- The Town Square is a central space with a high level of finishes and facilities, high levels of lighting and good street surveillance.
- The minimum dimensions of the town square should be 25m by 30m.

6.3.2 RESIDENTIAL

The LSP acknowledges opportunities for the Town Centre Precinct and adjacent Residential Precincts to accommodate increased heights and densities in close proximity to the rail station to maximise the use of the public transport system and encourage walkability.

Medium Density

Medium density residential development ranging from R30 to R60 is located on the periphery of the Town Centre. These areas are located so that Multiple-use corridors provide a transition between the intensified Town Centre development. The corridors provide the amenity to support pockets of medium density residential development, while the development itself should be designed such that it provides passive surveillance to the Multiple-use corridor or Public Open Space area. The medium density area is proposed to compromise a mix of single, grouped and multiple dwellings as well as providing the opportunity for independent living and supported aged care accommodation. The density proposed is suitable within a 400-800m catchment of a Town Centre.

Existing Byford Townsite

Opportunities for increased residential densities to the eastern side of South Western Highway are provided by the Byford Townsite DAP. Any proposed increases in density in this area will need to be considered having regard to the provisions of the Plan and the possible need for detailed planning to ensure an appropriate overall development outcome in the area.

Low Density

The LSP aims to provide a balance between the rural and urban aspects of the Byford area by providing a suitable transition between densities in the western portion of the LSP area and the adjacent Trotting Complex/rural-residential area. Residential densities on lots adjacent to the Trotting Complex are set to a maximum of R15. Detailed planning of interface treatments will occur at the subdivision and development stages, and may include the preparation of detailed area plans to set building envelopes and ensure appropriate buffers and other treatment methods.

6.3.3 DWELLING YIELDS AND POPULATION

For the purposes of the dwelling yield and population calculation, it is assumed that in the ultimate development scenario:

- One third the Town Centre retail core and 75 percent of the Town Centre mixed use area may include a residential component
- The equivalent density of residential development within the Town Centre will be R80**.** It should however be noted that there is no residential density limit in the Town Centre classification.
- The potential population calculation is based on trends for housing needs and household configurations.

TABLE 5 – DWELLING YIELDS AND POPULATION*

	AREA (HA)	POTENTIAL DWELLINGS	POTENTIAL POPULATION
R15	1.35	20	40
R25	2.44	52	104
R30	7.69	230	460
R60	9.40	562	1124
Town Centre	2.73	218	436
Town Centre (mixed-use) – R80	3.5	297	594
TOTAL	**27.11**	**1379**	**2759**

** Please note the population projection of 2.0 persons per household is an estimate. iD Forecast has established an overall average household size of 2.8 for the Shire at 2031, along with an average dwelling occupancy of 93.0%. For comparative purposes, the draft Outer Metropolitan Growth Strategy has identified an average of 2.21 persons per household by 2031. The latest census does not allow analysis of household size by dwelling type which would be the most appropriate benchmark in this instance. A comparison of ABS data on existing areas would be possible, however the data is not available at a small enough area to ascertain the typical household size of individual apartment buildings. The most significant determinant of household size would be the type of dwellings that eventuate (ie one bed, two bed or three bed apartments). At this stage it would be premature to provide anything beyond an indicative estimate of household size for the proposed development at Byford.*

6.3.4 HIGHWAY COMMERCIAL

It is likely that there will be a demand for low intensity and car based commercial uses requiring high road exposure to locate within the Town Centre. Highway Commercial areas are identified on the periphery of the Town Centre along South Western Highway. These uses require significant floor plates and or parking requirements, which are not conducive to achieving a fine grained mixed use, and active street front environment. On this basis the following land uses are anticipated:

- Home based business;
- Medical suites;
- Showrooms and;
- Drive through food premises.

Developments shall address the Highway frontage to maximise image and exposure. Retail (including showrooms) and office components should be located facing the South Western Highway. To demarcate the approach to the Town Centre, at the key corners of Evans Way and South Western Highway, development must provide an active frontage to the corner.

6.3.5 COMMERCIAL

Two areas of land within the LSP area have been designated as Commercial, to the north and south of Abernethy Road. These areas are proposed to entail small to medium floor plate commercial development, catering towards uses such as offices and consulting rooms. Small-scale retail development can be considered provided it compliments and does not compete with the Town Centre land. Fast food outlets and similar drive through style development is not considered appropriate in these areas due to access issues, and is more suited to the Highway Commercial land.

Development will be required to respond to and compliment the surrounding natural features including wetlands and the Beenyup Brook.

6.3.6 PUBLIC OPEN SPACE

The location of the Byford Town Centre LSP area at a site of significant flood risk has resulted in a need to manage stormwater by providing large amount of detention capacity within Public Open Space as well as modifying the drains and waterways to ensure that they have sufficient capacity within their designed floodways to contain the 100 year ARI event.

The section of the Beenyup Brook within the Town Centre has been designed to incorporate a broad floodplain area within linear Public Open Space which must be landscaped and managed to minimise interruption of the flow during major events. Similarly the other major swales within the Town Centre are designed with gently sloping sides. These must also be landscaped and managed to minimise interruption of the flow during major events whilst maintaining a high landscape and aesthetic function.

Dual-Drainage Function

The provision of multiple-use corridors is in accordance with the Shire's objectives from a landscape and urban water management perspective. The ability for alternative forms of drainage is acknowledged, however, this is inconsistent with the Shire's position and contemporary methods of addressing stormwater quality and quantity.

It has been identified that the volumes and velocities of stormwater in the area during peak events may make piped drainage solutions unfeasible in this location.

While the drainage proposed by the LSP differs from that of the DSP, the proposals of the DSP are indicative only and intended to guide and facilitate the preparation of detailed precinct-based LSPs. The proposals of the Byford Town Centre LSP are based upon more detailed hydrological investigations, as well as ensuring an appropriate development design outcome is achieved, in particular, that of a consolidated Town Centre core.

Size and Distribution of Public Open Space

The LSP focuses on the provision of a linear open space network that perform an urban water management, recreation, amenity and conservation role. These are called Multiple-use corridors (MUC) in the LSP.

Public parkland in the LSP area will:

- Be of a sufficient cumulative area to adequately cater for the recreation needs of the Byford community;
- Be of sufficient area and dimensions to cater for broad range of passive and active recreation activities;
- Be distributed to be within a comfortable walking distance of the majority of dwellings and incorporated in to MUC;
- Be located to protect and optimise valuable landscape features and view corridors;
- Provide amenity as well as retain elements of the Byford cultural landscape;
- Be located to protect and optimise valuable pedestrian movement corridors; and
- Be located to provide a focus for commercial and medium–high density residential uses.

Schools play fields can be incorporated into the network of public open space corridors.

Water quality/quantity treatment devices within parks will only be supported in accordance with the Local Water Management Strategy and subsequent Urban Water Management Plans prepared at the subdivision stage.

Public Open Space Calculation Methodology

Liveable Neighbourhoods requires that at least 10 percent of the gross subdivisible residential area is provided as public open space (POS). This may comprise a minimum of eight per cent for active and passive recreational purposes where the remaining two per cent comprises restricted use POS uses.

Given the nature of the land and topography of the area, the drainage requirements for the LSP area are significant resulting in a total creditable public open space provision in excess of the standard 10 percent requirement.

In accordance with Liveable Neighbourhoods requirements and Department of Planning advice, the following methodology is applied to the calculation of public open space:

- The surface area that occupies up to the 1 in 1 year storm water event receives no POS credit (either as restricted or unrestricted open space). However, this area can be included as a deduction to the gross subdivisible area.
- Between the 1 in 1 year and 1 in 5 year event (including the 1 in 5 year event), 100 percent credit can be applied as restricted open space (limited to a maximum of 2 percent of the 10 percent requirement). The surface area over and above the 2 percent maximum restricted open space receives no credit but can be treated as a deduction to the gross subdivisible area.
- The surface area for above the 1 in 5 year stormwater event receives 100 percent credit as public open space (unrestricted).

The following table provides a breakdown of public open space for the Byford Town Centre LSP:

TABLE 6 – PUBLIC OPEN SPACE SCHEDULE

Public Open Space Schedule			
Site Area			78.53ha
Less			
Environmental Protection Policy Areas	0.68ha		
Resource Enhancement Wetland (to be ceded)			
Restricted Public Open Space areas greater than maximum 2% provision (Non-credited)	0.11ha		
Total			77.75ha
Net Site Area			
Deductions			
Commercial*	9.1ha		
Highway Commercial	1.55ha		
Public Purpose			
High School (13.06 ha)	13.76ha		
- Town Hall (0.4 ha)		24.27ha	
Dedicated drainage reserve (1 year ARI event)	0.73ha		
Rail Reserve	5.40ha		
South Western Highway Reserve	1.63ha		
Gross Subdivisible area			45.80ha
Public Open Space @ 10%			4.58ha
Public Open Space Contribution			
Unrestricted Required (Minimum 8%)	3.65ha		
Restricted Allocation (Maximum 2%)	0.91ha		
Unrestricted Provided		5.76ha	
Restricted Provided		1.02ha	6.78ha
Unrestricted public open space sites			
Greenway (not including CCW, dedicated drainage reserve and contingency buffer for drainage corridors)		1.24ha	
Contingency buffer for drainage corridors 5 year - 100 year ARI event		4.67ha	
Restricted use public open space sites			

Contingency buffer for drainage corridors (1 year – 5 year ARI event)	1.02ha	
Total restricted use public open space maximum allowable	0.91ha	
Excess restricted use public to be included as a deduction	0.11ha	
Public open space provision		**6.66 ha or 14.60%**

Frontages to Open Space

In accordance with “Crime Presentation Through Environmental Design” (CPTED) principles the LSP (supported by the associated Design Guidelines) promotes development overlooking public open spaces. This will enable development to take advantage of the amenity provided by the linear open spaces, whilst also ensuring that the areas operate with a high level of real and perceived safety.

6.3.7 WETLANDS

Two resource enhancement wetlands have been depicted on the LSP and are proposed to be bordered by public open space, providing a buffer function. Development in proximity to the wetlands will be required to respond to the buffer, environmental management and other associated requirements of the Department of Parks and Wildlife.

6.3.8 PUBLIC AND COMMUNITY PURPOSES

High School and Community Facility

The LSP area includes the proposed High School site on Abernethy Road given the gateway function that the site would perform at the western entrance to the Town Centre. The LSP also refers to a proposed community facility on the eastern corner of the school site fronting Abernethy Road. While development of the High School will be guided largely by the Department of Education and Training’s requirements, it is necessary that due regard is given to the need for an appropriate entrance and landmark element at this site on Abernethy Road.

Town Hall

The LSP reflects the existing public purpose reserve for the Byford Town Hall to the east of South Western Highway.

6.4 RETENTION OF EXISTING VEGETATION

The identification of good stands of remnant vegetation provides opportunity for the strategic selection of such areas for inclusion in public open space. The protection of some areas of remnant vegetation has obvious environmental value, but may also bring aesthetic values to the area as landscape and character features. The remaining stands protected by the LSP area are primarily located within the Beenyup Brook floodplain near the corner of Abernethy Road and Soldiers Road. Opportunities for the incorporation of mature trees also exists near or within the proposed Town Square.

6.5 HERITAGE

With further investigation, some of the areas identified as giving potential for heritage or archaeological significance, such as around the wetlands and Beenyup Brook, may prove to be of a level of significance worthy of protection. Depending on significance, these sites may be a constraint to future urban development. However with appropriate planning these site should be incorporated into the public realm treatment of the area (if appropriate) thus strengthening the sense of place and overall character of the urban environment.

6.6 MOVEMENT NETWORK

The Movement Network Plan contained in **Appendix C** should be read in conjunction with this section of the LSP.

6.6.1 TRANSIT STATION AND RAIL CROSSINGS

It is desirable as new residential areas develop that a public transport alternative be made available to residents at an early stage such that the appropriate urban form and transport behaviour can be established from the outset. The LSP is premised on the future extension of the metropolitan rail services to Byford, however in recognition of the uncertainty of timing, the plan provides for interim development of a bus interchange to connect to the Armadale Station. The present location of the Byford station (operated for the Australind service) is not considered appropriate in facilitating a Transit Oriented Development. On this basis, the Byford DSP recommends the relocation of the Byford station to within the Town Centre core to facilitate the development of a compact, mixed use, accessible and intensified node as well increase the patronage potential for the rail service.

Furthermore, providing good access to the Town Centre expansion area is critical to the commercial success and operation of the Town Centre from a civic and commercial perspective. The optimal outcome to facilitate access into and within the centre is the through the provision of additional crossings over the rail line. These are required to establish linkages between the expansion area and South Western Highway, the original townsite, and existing commercial areas.

Existing Abernethy Road Crossing

Abernethy Road presented particular issues given the proximity of the Beenyup Brook, South Western Highway traffic signals, existing development and the rail line. Options that were considered for the existing Abernethy Road rail crossing included:

- Road Bridge (direct and in horse-shoe bridge configurations) - This was considered unfeasible due to the limited clearances from South Western Highway and the gradients required. A horseshoe bridge design was considered as a possible long term solution should electrified passenger services extend beyond Byford, however this was unlikely to be required. The LSP does not prevent this from being delivered.
- Road Subway - This option has significant issues associated with gradients required, groundwater flows, cost and visual impact and was considered undesirable.
- Rail Subway - This option is an ideal design solution but was not considered feasible due to the significant cost and the retained issue of groundwater flows.

The existing level crossing is considered to be the preferred position for the next 20 years. Should grade separation be required in the longer term, however, the LSP does not compromise the ability to deliver this in the long term within a horse-shoe configuration.

Proposed Transit Station

Various locations for the station were tested. It was agreed that a location south of Abernethy Road was not acceptable based on risk and the implications for the functioning of the Town Centre. Although a location north of the Town Centre had less risk, the implications given the objective of creating a transit orientated developed were unacceptable.

The preferred location of the transit station is central to the Town Centre (north of Abernethy Road) as it represents the best balance between urban design outcomes and safety/operational considerations. The location of the station will ensure a high level of connectivity is provided between the existing and proposed Town Centre areas, facilitate transit orientated development outcomes and ensure the ability of the railway to be extended to Mundijong is retained.

Proposed Additional Rail Crossing

The integration and connectivity of the existing Town Centre and Town Centre expansion area is paramount to the successful delivery of a vibrant Town Centre in accordance with the Shire and Byford community's aspirations. On that basis, options which limit both pedestrian and vehicular access between the two parts of the Town Centre scored poorly in the Risk Assessment of the various options for the Station location and new rail crossing location.

In light of this, the LSP proposes an additional east-west level crossing between the existing Town Centre and Town Centre expansion area. This additional linkage will likely be subject to further investigation as part of planning for the extension of the electrified rail system. The ultimate crossing location will be determined based on a balanced outcome between urban design and safety considerations. Such an approach has been applied elsewhere within Perth, such as within the Gosnells Town Centre.

6.6.2 BUS PUBLIC TRANSPORT

Bus Transit Node

Based on discussions with the Public Transport Authority and advice from relevant consultants, the extension of the metropolitan rail service to Byford is a long term proposal. As stated previously the establishment of transit orientated urban form and commuter habits early is important in reducing the current dependence on the private motor vehicle. On this basis it is planned to develop a transit node at the site of the future station which would be serviced in the interim by a feeder bus system.

The bus transit node would enable a visible presence and service to be centred in the Town Centre which will assist in establishing the urban form and commuter habits necessary to support the ultimate rail service envisaged.

Bus Routes

The LSP has been developed to integrate planning for future public transport services. As such, they form a key consideration in the identification of an appropriate movement network and road hierarchy. The Movement Network Plan identifies the preferred route into and out of the transit hub for buses servicing Byford North and Byford South/Mundijong. Proposed cross sections for roads planned as bus routes feature lane widths sufficient for bus movement.

The bus transit node would take feeder buses from the surrounding developing area and provide a high frequency service to the Armadale Station. It is anticipated that some park and ride component would also be available, although the extent of this is yet to be determined. Service routes for buses entering end existing the bus transfer facility are shown in the Movement Network Plan.

6.6.3 ROAD NETWORK

The LSP establishes a highly interconnected road network that provides route choice, reducing vehicle flows on individual routes and strong visual, pedestrian and cycle links to the Multiple-use corridor, Primary School, District Open Space and local parks.

The LSP adopts the street classification defined in Liveable Neighbourhoods (Table 3 and 4). An indicative road hierarchy based on Liveable Neighbourhoods road classifications is shown on the Movement Network Map. The road layout is indicative only and is subject to detailed planning at the time of subdivision and development.

On this basis the following road hierarchy and reserves are identified:

TABLE 7 – SUMMARY OF ROAD HIERARCHY

STREET	CLASSIFICATION	DESIGN PARAMETERS

South Western Highway	Primary Distributor	Ultimate Road Reserve 30.0m

Abernethy Road	District Distributor	30.0m
Sam Simeon Boulevard	District Distributor	22.5m
I	Town Centre Main Streets	22.5m
II	Integrator Arterial B	25.0m
III	Neighbourhood Connector B	20.0m
IV	Access Street	15.0m-18.0m

Abernethy Road

The preferred urban water management strategy utilises Beenyup Brook as a Multiple-use corridor for the west bound conveyance of water. The reserve width for Abernethy Road can therefore be 35m as it is only required to accommodate its own drainage requirements allowing for a more intimate and constrained road environment which discourages speeding.

Soldiers Road

Soldiers Road is an important connection to the existing hamlets to the South of Byford and to Mundijong. The existing Soldiers Road intersection is located in close proximity to the Abernethy Road level crossing and Beenyup Brook.

Western Link

The proposed east-west spine road is proposed to extend over the multiple-use corridor into the proposed residential area to the west. This road will not provide a vehicular connection into the Byford Trotting Complex, however, pedestrian access will be provided. A left-in/left-out movement restriction will be applied where the road intersects with Abernethy Road. In conjunction with traffic calming measures and the provision of a left turn slip lane at the intersection of Abernethy Road and Sam Simeon Boulevard, this approach will avoid the road being used as an alternative access and egress route for the Town Centre. It is considered important to provide legible links into the surrounding area for the Town Centre to function, however it is also acknowledged that suitable traffic management will be necessary to prevent impacts on the amenity of these existing areas.

This road will form one of the main street connections through the Town Centre.

Northern Link

A north-south road from Abernethy Road connecting into the east-west spine road is proposed. This road will form the second main street connection through the Town Centre.

Northern Link – Thomas Road Deviation

The proposed north/south spine to the west of the Town Centre Core has been aligned with regard to existing approved road alignments, whilst being sited to provide a defined edge to the Town Centre and the linear open space.

Intersection treatments

In addition to the current traffic signals developed at the intersection of Abernethy Road and South Western Highway, additional traffic signals are proposed at the intersection of Pitman Way/South Western Highway and the Thomas Road deviation/Abernethy Road intersection. These treatments will assist in traffic management but will also facilitate pedestrian crossing at these strategic locations. Additionally they will signify key entry points into the Town Centre, and therefore a change in traffic speed and street environment.

Traffic signals are also required at the Abernethy Road/Main Street intersection.

6.6.4 PARKING

Parking requirements to reflect the recommendations in SPP 4.2.

This is a variation from the standard TPS 2 provisions, which currently require 1 car bay for every 12.5m^2 GLA for a Shopping Centre land use. This variation is proposed to support the development vision of a mixed-use transit oriented Town Centre as opposed to a traditional suburban shopping centre; making better use of car parking areas while maintaining car parking provision.

As part of any commercial or mixed-use proposal, a parking and access management strategy will need to be prepared and approved. This strategy is to address:

- Peak parking requirements;
- Shared parking and access arrangements;
- Access rationalisation on South Western Highway.
- Timing limits and management;
- Accessibility and amenity;
- Parking for people with disabilities; and
- Loading areas.

The parking and access management strategy will need to have regard to any overarching access and parking management strategy prepared for the Byford Town Centre.

6.6.5 PARK AND RIDE

The Byford Town Centre Concept Plan identifies proposed park and ride facilitates within the Byford Town Centre. Facilities are proposed to the east and west of the future train station within the road and railway reserve, and toward the western side of the Town Centre core. This approach will ensure key development sites in proximity to the station are not taken up by car parking**,** as well as facilitating additional pedestrian traffic in proximity to the Town Centre. The siting of additional park and ride facilities away from the station allows for pedestrian traffic to be funnelled through the Town Centre.

In proposing the park and ride facilities, it has been necessary to ensure that land is not sterilised from development in the short to medium-term and at the same time, the opportunity to provide a park and ride facility in the long-term is retained. To this extent, proponents will be required to demonstrate, through DAPs and development applications, that the ability for a park and ride facility to be established in the long-term will not be prejudiced.

Although detailed design and management will be considered in conjunction with the Shire, landowners and the PTA at a later stage, it is likely that a system will be required to ensure the park and ride facility is utilised by legitimate public transport users. This may involve an access control system or ticketing system linked to the PTAs Smartrider system, as currently operated within several other park and ride stations in Perth.

The Byford Town Centre Design Guidelines Local Planning Policy provides the principles and indicative concept for the ultimate development scenarios incorporating any future park and ride.

6.6.6 PEDESTRIANS AND CYCLISTS

Consistent with a Main Street Town Centre environment, footpaths are to be provided on both sides of all streets within the LSP area. The location of these paths adjacent to primary roads ensures they follow the most direct routes and enjoy the security benefits of passive surveillance by passing vehicular traffic. Path widths, landscape treatments and street furniture requirements are provided in the Byford Town Centre Strategy.

A cycle network made up of dual use paths within Multiple-use corridors, on road cycle lanes and shared streets are identified in Movement Network Plan.

In addition the following strategies should be implemented:

- All new developments should consider the need for shower and change room facilities.
- On District and Regional roads bicycle racks will be required where retail businesses face a footpath and should be installed as required.
- On local streets bicycle racks will be required where retail businesses face a footpath and should be installed as required at the building entrance to shopping centres and business commercial centres.

6.7 TRAFFIC INVESTIGATIONS

Detailed traffic investigations are currently being undertaken in response to the revised LSP. The results of these investigations, when completed, will facilitate progression of the LSP toward finalisation.

6.8 TRANSPORT NOISE ATTENUATION

Town centre development will benefit from the requirement for residential development to adhere to SPP 5.4 recommendations. Areas affected by noise issues shall be identified in precinct DAP's and development criteria shall recommend building design and noise attenuation methods.

The railway reserve is acknowledged as a source of noise within the LSP area. Appropriate responses to ensure development is not adversely affected by noise includes considered design of rail infrastructure as well as appropriate urban design and building construction standards.

6.9 URBAN WATER MANAGEMENT

The Byford Town Centre is located in an area of existing high or extreme flood hazard. The Byford Town Site Drainage and Water Management Plan modelling indicates that this risk is manageable.

The management of peak 5 year ARI and 100 year ARI flows through the Byford Town Centre has been identified as a significant issue to address given the implications on infrastructure and land use planning. A number of options were identified based on investigations carried out by GHD and the Byford Drainage and Water Management Plan endorsed by the Department of Water (DoW) and the Shire.

The two key challenges for drainage in the Town Centre are accommodating the peak regional northern and southern overflows which converge in the Town Centre. The significant peak water volumes has required a holistic and integrated approach based on the use of natural drainage alignments where possible, given the significant cost and feasibility of accommodating these flows using traditional piped infrastructure.

Based on initial design, environmental and hydrological investigations and consultation with relevant agencies, the following key issues require consideration in the identification of an appropriate urban water management strategy for the area:

- Accommodating the significant regional northern and southern overland flows that converge in the area identified for Town Centre expansion;
- Provision of piped infrastructure for peak flows is not feasible based on significant costs;
- Community desire for the use of natural alignments of streams and swales to manage storm water, with these areas having multiple functions for recreation and conservation;
- Addressing the limited opportunities for water conveyance under the railway line and the cost of providing additional culverts;
- The impacts on connectivity across Abernethy Road if the road reserve is used for drainage;
- Options for drainage are limited by proposed subdivisions in the area;
- The LSP proposes the urbanisation of a large area of land, therefore storage needs to be provided to detain floodwaters.

The preferred drainage option will address these issues within the planning and urban design parameters of the LSP.

On this basis the urban water management strategy is guided by the principle that living streams and swales are preferred over piped drainage through the Town Centre. While natural alignments of water courses should be utilised where possible, some re-alignment of Beenyup Brook through the Town Centre may be necessary to develop a functional and consolidated Town Centre.

Other options to divert water north through the Town Centre were considered, however in order to achieve a more efficient spatial layout of the centre, diversion of water to the perimeter was necessary. The use of the rail reserve for conveyance was also considered however a swale adjacent to the railway reserve to the north would further severe the new and existing Town Centres and could impact on integration of the new Town Centre with any future railway station/bus interchange in that location

The determination of a preferred drainage strategy for the Town Centre was guided by the following parameters:

- The existing culverts under Abernethy Road do not currently have the capacity to accommodate the 50 year ARI and 100 year ARI and will need to be upgraded;
- The option of diverting the southern flow further upstream via Mead Street was investigated, however this would require additional culverts under the railway line which has cost imposts;
- The Beenyup Brook swale has the advantage of being used as multi-use corridor, and allows for the maintenance of existing fringing vegetation and mature trees; and
- Drainage swales through the Town Centre, if appropriately treated, can provide interface between residential uses and mixed/commercial uses. While this may impact on the amount of developable land for major land owners, it creates opportunities for consolidation and can become a real feature of the Town Centre.

The recommendations below present the greatest potential for the simultaneous achievement of drainage and urban design objectives for the Byford Town Centre, based on the Shire's parameters:

- Upgrading the culverts at Abernethy Road
- Use of Beenyup Brook as swale through the Town Centre
- Use of the future Integrator Arterial B road on the western boundary of the Town Centre and an adjacent multiple-use corridor for the northern peak flow conveyance.

The drainage corridor alignments shown in the LSP demonstrate the above.

6.9.1 LOCAL WATER MANAGEMENT STRATEGY

Principles

The LWMS which covers the Byford Town Centre has been prepared in accordance with *Better Urban Water Management* (Western Australia Planning Commission 2008). The key principles of integrated urban water management are:

- Minimise total water use in the Development Area;
- Protect infrastructure and assets from inundation and flooding;
- Manage groundwater levels to protect infrastructure and assets; and
- Protect environmental values of receiving water bodies.

Landowner Responsibilities

The LWMS details a number of landowner responsibilities to ensure the actions recommended in the Strategy are enforced, and includes the following:

- Preparation of an Urban Water Management Plan to be lodged with a Subdivision Application;
- Design and construction of drainage system to be handed over to the Shire at practical competition;
- Land use and management measures to ensure sediment and erosion control during construction;
- The use of public awareness campaigns to develop a wider appreciation of the local environment. The Strategy suggests sustainability packs including educational information regarding non-structural control measures (ie. waste management, landscaping guidelines and fertiliser guidelines), and should be provided at settlement;
- Water quality monitoring and reporting through a monitoring program. This will be undertaken by the preparation of annual reports by the landowner to be submitted to the Shire and Department of Water review for a period of up to 3 years from practical completion; and
- The location and design of 1 year 1 hour ARI event retention/detention and bio-retention areas to be determined in the Urban Water Management Plan.

Stormwater Management

Flood mitigation measures are focused on correct planning for appropriate land use in the LSP area and setting aside the land required for the floodplain inundation depths. The *Floodplain Management Strategy* (SKM 2007) recommends planning measures including:

- New dwellings in proposed and existing residential areas must have their floor levels elevated 500 mm above the 100 year annual recurrence interval flood level.
- New industrial or commercial premises should have their floor levels elevated 500 mm above the 100 year annual recurrence interval flood level.
- Major arterial roads with immunity to the 100-year annual recurrence interval flood level that access new residential areas and can provide egress to emergency services must be identified. Other residential streets should be designed to be serviceable up to the five-year annual recurrence interval flood event.

Stormwater Quantity

Surface water quantity management is not only restricted to preventing runoff from increasing due to development, but must also manage the maintenance or even restoration of desirable environmental flows and/or hydrological cycles where potential impacts on significant ecosystems such as wetlands are identified.

The proposed stormwater management strategy employs measures for the following events:

- 1 year ARI event;
- 5 year ARI event; and
- 100 year ARI event.

To address stormwater and flood management, the principles of the minor/major system of drainage will be employed. The minor drainage system accommodates the low frequency ARI event, typically less than 1 in 5 year. The major drainage system is a system of underground pipes, swale, kerbs and road to attenuate and infiltrate peak surface water flows.

Surface Water Quality Management

To manage surface water quality across the LSP area, it is proposed to adopt Water Sensitive Urban Design (WSUD) and Best Management Practices (BMP's) promoting retention, infiltration and treatment of events up to the 1-year ARI events, in accordance with the *Stormwater Management Manual for Western Australia* (DoW, 2004-2007).

The key WSUD elements to be incorporated into the design of sub-divisions of the development area are:

- Biofiltration pockets: Where practical, these small biofiltration and infiltration systems will be incorporated into non-frontage verges (where they will not obstruct driveway crossovers) and road nibs;
- Vegetated median swales. Wherever practical, biofiltration and infiltration systems in the form of vegetated swales will be incorporated into median strips.

Where development is associated with an ecosystem that is dependent on a particular hydrologic regime for survival, the water quality discharged to the groundwater must be in accordance with the requirements of Department for Parks and Wildlife.

Where development is associated with any new or existing waterway or open drain that intersects the shallow water table, and that may discharge pollutants from the shallow groundwater to receiving environments, the interim targets provided in the Local Water Management Strategy (**Appendix D**) will be adopted until such time as appropriate site-specific targets are developed.

The Next Stage

The next stage of subdivision planning will require the development of an Urban Water Management Plan (UWMP). This will include progressing conceptual designs to detailed design. The issues that need to be addressed within the UWMP are detailed in the LWMS, including demonstration that the UWMP will meet the objectives and criteria stated in the LWMS.

Where a development site is located adjacent to a resource enhancement wetland, appropriate wetland management measures should be identified in the UWMP. It is also recommended that appropriate site management is undertaken when a site is undergoing subdivision to address any potential impacts associated with construction activities including acid sulphate soils, erosion and sediment control and management of any required dewatering.

In order to minimise the impact that the future Town Centre development will have on groundwater and surface water quality and quantity, aquatic habitats and terrestrial habitats, the management of

groundwater quality and minimisation and contamination, erosion and damage to flora and fauna from dewatering procedures must take precedence in the overall LSP process.

Management strategies for surface and ground water are detailed in the Shire of Serpentine-Jarrahdale Environmental Management Plan for the Byford Town Centre Development 2009.

6.10 UTILITIES

A preliminary servicing report has been prepared to address servicing requirements for the proposed Town Centre development and to provide estimated costs for the extension of services to the site for the Byford Town Centre LSP.

The Report makes recommendations with respect to clearing, earthworks and retaining walls, roads, stormwater drainage, water reticulation, sewerage, power, telecommunications and gas.

In general, the portion of the study area situated to the east of the railway reserve is well serviced with existing infrastructure, which has sufficient capacity to service the existing residential and commercial lots. It appears likely that the existing network can service the proposed Town Centre consolidation in this area with only minor alterations and network expansions.

The study area to the west of the railway reserve and north and south of Abernethy Road currently lacks major infrastructure as it is largely undeveloped. Water Corporation long term planning shows proposed larger diameter water distribution and gravity sewer mains to be installed in existing and future road reserves pertaining and crossing the study area, and these mains may be used to provide water and sewer connections to the proposed development.

Subject to proposed timing some infrastructure extensions may have to be pre-funded by Developers. As WestNet Energy assets are usually installed in a common trench with Water Corporation utilities, it can be presumed that gas pipelines will be brought forward to the subject site at the time water and sewer extensions are constructed. Internal extensions from the existing services will also be required and will need to be Developer funded.

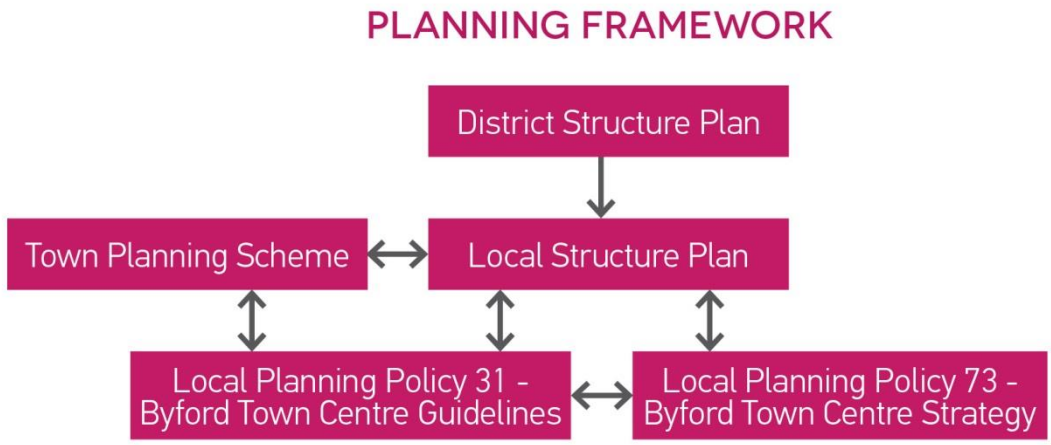
As the majority of existing and future asset provided funded infrastructure is located in the road reserves immediately to the east and west of the railway reserve and in Abernethy Road, progress of staging of the new developments is expected to commence from the George Street and Abernethy Road intersection and continue from there to the north-west and south-west.

Due to the location and capacity of existing stormwater infrastructure, consideration must be given to the timely construction and/ or relocation of structures required to maintain discharge of on study area drainage.

7 Implementation

The implementation of the vision for the Byford Town Centre requires the application of a number of tools and interventions. The Byford Town Centre LSP should be implemented in parallel with the supporting Byford Town Centre Design Guidelines LPP 31 and Byford Town Centre Strategy. Whilst the LSP focuses on the broader land use and design framework, the Design Guidelines identify the requirements for built form within new development. The Town Centre Strategy provides requirements for the public realm which will be applied through new development as well as determining the character of renewal work undertaken by the Local Government.

FIGURE 2 – PLANNING FRAMEWORK DIAGRAM



The following diagram identifies the planning framework proposed to apply to the Byford Town Centre area.

7.1 ADOPTION OF LOCAL STRUCTURE PLAN

The LSP, comprising Part 1, Part 2 and Appendices, has been prepared in accordance with the requirements of the Scheme.

The formal adoption of the LSP by Council, following consideration of submissions, and then the Western Australian Planning Commission, facilitate any additional detailed planning and subdivision and development. The LSP will guide the Shire and the Commission in its consideration of detailed area plans, subdivision and development.

7.2 TOWN CENTRE STRATEGY

The Town Centre Strategy provides explicit requirements for public realm development and improvement to create a consistent theme for the expanded Town Centre consistent with the character vision for Byford. It is suggested that the Shire will need to initiate works consistent with the Strategy in the short term in order to re-enforce this theme and quality on any future development.

7.3 STAGING

A challenge for the evolution of the Byford Town Centre will be for the built form and land uses to establish an intensity of activity and physical presence that is attractive as well as functional, while achieving the design principles established in the LSP, from the early stages of development.

It is envisaged that retail and commercial development will precede any residential development in the short term due to existing demand. Priority is for the establishment of the Main Street, and associated retail development (including cafés), with other commercial development and services determined by population growth/ demand, competition and demographics.

This means that uses currently in demand and those planned are focussed around the Town Square and Main Street to create an intensity of use and Town Centre presence. This will enable the Main Street to become the central node of development and the spine from which all other activities link into. The timing of the development of the Byford Town Centre will be dependent on the establishment of appropriate drainage management and the upgrading of servicing infrastructure.

7.4 IMPLEMENTATION PROJECT

The Shire is currently progressing a major project to bring about the successful implementation and operation of the Byford Town Centre LSP.

Various elements of the Byford planning framework are being reviewed, including the DSP, the Byford Townsite DAP and LPP 19. The review is focussing on identifying issues associated with the operation and implementation of the Town Centre LSP in the context of the wider Byford planning framework.

In addition, a review of alternative implementation mechanisms for the Town Centre LSP is being undertaken, including Scheme DCAs, improvement plans, guided development schemes and resumptive development schemes.

Work on this project is continuing in parallel with progression of the Byford Town Centre LSP to ensure an effective and efficient planning framework.

7.5 COST SHARING AND DEVELOPMENT CONTRIBUTIONS

Various items of infrastructure serve land beyond the boundaries of a particular lot proposed to be subdivided or developed. It is common practice for the costs associated with this common infrastructure to be most equitably shared between landowners.

Provisions exist in TPS 2 to permit the sharing of the cost of common infrastructure items between developing landowners. These costs are generally coordinated through the preparation of detailed Development Contribution Plans (DCP's).

A development contribution arrangement (DCA) is currently being established for the greater DSP area. Development contributions will be required pursuant to the provisions of TPS 2, and any relevant development contribution plan.

Appendix A Context Analysis

Appendix B Design Considerations

Appendix C Movement Network Plan

Appendix D Byford Town Centre Local Water Management Strategy

Appendix E Byford Town Centre Environmental Management Plan

Appendix F Byford Town Centre Transport and Traffic Analysis

Appendix G Byford Town Centre Retail Demand Analysis

Schedule 1 Byford Town Centre Local Structure Plan - Amendment 3

ROWE GROUP DESIGN

STRUCTURE PLAN

BYFORD TOWN CENTRE

WAPC REF: SPN 0098M – 3

OUR REF: 8861 19/10/2021

DOCUMENT CONTROL

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This report has been authorised by;

Rebecca Thompson
Senior Urban Planner

Forbes Chesterman
Manager Urban Design

Jamie Baxter
Quality Control

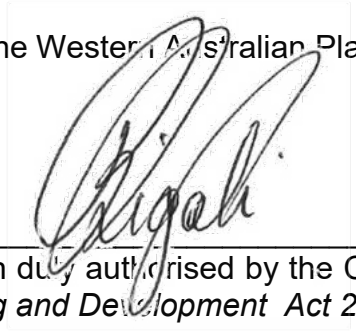
CONTACT PERTH OFFICE

p 9221 1991 **e** info@rowegroup.com.au **w** rowegroup.com.au
a 3/369 Newcastle Street, Northbridge 6003

IT IS CERTIFIED THAT AMENDMENT NO. 3 TO BYFORD TOWN CENTRE STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

15 FEBRUARY 2022

Signed for and on behalf of the Western Australian Planning Commission



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

TABLE OF AMENDMENTS

AMENDMENT NO.	SUMMARY OF THE AMENDMENT	DATE APPROVED BY WAPC
1	Land use reallocation – Public Open Space to Town Centre – Lot 4 South Western Highway.	December 2015
2	Density recoding from R30 to R60 – Lot 2 Abernethy Road.	18 June 2018
3	- Modification to road layout in accordance with District Structure Plan; - Redistribution of density (R-Code allocations); and - Additional Commercial land use.	15 February 2022

EXECUTIVE SUMMARY

This Structure Plan has been prepared by Rowe Group on behalf of Aigle Royal Group, the owner of Lot 1 Abernethy Road, Byford. This Structure Plan reflects an amendment to the existing approved *Byford Town Centre Structure Plan* (approved December 2015, amended June 2018), prepared by Urbis (WAPC Reference SPN-0098M-2). The proposed amendment seeks to revise the land use allocations and spatial design across the approved Local Structure Plan area, generally bringing it in to alignment with the draft *Byford District Structure Plan*.

Portions of the approved Local Structure Plan have already been implemented through the delivery of the Byford Village and Byford Market Place shopping centres, providing for a large format supermarket, retail and specialty shops. Land to the south of Abernethy Road and east of the railway line has also been developed, including the Byford Secondary College, commercial uses and medium density residential development. Therefore, this amendment request only applies to the undeveloped land within the Local Structure Plan area.

The proposed Local Structure Plan Amendment incorporates the following modifications:

- Realignment of San Simeon Boulevard in accordance with the draft *Byford District Structure Plan*;
- Reconfiguration of the multiple use corridors in accordance with the draft *Byford District Structure Plan*;
- Inclusion of additional Commercial land;
- Rationalisation of the local road network;
- Redistribution of residential density; and
- Consideration for transit oriented design in light of an indicative METRONET station precinct.

The objective of this Amendment is to introduce a number of the key initiatives contemplated under the draft *Byford District Structure Plan*, as well as consideration for an indicative METRONET station precinct. Such initiatives are proposed to address the requirements for the reconfiguration of the multiple use corridors (incorporating public open space and drainage), residential cells, the inclusion of additional commercial land, and transit oriented design. This Amendment therefore provides for the reconsideration and rationalisation of the existing approved Local Structure Plan in this context.

The intention of this Amendment is to allocate a mix of land uses which are suited to, and complement the site's location and surrounding land uses through a modified urban layout, providing an appropriate land use transition across the site, which is legible and pedestrian orientated, whilst also addressing the significant drainage requirements for the site (as stipulated under the approved Local Structure Plan).

This report has been prepared in accordance with the requirements of the *Shire of Serpentine-Jarrahdale Town Planning Scheme No. 2* (LPS 2) and the *Planning and Development (Local Planning Schemes) Regulations 2015* (the Regulations), and is supported by technical assessments and

reporting from a consultant team comprising fire management, hydrology, acoustic, environmental, traffic and retail studies (included as Appendices to this report).

This Amendment has been undertaken in collaboration with the Shire of Serpentine-Jarrahdale and in consultation with relevant government stakeholders. As noted above, the Amendment has also given due regard to the draft *Byford District Structure Plan*, which has been adopted for advertising by the Shire of Serpentine Jarrahdale. The Amendment is proposed to run in parallel and support of the draft *Byford District Structure Plan*.

STRUCTURE PLAN SUMMARY

ITEM	DATA	SECTION NUMBER REFERENCED IN PART 2 OF REPORT
Total area covered by the Structure Plan	78.4 hectares (34.8 hectares subject to amendment)	2.2
Area of each land use proposed: - Residential - Commercial / Mixed Use	 16.3 hectares 19.6 hectares	
Estimated number of dwellings	up to 840 dwellings, subject to design	5.3
Estimated residential site density	50-60 dwellings per site hectare	5.3
Estimated population	2,520 people, based on 3 people per household (2016 Census)	5.3
Number of high schools	1 high school	5.6
Number of primary schools	0 primary schools	5.6
Estimated area and percentage of public open space given over to: - Multiple Use Corridors - Local Parks - Community Purpose	 - 6.2 hectares - 1.2 hectares - 0.7 hectares	5.2

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

CONTENTS

DOCUMENT CONTROL I

RECORD OF ENDORSEMENT I

TABLE OF AMENDMENTS II

EXECUTIVE SUMMARY III

STRUCTURE PLAN SUMMARY V

CONTENTS I

FIGURES III

TECHNICAL APPENDICES IV

1. STRUCTURE PLAN AREA 2
2. OPERATION 2
3. STAGING 2
4. SUBDIVISION AND DEVELOPMENT 2
5. OTHER REQUIREMENTS 4

1. INTRODUCTION AND PURPOSE 7

1.1 PROJECT TEAM 7

2. LAND DESCRIPTION 8

2.1 LOCATION 8

2.2 AREA AND LAND USE 8

2.3 LEGAL DESCRIPTION AND OWNERSHIP 9

3. PLANNING FRAMEWORK 13

3.1 ZONING AND RESERVATIONS 13

3.1.1 METROPOLITAN REGION SCHEME 13

3.1.2 SHIRE OF SJ TOWN PLANNING SCHEME NO. 2 13

3.2 REGIONAL AND SUB-REGIONAL STRUCTURE PLAN 13

3.2.1 SOUTH METROPOLITAN PEEL SUB-REGIONAL PLANNING FRAMEWORK 13

3.2.2 BYFORD DISTRICT STRUCTURE PLAN (DRAFT) 16

3.2.3 BYFORD TOWN CENTRE STRUCTURE PLAN 17
3.2.4 LOT 1 SUBDIVISION APPROVAL (WAPC REFERENCE 153951) 17
3.3 PLANNING POLICIES 18
3.3.1 LIVEABLE NEIGHBOURHOODS 18
3.3.2 STATE PLANNING POLICY 4.2 – ACTIVITY CENTRES FOR PERTH AND PEEL 18
3.3.3 STATE PLANNING POLICY 3 – URBAN GROWTH AND SETTLEMENT 19
3.3.4 STATE PLANNING POLICY 3.7 – PLANNING IN BUSHFIRE PRONE AREAS 19
3.3.5 LOCAL PLANNING POLICIES 20
4. SITE CONDITIONS AND CONSTRAINTS 21
4.1 BIODIVERSITY AND NATURAL AREA ASSETS 21
4.2 LANDFORM AND SOILS 21
4.2.1 GEOTECHNICAL 21
4.2.2 TOPOGRAPHY 21
4.2.3 ACID SULPHATE SOILS 21
4.2.4 CONTAMINATION 22
4.3 GROUNDWATER AND SURFACE WATER 22
4.4 BUSHFIRE HAZARD 22
4.5 HERITAGE 23
4.5.1 ABORIGINAL HERITAGE 23
4.5.2 EUROPEAN HERITAGE 23
4.6 CONTEXT AND OTHER LAND USE CONSTRAINTS AND OPPORTUNITIES 23
4.6.1 INDICATIVE METRONET STATION 23
4.6.2 NOISE MANAGEMENT 24
4.6.3 INTERFACE WITH ADJOINING RURAL RESIDENTIAL LAND 24
5. LAND USE AND SUBDIVISION REQUIREMENTS 25
5.1 LAND USE 25
5.2 PUBLIC OPEN SPACE 25
5.2.1 MULTIPLE USE CORRIDORS 26
5.2.2 WESTERN LINEAR PUBLIC OPEN SPACE 27
5.2.3 NORTH-EASTERN PUBLIC OPEN SPACE 27
5.2.4 EASTERN PUBLIC OPEN SPACE 27

5.2.5 INDICATIVE METRONET PRECINCT 27
5.3 RESIDENTIAL 30
5.3.1 R10 DENSITY CODE 30
5.3.2 R30 DENSITY CODE 30
5.3.3 R40 DENSITY CODE 30
5.3.4 R60-R80 DENSITY CODE 31
5.3.5 DENSITY TARGETS 31
5.3.6 LOCAL DEVELOPMENT PLANS 32
5.4 MOVEMENT NETWORK 33
5.4.1 NEIGHBOURHOOD CONNECTOR A 33
5.4.2 ACCESS STREET B 34
5.4.3 PUBLIC TRANSPORT 34
5.4.4 PEDESTRIAN AND CYCLE NETWORK 34
5.5 URBAN WATER MANAGEMENT 35
5.5.1 LOCAL WATER MANAGEMENT STRATEGY 35
5.6 EDUCATION FACILITIES 36
5.7 ACTIVITY CENTRES AND EMPLOYMENT 36
5.7.1 COMMERCIAL 37
5.8 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING 38
5.8.1 HIGH PRESSURE GAS PIPELINE 38
5.8.2 WATER PLANNING 38
5.9 DEVELOPER CONTRIBUTION ARRANGEMENTS 39

FIGURES

1. REGIONAL LOCATION 10
2. LOCAL CONTEXT PLAN 11
3. SITE PLAN 12
4. METROPOLITAN REGION SCHEME ZONING 14
5. SHIRE OF SJ TOWN PLANNING SCHEME NO. 4 ZONING 15
6. PUBLIC OPEN SPACE PLAN 28
7. PUBLIC OPEN SPACE SCHEDULE 29

TECHNICAL APPENDICES

APPENDIX NUMBER	DOCUMENT TITLE	NATURE OF DOCUMENT	REFERRAL/APPROVAL AGENCY	APPROVAL STATUS
1	Certificate of Title	Reference	Landgate	-
2	Draft Byford District Structure Plan	Reference	Shire of Serpentine-Jarrahdale	-
3	Approved Byford Town Centre Local Structure Plan	Reference	Shire of Serpentine-Jarrahdale	-
4	Approved Plan of Subdivision 153951	Reference	Western Australian Planning Commission	-
5	Bushfire Management Plan	Approval Required	Department of Fire and Emergency Services	
6	Environmental Management Plan	Approval Required (at subdivision stage)	Shire of Serpentine-Jarrahdale	
7	Landscape Concept Masterplan	Supporting	Shire of Serpentine-Jarrahdale	-
8	Transport Impact Assessment	Supporting	Main Roads WA / Shire of Serpentine-Jarrahdale	-
9	Local Water Management Strategy Addendum	Approval Required	Department of Water and Environmental Regulation	Approved
10	Assessment of Commercial Development Potential	Supporting	Shire of Serpentine-Jarrahdale	-
11	Engineering Servicing Summary	Supporting	Shire of Serpentine-Jarrahdale	-

PART ONE

IMPLEMENTATION

ROWE GROUP DESIGN

1. STRUCTURE PLAN AREA

This Structure Plan applies to the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan map (Refer Plan 1 situated at the end of Part 1 of this Structure Plan report).

2. OPERATION

In accordance with Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, this Structure Plan shall come into operation when it is approved by the Western Australian Planning Commission (WAPC) pursuant to Schedule 2, Part 4, Clause 22 of the Regulations.

Pursuant to clause 27(1) of Schedule 2 of the Planning Regulations:

> *A decision-maker for an application for development approval or subdivision approval in an area covered by a structure plan that has been approved by the Commission is to have due regard to, but is not bound by, the structure plan when deciding the application.*

Pursuant to clause 28(1) of Schedule 2 of the Planning Regulations this Structure Plan has effect for a period of 10 years, commencing on the day which the WAPC approves the plan.

3. STAGING

Staging of the Structure Plan is to occur from the east to west, and in accordance with the provision of services and infrastructure. Further staging is to be addressed and considered through the subdivision and detailed design stages.

4. SUBDIVISION AND DEVELOPMENT

4.1 LAND USE AND ZONES

The Structure Plan Map (Plan 1) outlines the land uses, zones and reserves applicable within the Structure Plan area. The zones and reserves designated under this Structure Plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.

4.2 PUBLIC OPEN SPACE

Public open space (including multiple use corridors) should be provided generally in accordance with the Structure Plan Map (Plan 1) and the approved Local Water Management Strategy.

4.3 RAILWAY STATION PRECINCT (METRONET)

A Precinct Structure Plan is to be prepared for the area identified on Plan 1 in accordance with *State Planning Policy 7.2: Precinct Design* and approved under the Deemed Provisions of the *Planning and Development (Local Planning Scheme) Regulations 2015*. The Precinct Structure Plan is to address the following:

a) Location and configuration of park-and-ride and bus interchange facilities;

b) Built form and orientation to park-and-ride and bus interchange;

c) Access and building orientation within the immediate proximity to the station entrance;

d) Density coding to achieve a target of 30 dwellings per gross urban hectare;

e) Built form, access and orientation fronting the local street network; and

f) Built form and orientation fronting Multiple Use Corridors.

The Precinct Structure Plan may be prepared in two stages, being:

1. North of Clara Street, inclusive of Clara Street; and
2. South of Clara Street, inclusive of the Multiple Use Corridor.

Each stage must address the principles listed above and demonstrate the interface between the two stages can be coordinated.

4.4 HIGHWAY COMMERCIAL (RESTRICTED USE PRECINCT)

The land fronting Abernethy Road and allocated as 'Highway Commercial (Restricted Use Precinct)' on the Structure Plan is subject to the following land use restrictions:

LAND USE	PERMISSIBILITY
Automotive Sales	AA
Health Studio	AA
Medical Centre	P
Office	P
Service Station	SA
Showroom	P
Warehouse	AA
Veterinary Establishment	AA

4.5 INTERFACE WITH ADJOINING LAND

Subdivision and development within the Structure Plan area shall have due consideration for land use allocation and ensure the seamless connection of roads and other infrastructure with existing development (as constructed) on the adjoining land.

4.6 RESIDENTIAL DENSITY TARGETS

The residential density codes applicable to the Structure Plan shall be in accordance with those shown on the Structure Plan Map (Plan 1).

In accordance with Liveable Neighbourhoods targets, the Structure Plan area shall provide for a minimum average of 30-40 dwellings per residential site hectare.

4.7 LOCAL DEVELOPMENT PLANS

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

- Commercial land abutting or adjacent to Rural zoned areas to the west is to address the rural/urban interface, including provisions for building setbacks and orientation, access, landscaping, fencing and earthworks;
- Residential land fronting public open space and drainage is to address building orientation, building height, streetscape, fencing and site works; and
- Residential and commercial land fronting San Simeon Boulevard is to address built form, access and urban design outcomes to ensure an urban frontage reflective of the METRONET Precinct objectives.

4.8 NOTIFICATIONS ON TITLE

In respect of applications for the subdivision of land, the Council shall recommend to the WAPC a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate(s) of Title to advise of the following:

g) Lots deemed to be affected by a noise impact from road or rail infrastructure, as identified in an approved Noise Management Plan; and/or

h) Lots created within areas exposed to a Bushfire Attack Level (BAL) rating exceeding BAL-Low, as specified in an approved Bushfire Management Plan.

5. OTHER REQUIREMENTS

5.1 BUSHFIRE MANAGEMENT

This Structure Plan is supported by a Bushfire Management Plan. Any buildings to be erected on land identified as falling within 100 metres of a bushfire hazard, as identified in the Bushfire Management Plan, shall comply with the requirements of *Australian Standard 3959* under the *Building Code of Australia*.

5.2 INFRASTRUCTURE REQUIREMENTS

The following infrastructure is required as a precursor to the development of the site:

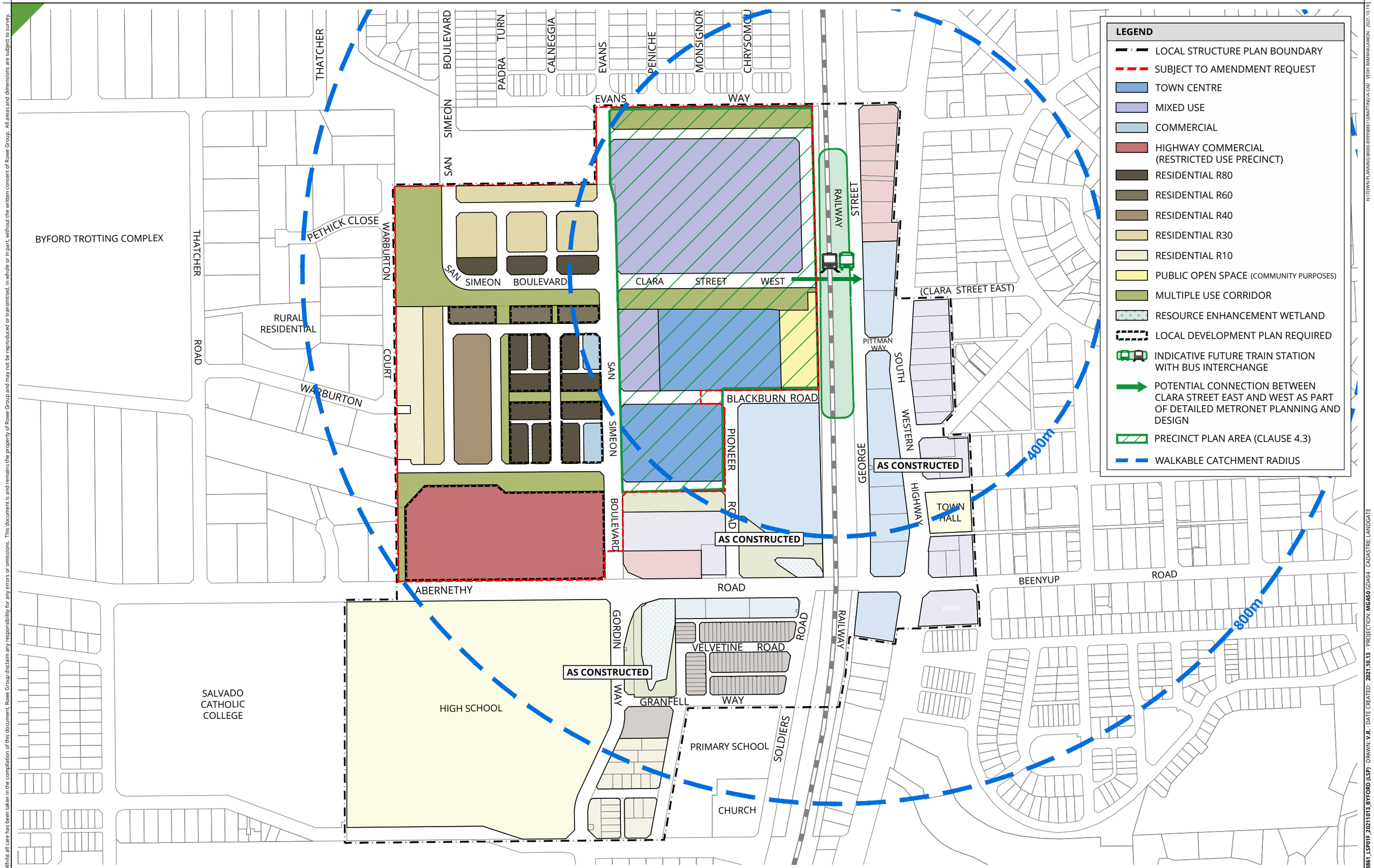
- Extension of San Simeon Boulevard from the northern Structure Plan boundary to Abernethy Road; and
- Construction of the multiple use corridors, as identified on the Structure Plan Map (Plan 1).

The internal road infrastructure shall have due regard to the existing design, service alignments and connection points to the immediate surrounding development.

5.3 DEVELOPMENT CONTRIBUTION ARRANGEMENTS

Funding arrangements for the provision of traditional and community infrastructure are pursuant to Clause 9.3 of the Shire of Serpentine-Jarrahdale Town Planning Scheme No.2.

In accordance with Town Planning Scheme No. 2, the Structure Plan is included within Development Contribution Areas 1 and 4. Contributions are to therefore be paid in accordance with the requirements of the Scheme.



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PLAN 1
LOCAL STRUCTURE PLAN (WAPC REFERENCE: SPN 0098M-3)

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8861_LSP01F_20211013_BYFORD (LSP) - DRAWN: V.R. - DATE CREATED: 2021.10.13 - PROJECTION: MGA50 GDA94 - CADASTRE: LANDGATE

PART TWO

EXPLANATORY SECTION

ROWE GROUP DESIGN

1. INTRODUCTION AND PURPOSE

This Structure Plan comprises a major amendment to the existing approved Byford Town Centre Local Structure Plan, prepared by Urbis (2018). Therefore, for the purposes of the 'Part Two – Explanatory Section' of the Structure Plan, this report (from herein) will primarily focus on the portion of the Structure Plan subject to modification (herein referred to as the subject site), as defined on Plan 1.

The purpose of the Structure Plan amendment is to facilitate the urban development of Lot 1 Abernethy Road and make provision for the future development of the METRONET Train Station Precinct on Lot 2. The Amendment provides for an urban environment which contributes to the vitality of the Byford Town Centre through the revised spatial allocation of appropriate land uses and residential densities. The Structure Plan is intended to provide for a land use transition from the Byford Town Centre and indicative METRONET station, to the 'Special Residential' precinct to the west. The proposed Structure Plan has been considered in the context of the existing and draft state and local planning frameworks, as well as the drainage requirements for the broader area, which impact upon the design of the site.

The Structure Plan is intended to provide for urban development in accordance with the broad land use parameters of the approved *Byford Town Centre Local Structure Plan* ('BTCLSP'). The proposed amendments have also given due regard to achieving the aspirations of the draft *Byford District Structure Plan* ('BDSP').

1.1 PROJECT TEAM

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

DISCIPLINE	CONSULTANT
Project Manager / Developer	Aigle Royal Group
Bushfire	Emerge Associates
Civil Engineering	Tabec
Environmental	GHD
Hydrological	Hyd2o
Town Planning and Design	Rowe Group
Traffic	Cardno
Retail	MacroPlan

Aigle Royal and Rowe Group are the primary points of contact for all matters relating to this Structure Plan.

2. LAND DESCRIPTION

2.1 LOCATION

The subject site is located in the Shire of Serpentine-Jarrahdale, approximately 40 kilometres south-east of the Perth Central Area.

The subject site is situated immediately west of and adjacent to the historic Byford Town Centre, bound by Abernethy Road to the south, the South Western Highway to the east, Byford Secondary College to the south and residential development to the north. The site abuts the Byford Special Residential area located to the west.

Refer **Figure 1** – Regional Location.

A Local Context Plan (refer **Figure 2**) has been prepared to illustrate the subject site's proximity to existing and future local community services and infrastructure. The Local Context Plan recognises the site's proximity to the existing Byford Town Centre, the future (indicative) Byford train station (METRONET), primary schools, public and private high schools, and associated areas for active recreation within an 800-metre radius. The site lies within proximity to the recreational amenity afforded by surrounding Regional Open Space and the Darling Ranges.

In addition to demonstrating the subject site in the context of existing and proposed local community services and infrastructure, the Local Context Plan illustrates how the future development of the subject site will provide for infill residential development within this locality, in accordance with State Government policy initiatives.

Refer to **Figure 2** – Local Context Plan.

2.2 AREA AND LAND USE

The Structure Plan comprises a total area of approximately 78.4 hectares, of which approximately 34.8 hectares is subject to this amendment.

The land subject to amendment has been cleared and is currently vacant. There are two existing watercourses traversing the site, which will be retained within the multiple use corridors identified on the Structure Plan.

The balance of the Structure Plan area has already been developed for urban purposes, comprising a high school, residential and commercial development.

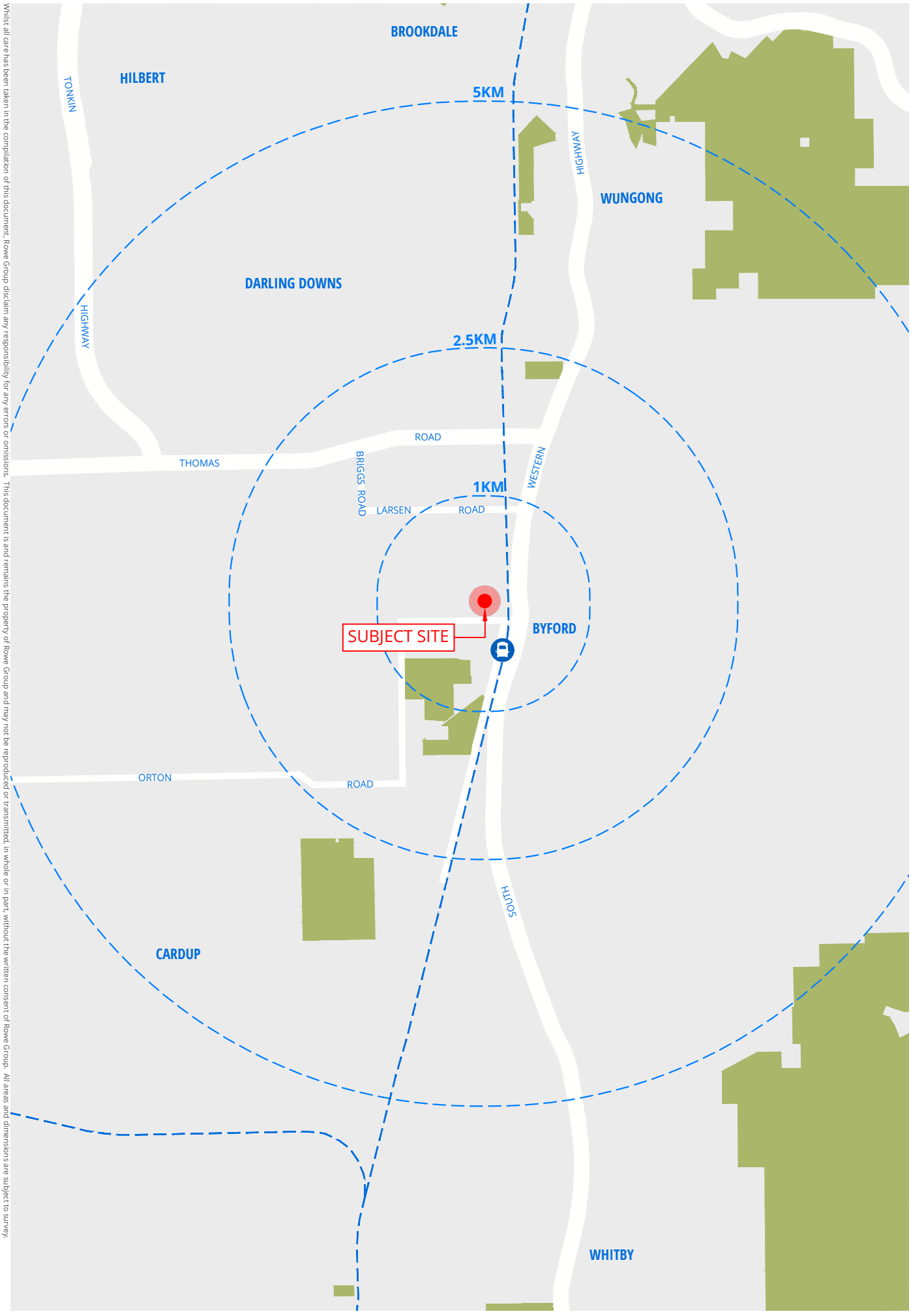
Refer **Figure 3** – Site Plan.

2.3 LEGAL DESCRIPTION AND OWNERSHIP

The undeveloped land comprising the Structure Plan amendment, comprises two landholdings, legally described as follows:

LOT NUMBER / ADDRESS	DEPOSITED PLAN	VOLUME / FOLIO	OWNER	AREA (APPROX.)
Lot 1 Abernethy Road	D65664	1671 /911	ARD No. 5 Pty Ltd	19.72 ha
Part Lot 2 (No. 20) Abernethy Road	D65664	1671 / 912	Coles Group Property Developments Ltd and LWP Byford Syndicate Pty Ltd	15.1 ha (19.27 ha total lot area)

Refer **Appendix 1** – Certificates of Title.



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8861_FIG01B_20200528 Byford (Regional) - DRAWN:ADAM GLASKIN - DATE CREATED: 2020.05.28 - PROJECTION: MGA50 GDA94 - CADASTRE: LANDGATE -

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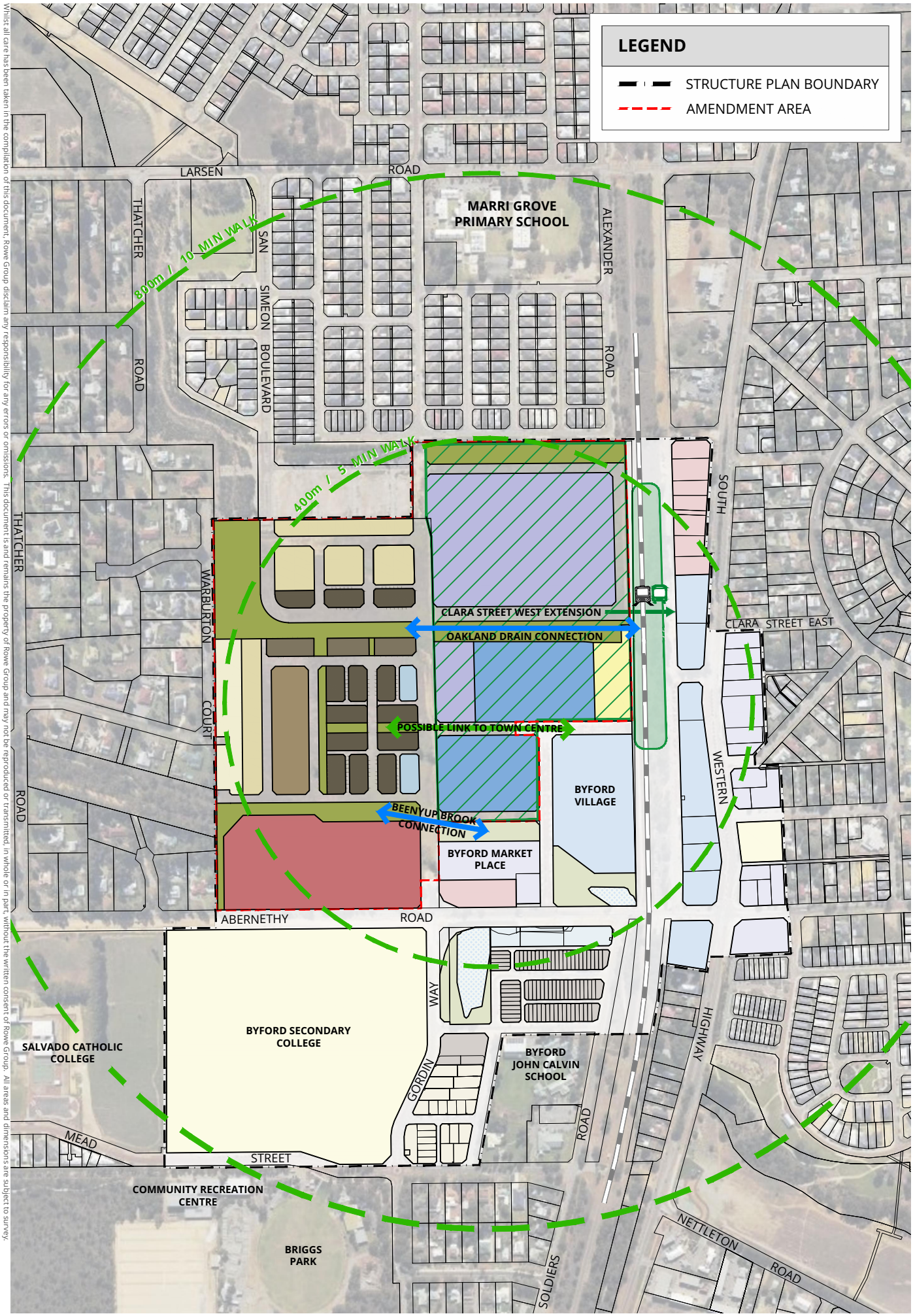
FIGURE 1

REGIONAL LOCATION



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8861_FIG06F_20211019 Byford (Local Context Plan) : DRAWN: A. GLASKIN - DATE CREATED: 2021.10.19 - PROJECTION: MGA50 GDA94 - CADASTRE: LANDGATE - AERIAL: MNG

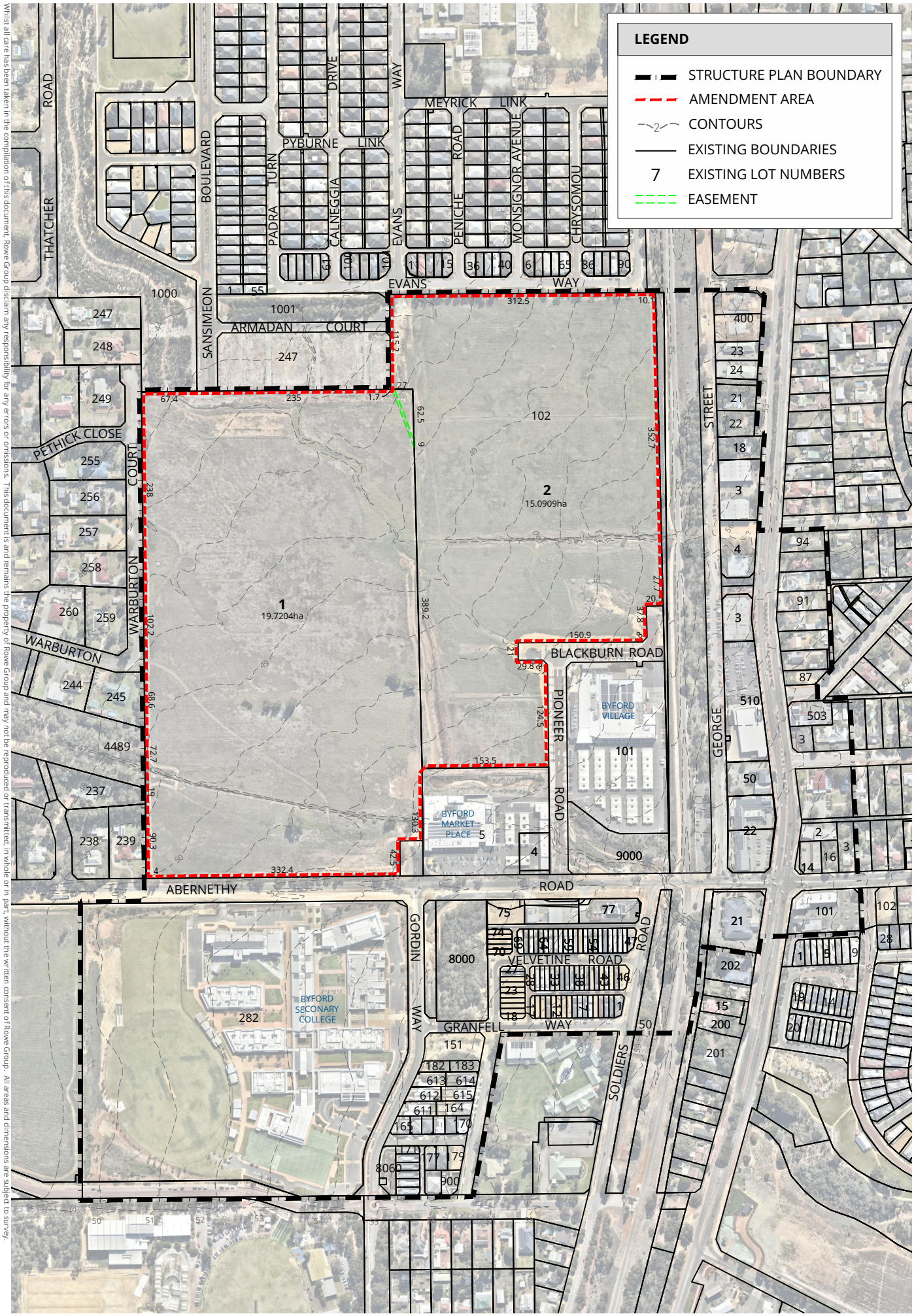
0 187.5 m

SCALE @ A4: 1:7500

NORTH

FIGURE 2

LOCAL CONTEXT PLAN



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8861_FIG03C_20200603 Byford (Site) · DRAWN: A. GLASKIN · DATE CREATED: 2020.06.03 · PROJECTION: MGA50 GDA94 · AERIAL: MNG

0 150 m

SCALE @ A4: 1:6000

NORTH

FIGURE 3
SITE PLAN

3. PLANNING FRAMEWORK

3.1 ZONING AND RESERVATIONS

3.1.1 METROPOLITAN REGION SCHEME

The majority of the site is zoned 'Urban' under the provisions of the *Metropolitan Region Scheme* (MRS). A small portion of the site in the north-western corner (which is identified as a 'Multiple Use Corridor' on the Structure Plan) is currently zoned 'Urban Deferred' under the MRS.

Refer to **Figure 4** – Metropolitan Region Scheme Zoning.

3.1.2 SHIRE OF SJ TOWN PLANNING SCHEME NO. 2

The subject site is zoned 'Urban Development' under the provisions of the Shire of Serpentine Jarrahdale *Town Planning Scheme No. 2* (TPS 2), as well as Draft *Town Planning Scheme No. 3*.

The objective of the 'Urban Development' zone, as stated in clause 5.18 of TPS 2, is:

> *To provide for the orderly planning of large areas of land in a locally integrated manner and within a regional context, whilst retaining flexibility to review planning with changing circumstances.*

This Structure Plan has therefore been prepared in accordance with objectives of the 'Urban Development' Zone.

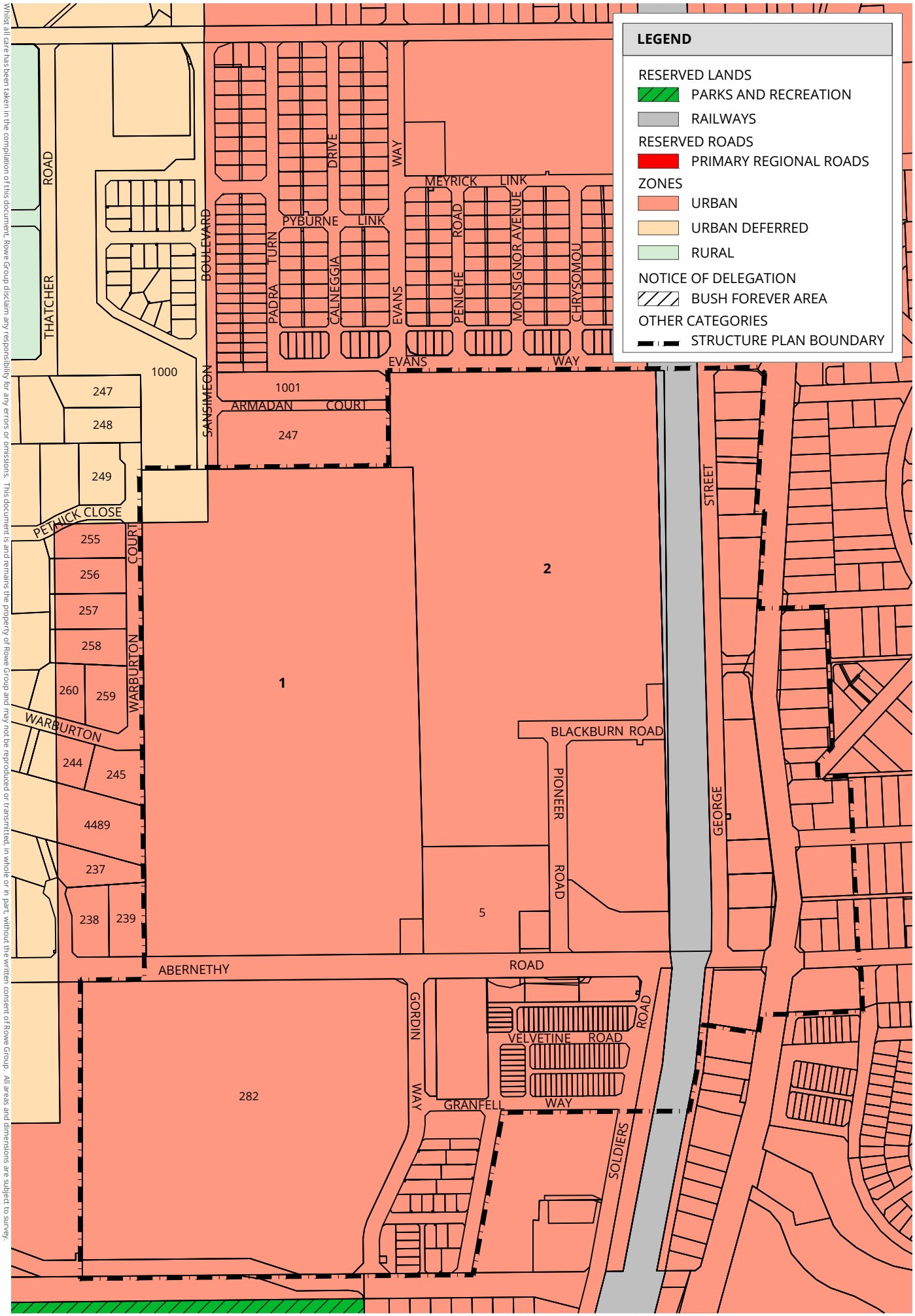
Refer to **Figure 5** – Town Planning Scheme No. 2 Zoning.

3.2 REGIONAL AND SUB-REGIONAL STRUCTURE PLAN

3.2.1 SOUTH METROPOLITAN PEEL SUB-REGIONAL PLANNING FRAMEWORK

Perth and Peel @ 3.5 Million seeks to meet the targets identified under *Directions 2031 and Beyond* ('Directions 2031') and the *State Planning Strategy 2050*. The suite of documents also includes four sub-regional planning frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions. The four sub-regional planning frameworks detail where future homes and employment should be located, and where important environmental assets should be avoided and protected.

The subject site is located within the *South Metropolitan Peel Sub-Regional Planning Framework* (the 'Framework'). The Framework represents a whole of State Government approach to managing the future urban growth within the sub-region, and identifies sufficient land to meet the increased demand for residential dwellings. Under the Framework, the Shire of Serpentine-Jarrahdale is expected to require an additional 35,800 dwellings by 2050. The subject site is identified as 'Urban' under the Framework, consistent with the site's zoning under the MRS.



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8861_FIG04C_20200603 Byford (MRS) - DRAWN: W. CLEMENTS - DATE CREATED: 2020.06.03 - PROJECTION: MGA50 GDA94 - MAP DATA: WAPC

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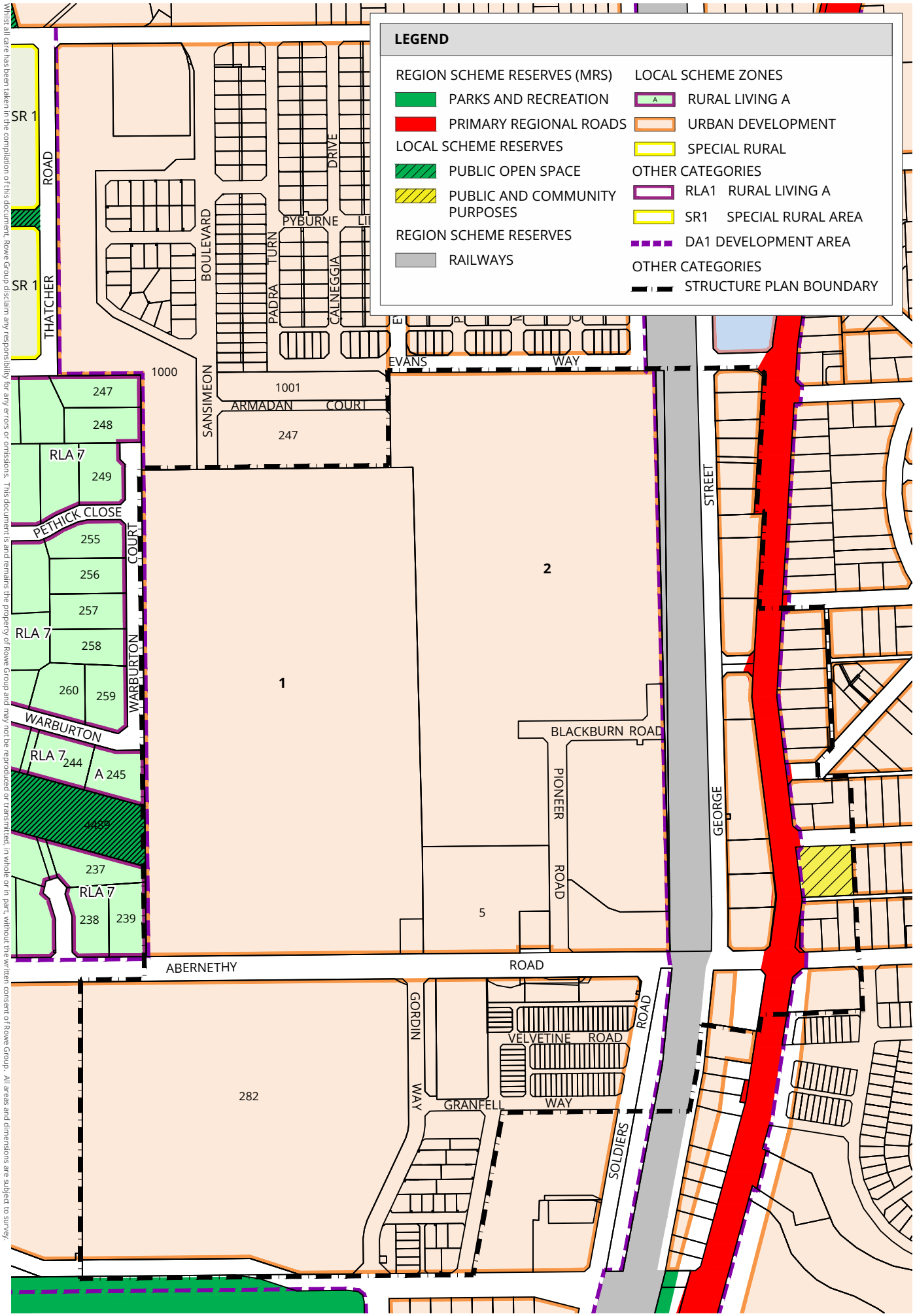
NORTH

FIGURE 4

METROPOLITAN REGION SCHEME ZONING



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8861_FIG05C_20200603 Byford (TPS) - DRAWN: W. CLEMENTS - DATE CREATED: 2020.06.03 - PROJECTION: MGA50 GDA94 - MAP DATA: WAPC

0 150 m

SCALE @ A4: 1:6000

NORTH

FIGURE 5

SHIRE OF SERPENTINE - JARRAHDALE TOWN PLANNING SCHEME No. 4 ZONING

3.2.2 BYFORD DISTRICT STRUCTURE PLAN (DRAFT)

The original *Byford District Structure Plan* was approved in 2005 and sought to guide development and subdivision of the Byford locality, setting the foundation for the initial growth and expansion of the town centre and surrounds. The revised *Byford District Structure Plan* reflects and builds upon the key objectives and principles of the original District Structure Plan in order to consolidate the work undertaken to date and to sustainably guide the future growth of Byford.

The Shire of Serpentine-Jarrahdale adopted the draft *Byford District Structure Plan* ('BDSP') for public advertising at its 17 December 2018 Ordinary Council Meeting. Whilst yet to be finalised and approved, the draft BDSP is considered to be a seriously entertained document, and as such, has been given due regard in the preparation of this Structure Plan amendment.

Preparation of the BDSP was driven by several factors, including the significant population growth forecast for Byford (and the broader Region) under the Sub Regional Framework, the likelihood of a future railway station within the town centre, and the identification of a future district centre within Byford.

The subject site is identified as being within '*LSP Area A – Byford Town Centre*' under the draft BDSP, which identifies the following key matters to be addressed as part of structure planning, subdivision and development at the site:

- Subject to outcomes of METRONET investigations for extension of the Armadale rail line to Byford, address the integration of a transit-oriented development to service a new railway station within the town centre;
- Provide for a diversity of land uses, lot sizes and housing types at a greater density to support activation of the Byford centre;
- Design buildings and dwellings with a high level of adaptability to suit different lifecycle stages/changing demographic needs;
- Maximise connectivity for vehicular, pedestrian and cycling transport networks both internally and to the surrounding street network;
- Demonstrate the retail and commercial demand for the Byford Town Centre as a district level activity centre;
- Sensitively address the interface between the Byford Town Centre and the Byford Trotting Complex Precinct; and
- Protect a connected network of multiple use corridors.

In giving consideration to the above, the proposed Structure Plan provides for a land use framework which contributes to and supports the Byford Town Centre. This is achieved through providing opportunities for increased commercial activity and medium to high density residential dwellings within a legible movement network, with strong pedestrian links to the town centre and future railway station.

The draft BDSP proposes a range of initiatives which will guide the future development of the subject site. In accordance with the draft BDSP, this Structure Plan proposes to realign the future San Simeon Boulevard along the eastern boundary of Lot 1. The San Simeon Boulevard

realignment will provide an improved rectilinear interface with the town centre to the east, and provides a discernible edge for the residential precinct. The draft BDSP designates a significant portion of the land as 'medium to high density residential', with the land east of San Simeon Boulevard primarily identified as 'Commercial'. The draft BDSP also makes provision for two multiple use drainage corridors running in an east-west direction.

The proposed Structure Plan is considered to be consistent with the draft BDSP through the implementation of the following design criteria:

- Proposal to align San Simeon Boulevard along the eastern boundary;
- Provision of a range of residential densities including low, medium and high;
- Provision of two (2) multiple use corridors; and
- Provision of a METRONET Station precinct.

The proposed Structure Plan provides for a larger area of commercial land than allocated within the draft BDSP. The additional area of commercial land is proposed to comprise non-retail uses and is considered to be an appropriate land use in the location fronting Abernethy Road. It is supported by a comprehensive Retail Assessment, discussed in Section 5.7 of this report. The additional commercial area will provide a significant contribution to supporting the development of a future district centre at Byford, within a walkable catchment of the proposed future passenger railway station.

The proposed commercial area fronting Abernethy Road is envisaged to be created as a single lot, likely to accommodate a single showroom / warehouse development in the short to medium term. Longer term, given the landholding will be in single ownership and unfragmented, this may facilitate the transition of the holding to other uses which support the town centre, such as apartments or other commercial type land uses, should those uses be feasible in the future.

Refer **Appendix 2** – Draft Byford District Structure Plan (map only).

3.2.3 BYFORD TOWN CENTRE STRUCTURE PLAN

The current approved *Byford Town Centre Local Structure Plan* ('BTCLSP') was formally endorsed by the WAPC in 2015. The BTCLSP provides the framework for the allocation of land uses within the Byford Town Centre. This Structure Plan proposes to modify and therefore supersede the existing approved BTCLSP. The proposed amendment to the BTCLSP seeks to maintain the general objectives of the existing BTCLSP, whilst rationalising portions of the spatial layout to provide for a legible, rectilinear urban layout, providing for commercial, residential and multiple use corridors, as well as identifying a future METRONET station precinct, reflecting the draft BDSP and the future direction for the Byford Town Centre.

Refer **Appendix 3** – Current approved Byford Town Centre Local Structure Plan (map only).

3.2.4 LOT 1 SUBDIVISION APPROVAL (WAPC REFERENCE 153951)

Subdivision Approval (WAPC Reference 153951) was issued for part of the subject site (Lot 1) on 3 February 2017, comprising 173 residential lots and 3.54 hectares of multiple use corridors in accordance with the existing BTCLSP. This approval was obtained by the previous landowner and

will be superseded by a revised Plan of Subdivision to be prepared and lodged in accordance with the amended BTCLSP, once approved.

Refer **Appendix 4** – Existing Subdivision Approval (WAPC Ref: 153951).

3.3 PLANNING POLICIES

3.3.1 LIVEABLE NEIGHBOURHOODS

Liveable Neighbourhoods represents the WAPC's primary policy to guide the design and assessment of residential structure plans and subdivision. The underlying objective of *Liveable Neighbourhoods* is to create safe, sustainable and attractive neighbourhoods with a strong site-responsive identity that reduce dependency on private vehicles, and which are more energy and land efficient. As such, *Liveable Neighbourhoods* seeks to promote an urban structure based on walkable, mixed-use neighbourhoods with interconnected street patterns. It functions by consolidating key policy aspects into a single 'integrated planning and assessment policy' to provide for a performance-based approach to planning assessment. These aspects include:

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

Liveable Neighbourhoods identifies a series of objectives and requirements for structure plans that, when met, demonstrate compliance with the overall outcomes sought by *Liveable Neighbourhoods*. These objectives and requirements relate to items such as road layout, relationship of housing to open space, activity centres and schools, school location/distribution, public open space layout and location, housing densities and urban drainage considerations.

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

3.3.2 STATE PLANNING POLICY 4.2 – ACTIVITY CENTRES FOR PERTH AND PEEL

Byford is identified as a 'District Centre' within *State Planning Policy 4.2 – Activity Centres for Perth and Peel* ('SPP 4.2'). The main purpose of SPP 4.2 is *'to specify broad planning requirements for the planning and development of new activity centres and the redevelopment and renewal of existing centres in Perth and Peel'*.

The draft BDSP recognises the importance of the Byford Town Centre and states,

> *'the Byford Town Centre is of particular importance as it is projected to service a catchment of approximately 50,000 people. Through appropriate land use planning and*

transport integration the Byford District Structure Plan must enable the Byford Town Centre to provide a range of employment opportunities, access to retail and entertainment, housing diversity, and sufficient access to public transport.'

In the context of SPP 4.2, the Structure Plan provides for town centre uses associated with a transit-oriented development, with a medium to high density walkable residential catchment, consistent with the draft BDSP. Consideration has been given to the objectives of SPP 4.2 to provide for integrated urban development which facilitates opportunities for employment within proximity to higher density housing and high frequency public transport.

This Structure Plan seeks to support the objectives of SPP 4.2 through the optimisation of development generally in accordance with the draft BDSP. It provides for a commercial interface with the adjoining district distributor road network and a transition from the town centre to mixed use/residential land uses of medium to high densities, including consideration for transit-oriented design outcomes to support the indicative METRONET station precinct.

SPP 4.2 is addressed further in Section 5.7 of this report.

3.3.3 STATE PLANNING POLICY 3 – URBAN GROWTH AND SETTLEMENT

State Planning Policy 3 – Urban Growth and Settlement ('SPP 3') sets out the principles and considerations which apply to planning for urban growth and settlement in WA. SPP 3 recognises:

> *The orderly planning of urban growth and settlement should be facilitated by structure plans, which should take into account the strategic and physical context of the locality, provide for the development of safe, convenient and attractive neighbourhoods which meet the diverse needs of the community, and facilitate logical and timely provision of infrastructure and services. Structure plans may consist of a hierarchy of plans ranging from broad district structure plans to more detailed plans for neighbourhoods and precincts.*
>
> *Proposals for future urban growth will be determined having regard to-*
>
> - *the State Planning Strategy, relevant statements of planning policy and regional and subregional strategies in the State Planning Framework;*
> - *population projections provided by the Department for Planning and Infrastructure;*
> - *land release plans published by the Commission; and*
> - *local planning strategies prepared by local government and endorsed by the Commission.*

The proposed Structure Plan is consistent with the abovementioned objectives for future urban growth. Consideration of the strategic and physical context of the subject site is discussed further within this report and more detailed design provisions are to be addressed and considered through the subdivision and detailed design stage.

3.3.4 STATE PLANNING POLICY 3.7 – PLANNING IN BUSHFIRE PRONE AREAS

State Planning Policy 3.7 – Planning in Bushfire Prone Areas ('SPP 3.7') seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. The subject site is identified under the Department of Fire and Emergency Services ('DFES') *Mapping of Bush Fire Prone Areas* as being

'bushfire prone', with the mapped bushfire risk coming from the adjacent areas of remnant vegetation to the west and surrounding grasslands.

Due to the site being identified as bushfire prone, consideration of the principles and objectives of SPP 3.7 need to be considered as part of the design and development process. A Bushfire Management Plan has therefore been prepared by Emerge Associates in support of the proposed Structure Plan, and is included at **Appendix 5** of this report.

SPP 3.7 is addressed further in Section 4.4 of this report.

3.3.5 LOCAL PLANNING POLICIES

The following Shire of Serpentine-Jarrahdale Local Planning Policies are to be addressed and considered through the subdivision and detailed design stages.

- Local Planning Policy 2.8 – Public Open Spaces Policy;
- Local Planning Policy 3.5 – Byford Town Centre – Public Realm Guidelines; and
- Local Planning Policy 3.8 – Byford Town Centre Built Form Guidelines.

Local Planning Policies 3.5 and 3.8 will be updated by the Shire following approval of the amended Structure Plan.

4. SITE CONDITIONS AND CONSTRAINTS

4.1 BIODIVERSITY AND NATURAL AREA ASSETS

The Structure Plan area has been cleared of any remnant vegetation, with only a few trees remaining on site, and therefore holds little to no environmental value from and fauna or vegetation perspective.

There are two existing water courses traversing the site, comprising the Beenyup Brook and the Oaklands Drain. These water courses provide an important district drainage function and, as such, will be retained as part of the urban development of the site. These water courses will be incorporated within public open space, created and landscaped as living streams.

An Environmental Management Plan has been prepared in support of the future development of the Structure Plan area. A copy of the Environmental Management Plan is provided at **Appendix 6**.

4.2 LANDFORM AND SOILS

4.2.1 GEOTECHNICAL

The Structure Plan area is described as having a site classification of M (AS 2870). The soils in the area comprise sands, silty sands and clayey sands, overlying clayey and sandy gravels to depths of up to 2.5 metres below existing ground level of the following types:

- Ridge Hill colluvium of the Yogannup formation
- Guildford Clays – low to medium plasticity clays with silts and sands
- Bassendean Sands – bleached grey to pale yellow, fine to coarse sands.

4.2.2 TOPOGRAPHY

The subject site is relatively 'flat' in nature and is generally 'at grade' with the adjoining land. The topography of the land falls from approximately 53 metres AHD at the south east interface with Abernethy Road to 45 metres AHD in the north west corner.

There is a requirement to earthwork the site to allow for adequate treatment of stormwater runoff and separation to groundwater. Earthworks have been undertaken and a significant amount of fill has been placed on the adjoining site to the east comprising the Byford shopping centre. Future earthwork requirements have been considered in this regard and an Engineering Servicing Summary has been prepared in support of this Structure Plan, which is explained in Section 5.8 of this report.

4.2.3 ACID SULPHATE SOILS

A review of the DWER Acid Sulphate Soils (ASS) risk mapping indicates the site is located in an area having a moderate to low risk of ASS occurring within 3 metres of the natural ground surface.

If ASS is to be disturbed, a suitably qualified environmental consultant will be engaged to conduct an investigation of the area and, if necessary, prepare an ASS Management Plan. The ASS

Management Plan will detail the actions to minimise and mitigate potential adverse environmental effects during the works. If required, the ASS Management Plan will be prepared as a condition of subdivision approval.

4.2.4 CONTAMINATION

A search of the DWER Contaminated Sites Database identified no registered contaminated sites within the Structure Plan area or immediate surrounds.

4.3 GROUNDWATER AND SURFACE WATER

Recognising the site's susceptibility to flooding (given its location and existing natural topography), effective urban water management is critical to mitigating the risk of flooding and supporting the proposed urban development. The site is traversed by two drainage corridors which direct stormwater runoff from the Darling Escarpment, comprising:

- **Beenyup Brook**, which passes through the southern portion of the site. The Brook has been configured to the east of the site to direct water through landscaped drainage swales. The Brook continues to the west of the site through a dedicated drainage corridor within a natural setting.
- The **Oaklands Drain** passes through the north eastern portion of the site. It aligns within a semi formalised channel to the east and dedicated drainage corridor, where it exits the site in the north-west.

Surface water requirements for the site have been considered at district and local levels as part of the approved BTCLSP, through the consideration of the District Water Management Plan ('DWMP') and in the preparation a Local Water Management Strategy ('LWMS'). Drainage has been further considered across the site through the preparation of an Urban Water Management Plan ('UWMP') as a condition of Subdivision Approval (WAPC Ref: 153951).

The urban water management documents prepared in support of the BTCLSP and approved Plan of Subdivision have been reviewed in the preparation of this Structure Plan and are discussed further in Section 5.5 of this report.

4.4 BUSHFIRE HAZARD

In accordance with the Department of Fire and Emergency Services mapping, the subject site is identified as being bushfire prone. In accordance with the requirements of *State Planning Policy 3.7* and the associated *Guidelines for Planning in Bushfire Prone Areas*, a Bushfire Management Plan (BMP) has been prepared by Emerge Associates as a strategic guide to demonstrate how development compliance will be delivered at future planning stages. Refer to **Appendix 5** for a full copy of the BMP.

The BMP considers the bushfire hazards abutting the site and the associated bushfire risk. As demonstrated in the BMP, the risk to property and persons from bushfire is readily manageable through standard management responses. Upon implementation of the proposed management measures, the site will be able to be developed with a manageable level of bushfire risk while maintaining full compliance with the relevant bushfire controls.

4.5 HERITAGE

4.5.1 ABORIGINAL HERITAGE

A search of the Department of Planning, Lands and Heritage ('DPLH') Aboriginal Heritage Inquiry System has identified *Beenyup Brook*, which traverses the site, as a site of aboriginal heritage significance. Beenyup Brook is listed as Aboriginal Site 24991 and is noted as having mythological significance. Aboriginal Site 24991 is not, however, classified as a protected area and therefore, does not impact upon the development of the proposed Structure Plan area.

4.5.2 EUROPEAN HERITAGE

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

A search of the Shire of Serpentine - Jarrahdale's Municipal Heritage Inventory identified no sites of local historic significance within the subject site or immediate surrounds.

4.6 CONTEXT AND OTHER LAND USE CONSTRAINTS AND OPPORTUNITIES

4.6.1 INDICATIVE METRONET STATION

As part of its METRONET roll out, the State Government has proposed an extension of the Armadale passenger railway line through Byford, with a station (including bus interchange) proposed for the Byford Town Centre, within the Structure Plan area.

The Byford METRONET project has been committed to by Government and is currently with the Office of Major Transport and Infrastructure Delivery (OMTID) for delivery. The OMTID are currently undertaking a procurement process for an alliance contractor to construct the project.

Following engagement of a contractor, further detailed planning of the station and its immediate precinct will be undertaken. This will include engagement with the Shire of Serpentine-Jarrahdale and other key stakeholders. Based on current programming, stakeholder engagement is intended to commence by the end of 2021, following an announcement by Government. It is anticipated construction will commence at the end of 2022, for a proposed 2025 opening.

Given the above process, the Structure Plan has not endeavoured to provide a complete detailed design of the transit-oriented development. Rather, a METRONET station precinct has been identified on the Structure Plan, set aside for further detailed planning in accordance with the requirements of draft *State Planning Policy 7.2: Precinct Design*, prior to subdivision and development taking place.

Notwithstanding the further detailed planning to be undertaken, the Station Precinct is anticipated to provide for the following uses, subject to detailed design and consultation with the Shire of Serpentine-Jarrahdale:

- Library, community and innovation centre,
- Town square,

- Allied health hub,
- TAFE and technical skills education hub,
- Police and justice hub, and
- Mixed use development with ground floor food, beverage and entertainment.

The balance of the Structure Plan area has made careful consideration for the future station by way of providing for strong pedestrian connections and designation of appropriate land uses and densities. The proposed Structure Plan concept has been designed as such that it not only supports a transit-oriented development outcome, but also supports the growth of the town centre regardless of the train station, in the event the station does not eventuate.

4.6.2 NOISE MANAGEMENT

Given the proximity of the site to the proposed METRONET station and associated rail infrastructure, the Structure Plan area may be impacted by noise nuisance. However, given the detailed design for the rail extension and future station is yet to be undertaken, an acoustic assessment has not been undertaken for the site. Should further detailed planning be available at the time of subdivision, an acoustic assessment and Noise Management Plan will likely be required as a condition of subdivision approval.

4.6.3 INTERFACE WITH ADJOINING RURAL RESIDENTIAL LAND

There is an existing Rural Residential subdivision, associated with the Byford Trotting Complex, situated adjacent to the Structure Plan area to the west.

To minimise any impacts to the existing Rural amenity of this land, the Structure Plan provides interface treatments along the western boundary of the site, comprising an R10 transitional zone and public open space.

The R10 lots will be configured to complement the existing Special Residential development whilst contributing to the streetscape through wider lot frontages and sympathetic built form. They will provide for lots with an average size of 1000m^2, with frontages of approximately 25 metres and depths of 40 metres. The low-density residential transitional zone extends along approximately one-third of the Structure Plan boundary.

The balance of the interface will be softened by areas of proposed public open space, providing a suitable buffer to the urban residential development to the east, within the Structure Plan area. Whilst providing a buffer, this open space also provides for pedestrian connections through to the town centre and train station from the Rural Residential lots, via Warburton Court. Please refer to the cross-sections included as part of the Landscape Master Plan provided at **Appendix 7**.

To further minimise any potential land use conflicts or adverse amenity impacts, no vehicle access will be permitted from Warburton Court, running along the western boundary of the site, into the Structure Plan area. Limited lot access to the R10 coded lots is proposed (with only 7 lots relying on access from Warburton Court), with the balance accessed from internally within the Structure Plan area.

5. LAND USE AND SUBDIVISION REQUIREMENTS

5.1 LAND USE

The Structure Plan map (**Plan 1**) identifies the proposed land uses, residential densities, multiple use corridors and movement networks applicable to the Structure Plan area. The Structure Plan also identifies an indicative METRONET station precinct, which will require further detailed planning to be undertaken prior to any subdivision or development taking place.

The Structure Plan proposes urban development in accordance with the zoning of the site under the MRS and TPS 2, as well as the objectives of the existing approved BTCLSP and the draft BDSP. It comprises land uses such as strategically located 'Commercial' areas, orientated towards the major roads and rail infrastructure, 'Residential' with densities ranging from R10 to R80, as well as public open space and drainage in the form of multiple use corridors.

The spatial modifications to the existing BTCLSP, as proposed by this Structure Plan, include the following:

- Realignment of San Simeon Boulevard in accordance with the BDSP;
- Realignment of the multiple use corridors in accordance with the BDSP;
- Reconfiguration of the internal movement network;
- Reconfiguration of density and land uses;
- Consideration of the interface with adjoining roads, public open space and existing development;
- Increase in commercial floorspace; and
- Identification of an indicative METRONET station precinct.

Refer **Plan 1** – Structure Plan Map (as amended).

The following sections of this report address the relevant elements of Liveable Neighbourhoods, describing the design response proposed under the Structure Plan. Please refer to the Structure Plan Amendment summary table provided within the Executive Summary on Page v of this report.

5.2 PUBLIC OPEN SPACE

The provision of public open space across the Structure Plan area has been considered with regard to the requirements of Liveable Neighbourhoods. The proposed Structure Plan provides for approximately 5.83 hectares of public open space (excluding those areas which have already been developed), comprising approximately 19.4% of the gross subdivisible area. Including the existing areas of public open space, the Structure Plan provides for a total of approximately 8.1 hectares of public open space.

Refer **Figure 6** – Public Open Space Plan, and **Figure 7** – Public Open Space Schedule.

The Structure Plan provides for public open space which reflects the parameters of the draft BDSP, utilising water sensitive urban design principles that incorporate public open space and drainage through the provision of multiple use corridors ('MUCs').

The Structure Plan provides for two primary MUCs, running east-west across the site generally in accordance with the draft BDSP. Each of these have been considered with regard to their dual function in the conveyance, retention and infiltration of stormwater runoff, whilst also providing landscaped public open space amenity for recreation, serving both and active and passive function.

For further detail, refer to the Landscape Concept Masterplan prepared by Emerge Associates, provided at **Appendix 7**.

5.2.1 MULTIPLE USE CORRIDORS

The Multiple Use Corridors (MUCs) form the basis for the provision of public open space across the site. Whilst the corridors are required to convey stormwater at a district level, it is intended the corridors will make a significant contribution to the landscaped open space amenity across the site, serving both active and passive recreation functions.

5.2.1.1 NORTH

The northern MUC comprises an extension and formalisation of the Oaklands Drain, which enters the site from the east and runs parallel with San Simeon Boulevard and Clara Street West. The MUC will be 'framed' by the extension of San Simeon Boulevard/ Clara Street West on its northern boundary and have a direct interface with residential and mixed use/ commercial development to the south. These direct interfaces create opportunities for strong passive visual surveillance, access, and amenity.

The MUC will maintain its dual function under the proposed Structure Plan, providing primarily for the conveyance of district storm water and recreational space. The drainage swale will be created as a living stream through the site, designed to capture the 1 and 5 year ARI rainfall events. The MUC will be landscaped with a mix of vegetation and turf, incorporating a connected path network and pedestrian boardwalk style crossings.

The MUC widens in the west of the Structure Plan area, allowing for greater useability for active open space. This will include an open turf area providing for a 'kick about' space, as well as the provision of other public amenities such as picnic areas, play equipment, hard courts, shelters, barbecue facilities and seating. The provision of such amenities is subject to detailed design, in consultation with the Shire.

5.2.1.2 SOUTH

The southern MUC provides a link from the formally landscaped portion of Beenyup Brook as it passes the existing shopping centres in the east of the Structure Plan area, through to the informal drainage corridor traversing the Special Residential area to the west of the site.

This MUC will be constructed and landscaped similar to the northern MUC, providing for an enhanced pedestrian connection, linking the Special Residential lots to the west with the Town Centre, within a safe walkable corridor.

This MUC has direct frontage to residential development on its northern interface and commercial development to the south.

5.2.1.3 NORTH-SOUTH LINK

The north-south MUC provides for the dispersion of district drainage across the site, mitigating reliance on the capacity of Beenyup Brook downstream from the site. This MUC corridor will be constructed as a landscape feature to contribute to the site's amenity, providing for a strong pedestrian connection between the northern and southern MUCs.

5.2.2 WESTERN LINEAR PUBLIC OPEN SPACE

The Structure Plan provides for an east-west linear public open space corridor, west of San Simeon Boulevard. This open space corridor provides a connection between the western residential land and the Town Centre.

This open space provides opportunities for both passive and active recreation, as well as a children's play space, subject to detailed design and in consultation with the Shire.

This open space has direct residential frontage to both the north and south, increasing public safety through enhanced passive surveillance and opportunities for activation, as well as providing amenity for the adjacent lots.

5.2.3 NORTH-EASTERN PUBLIC OPEN SPACE

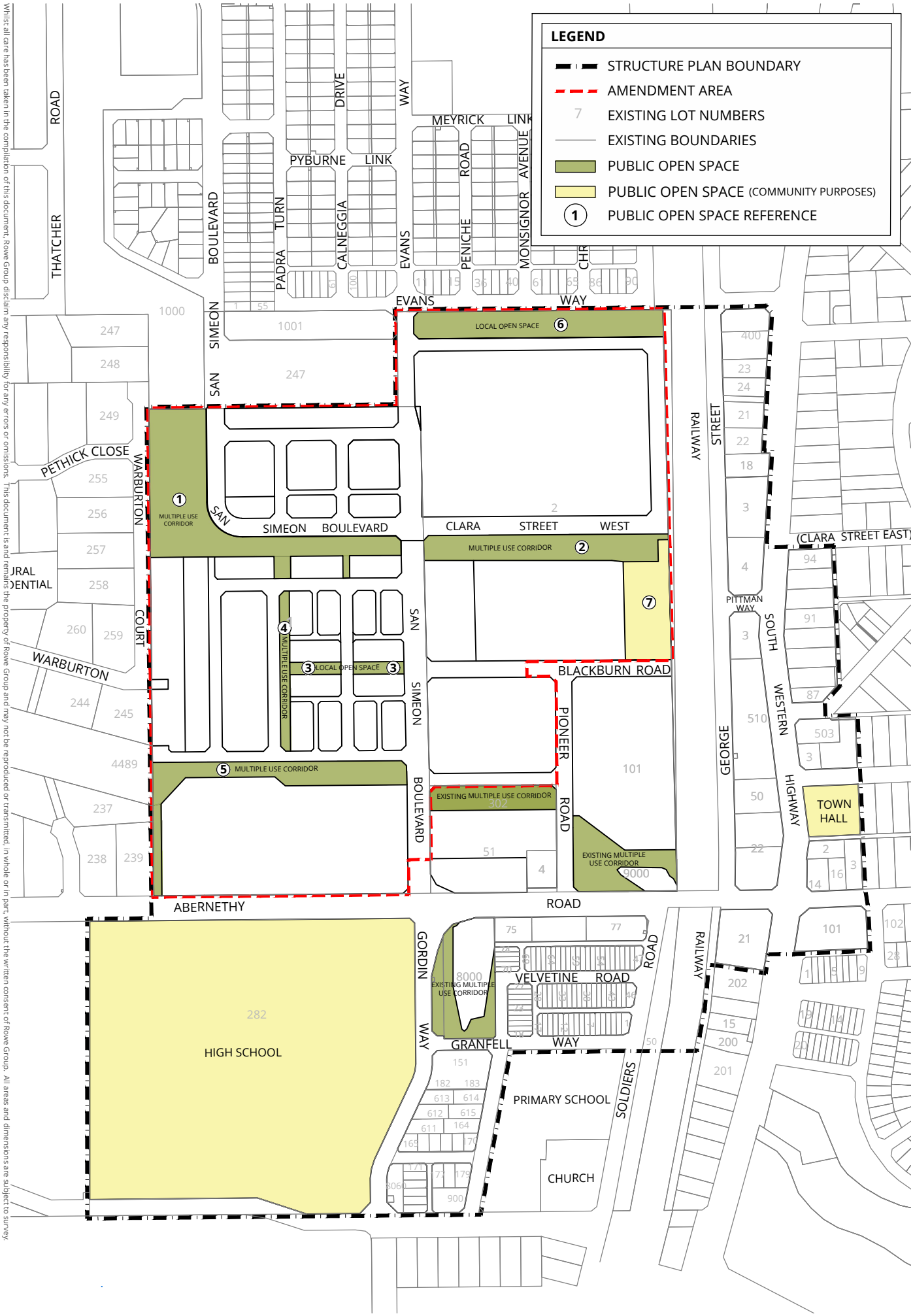
The Structure Plan provides for an area of public open space in the north of the site, fronting existing residential development. This open space will provide for both passive and active recreation opportunities, including picnic and children's playground facilities, subject to detailed design. This open space also provides for a drainage function.

5.2.4 EASTERN PUBLIC OPEN SPACE

This area of public open space provides for unrestricted local open space east of San Simeon Boulevard, serving both passive and active recreation functions. This open space provides a connection between other existing and proposed areas of open space, as well as providing for a 'buffer' between the proposed residential and town centre uses.

5.2.5 INDICATIVE METRONET PRECINCT

The public open space provision for the METRONET station precinct is to be detailed as part of the further detailed planning to be undertaken for that site. Any community facilities required for the Structure Plan area are likely to be situated within this precinct, which may include uses such as a library, community centre, and town square.



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8861_FIG07F_20211013_Byford (POS) : DRAWN:**VEDH RAMKHALAWON** : DATE CREATED: **2021.10.13** - PROJECTION: **MGA50** GDA94 - CADASTRE: LANDGATE -

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FIGURE 6

PUBLIC OPEN SPACE PLAN

Byford Town Centre Local Structure Plan (as amended) – Public Open Space Schedule

29/06/2021

Site Area (Local Structure Plan Boundary)					78.39 ha
Deductions					
Commercial/ Town Centre/ Mixed Use Zoned Land (incl. existing)	25.76 ha				
Existing Open Space and Drainage	2.26 ha				
Railway Reserve	3.95 ha				
High School Site	13.05 ha				
South Western Highway Reserve	1.53 ha				
District Drainage (1:5 Year ARI)	1.77 ha				
1:1 Year ARI Subdivision Drainage	0.03 ha				
Public Access Ways	0.02 ha				
Total		**48.37 ha**			
Gross Subdivisible Area					**30.02 ha**
POS @10%					3.00 ha
Public Open Space Contribution					
May comprise:					
Min 80% unrestricted POS		2.40 ha			
Min 20% restricted use POS		0.60 ha			
Total Required POS				**3.00 ha**	

POS Reference Number	**Total Area (m^2)**	**1:1yr Drainage (m^2)** *Deduction from Net*	**Unrestricted Urban POS sites (m^2)**	**Restricted Urban POS sites (m^2)**	**1:5 Year District Drainage (m^2)**
1 (MUC Oakland Drain West)	19074	118	9726	1230	8000
2 (MUC Oakland Drain East)	9033	41	5838	554	2600
3 (Linear Open Space)	1855	0	1855	0	0
4 (MUC Beenyup - Oakland link)	2295	0	795	0	1500
5 (MUC Beenyup Brook West)	9096	53	3968	975	4100
6(Northern Open Space)	9905	52	8292	61	1500
7 (Community Purpose)	7003	0	7005	0	0
Total	**58261**	**264**	**37479**	**2820**	**17,700**
	5.83	**0.03**	**3.75**	**0.28**	**1.77**
Percentage of gross subdivisible area	**19.4%**	**0.09%**	**12.48%**	**0.94%**	**5.90%**

Notes:

1. This Public Open Space Schedule is based on the Local Structure Plan prepared by Rowe Group (Plan ID: 8861-LSP01-D).

2. This Public Open Space Schedule is based on the drainage assumptions as per the Local Water Management Strategy prepared by Hyd2o

FIGURE 7

PUBLIC OPEN SPACE SCHEDULE

5.3 RESIDENTIAL

The spatial layout of the Structure Plan area has been configured to provide for a range of residential densities and dwelling types which are appropriate to the site's location, within immediate proximity to the Town Centre and indicative METRONET station, as well as allowing for a transition to the surrounding residential land uses. The layout has been considered in the context of the draft BDSP to provide for regularity and conformity through its design response.

The proposed residential layout has been designed to provide for a focus on areas of amenity (such as the multiple use corridors). The residential cells are oriented perpendicular and parallel to the external surrounding road network in accordance with the draft BDSP, to allow for efficiency in design and affordability in dwelling construction through the provision of regular shaped lots, as well as to provide for better solar-responsive design. The residential layout provides for a legible and safe movement network and enhanced pedestrian connections.

Residential density is allocated in accordance with the R-Codes, with due consideration given to the density codes identified within the existing BTCLSP (R15, R25, R30 and R60) and the density aspirations illustrated in the draft BDSP (Medium to High, R40 - R100), which provide for a range of lot sizes to meet the varying requirements for housing, cognisant to a town centre and transit-oriented development. Density codes across the site range from R10 at the western interface to R80.

To assist in providing for a high quality urban development outcome, the Structure Plan, through the implementation of Local Development Plans, requires all lots coded R40 and above to have a minimum height requirement of two storeys.

5.3.1 R10 DENSITY CODE

The Structure Plan provides a R10 transition zone along the western boundary of the site, providing for a suitable interface with the existing Special Residential subdivision to the west.

These lots will be configured to complement the existing Special Residential development whilst contributing to the streetscape through wider lot frontages and sympathetic built form. They will provide for lots with an average size of 1000m^2, with frontages of approximately 25 metres and depths of 40 metres.

5.3.2 R30 DENSITY CODE

R30 is the predominate density code across the site, which allows for flexibility in the provision of a suitable range of lot sizes to accommodate a wide range of dwelling types and affordability. Lot sizes are proposed to be of standard dimensions to accommodate project homes (i.e. frontages of 12.5 to 15 metres with depths of 30 metres).

5.3.3 R40 DENSITY CODE

R40 coded lots are proposed directly adjoining the multiple use corridors. These lots will be considered to provide for a uniform and aesthetic interface with the multiple use corridors to provide for enhanced passive surveillance and opportunities for activation. These areas are proposed to comprise elevated lots with 8.5 to 10 metre frontages, which will facilitate the

construction of double storey homes with outdoor living areas located at the interface with the multiple use corridor.

5.3.4 R60-R80 DENSITY CODE

Higher density areas, comprising density codes of R60 to R80, are proposed generally central within the Structure Plan area. These areas form an 'urban core', comprising development sites with direct frontage to areas of public open space and key movement corridors, providing strong, direct connections to the town centre and proposed train station.

The indicative METRONET Station precinct provides for an average density code of R60, however noting this area is subject to further detailed precinct planning, which may result in a review of density codes at that time.

5.3.5 DENSITY TARGETS

Based on the R-Codes allocated, excluding the Station Precinct area, the Structure Plan area is capable of achieving a residential density of approximately 36.5 dwellings per residential site hectare, subject to design.

Whilst a portion of the Structure Plan area is already constructed, the densities achieved over the majority of the Structure Plan will be subject to detailed design at the subdivision and development stages. Notwithstanding, a minimum average density of 30-40 dwellings per residential site hectare will be required to be achieved, consistent with the requirements of Liveable Neighbourhoods for land within 400 metres of a town centre or metropolitan railway station. The proposed Structure Plan is capable of achieving this target.

The above density targets are calculated on the assumption the Structure Plan amendment area can achieve a yield in the order of 255 dwellings, excluding the Station Precinct, based on the minimum average lot size requirements for the R-Codes allocated on the Structure Plan (refer Plan 1). This would equate to an approximate residential population of 765 people, based on 3 people per household (2016 Census). Whilst the amendment area is capable of achieving such yields, it is dependent on the detailed design of lots, as well as the market realities of the site. On this basis, it is likely the final dwelling yield will be less than 255.

As noted, the above calculations are exclusive of the Station Precinct.

Higher densities are expected within the Station Precinct, with density targets to be determined as part of further detailed precinct planning to be undertaken, with consideration for the requirements of State Planning Policy 4.2, Liveable Neighbourhoods and other relevant policies. However, based on the assumption that 75% of the station precinct will be developed for residential purposes, at an average density code of R80, and therefore achieving approximately 450 dwellings in that area, the Structure Plan is more likely to achieve densities in the order of 50 to 60 dwellings per residential site hectare

Based on an approximate 450 dwellings within the Station Precinct and 255 dwellings within the balance of the amendment area, the amendment area is anticipated to yield in the order of 705 dwellings, being approximately 55.5 dwellings per residential site hectare. There are also 113 dwellings existing within the balance of the Structure Plan area, which has the potential to increase

to 135 dwellings based on current zoning. The entire Structure Plan area therefore has the potential to yield approximately 840 dwellings, subject to detailed design.

5.3.6 LOCAL DEVELOPMENT PLANS

Given the prominence of the Structure Plan within the Byford Town Centre and the importance of delivering functional urban built form outcomes, Local Development Plan(s) are to be prepared for any lots with one or more of the following attributes:

- Lots with an area less than 260m^2;
- Grouped and/or multiple dwelling sites;
- Irregular shaped lots;
- Lots with particular site constraints;
- Lots abutting public open space;
- Lots abutting multiple use corridors;
- To address vehicle access and egress;
- Lots subject to a notification on Title;
- Lots with a Bushfire Attack Level rating of 12.5 or greater;
- Lots requiring quiet house design for noise attenuation through deemed-to-comply noise insulation packages, and/ or lots identified as requiring specialist acoustic requirements;
- Lots within the METRONET Train Station Precinct (unless otherwise satisfied by a Precinct Plan in accordance with the requirements of draft *State Planning Policy 7.2: Precinct Design*), to the satisfaction of the Shire of Serpentine-Jarrahdale; and
- Commercial, Mixed Use and Town Centre zoned land.

Local Development Plans are to address, as a minimum, the following requirements (where appropriate):

- Dwelling orientation;
- Type of fencing;
- Location of carports/garages and vehicular access;
- Passive surveillance;
- Setback variations;
- Solar passive design;
- Building height;
- Lots coded R40 and above are to consider a minimum building height of two-storeys;
- Building articulation; and

- Requirements of dwelling construction to enable compliance with an approved Bushfire Management Plan.

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

5.4 MOVEMENT NETWORK

The proposed movement network has been considered in the context of the road network identified under the draft BDSP, in consultation with officers of the Shire of Serpentine-Jarrahdale.

The Structure Plan proposes the following key modifications to the movement network identified under the existing BTCLSP:

- Realignment of San Simeon Boulevard in accordance with the draft BDSP;
- Incorporation of an efficient and legible modified grid layout;
- Orientation of pedestrian corridors to align with the proposed town centre and indicative railway station;
- Inclusion of multiple use corridors for drainage and recreation in accordance with the draft BDSP; and
- Provision for roundabouts at the intersections of San Simeon Boulevard and Abernethy Road, and at Clara Road West.

The vehicular and pedestrian connections provide for a highly legible and permeable movement network, which runs parallel and perpendicular to the existing roads, allowing safe and efficient movements across the site. Consideration has been given to the interface with the surrounding roads to allow for integration with proposed intersections and adjoining development.

A Traffic Impact Assessment has been prepared by Cardno, in support of this Structure Plan, which confirms the proposed movement network provides for an acceptable level of service and does not have a significant impact on the existing surrounding road network. The proposed Structure Plan represents a total two-way trip generation of approximately 1,709 vehicles during the morning peak hour and 3,026 vehicles during the afternoon/ evening peak hour.

It is anticipated the opening of the Byford METRONET station will result in a proportion of vehicular trips generated by the Structure Plan being shifted to public transport. The Traffic Impact Assessment therefore applies a 5% reduction to the total vehicle trips generated by the Structure Plan as a result of the station opening, reduced to 1,623 vehicles during the morning peak hour and 2,875 vehicles during the afternoon/ evening peak hour.

Refer **Appendix 8** – Traffic Impact Assessment.

5.4.1 NEIGHBOURHOOD CONNECTOR A

San Simeon Boulevard is the main distributor through the Structure Plan area, connecting from Larsen Road in the north to Abernethy Road in the south.

San Simeon Boulevard will function as a 'Neighbourhood Connector A' road, in accordance with the classification under Liveable Neighbourhoods. San Simeon Boulevard is proposed at widths varying between 22.5 and 27.5 metres in accordance with identified Development Contribution Plan requirements. The road reserve will be constructed with a central median and serves to link the north west areas of Byford with the town centre and indicative METRONET station precinct.

San Simeon Boulevard has been designed to facilitate a future connection to Clara Street West.

The intersection of San Simeon Boulevard with Abernethy Road is controlled by an existing roundabout, creating a four-way intersection with Gordon Street to the south.

Consideration for safe and efficient pedestrian movements across San Simeon Boulevard will be paramount to ensuring the effective connectivity through the site to the town centre and train station. Such movements will be included as part of the detailed design phase at subdivision, in consultation with the Shire of Serpentine-Jarrahdale, once the detailed lot layout is known.

5.4.2 ACCESS STREET B

The internal road network will function as typical residential access roads, which fall under the 'Access Street B' classification in accordance with Liveable Neighbourhoods. These roads have reserve widths ranging between 13.2 metres and 15 metres, servicing the residential lots.

The internal road network proposes streets in a regular north-south, east-west alignment providing for a legible and highly permeable road network, which facilitates vehicular and pedestrian movement to areas of high amenity, including the town centre and train station precinct, and the Byford Secondary College.

5.4.3 PUBLIC TRANSPORT

The Byford Town Centre is identified as providing for a future railway station as part of the State government's METRONET initiative. Whilst the specific design detail for the station is yet to be confirmed, its development will ultimately provide for a direct and efficient high frequency public transport connection to the Perth CBD, via an extension of the Armadale train line. The train station will be supported by a network of feeder bus services to reduce the number of car trips generated by the district.

At this stage, the station is anticipated to commence construction at the end of 2022, for a proposed 2025 opening.

The closest existing bus routes servicing the site are Transperth Services 254, 251, 252 and 253, all of which provide a connection to the Armadale station. These routes also service Byford and further afield, Mundijong and Jarrahdale. The closest existing bus stops are situated approximately 500 metres from the site on Soldiers Road and approximately 600 metres from the site on South Western Highway.

5.4.4 PEDESTRIAN AND CYCLE NETWORK

The public open space and multiple use corridor network provides for direct pedestrian access to the Byford Town Centre, the indicative METRONET station precinct and Byford Secondary College, all situated within a 400 metre walkable catchment. In accordance with Liveable Neighbourhoods, footpaths will also be provided on at least one side of all streets.

On street cycle lanes are accommodated within the San Simeon Boulevard and Clara Street West cross sections, providing east-west connections through the site to the town centre and train station, and north-south between Larson and Abernethy Roads. Traffic volumes on the access streets are anticipated to be relatively low, providing for a safe shared cycle and motor vehicle environment.

Under the draft BDSP, Principle Shared Paths are proposed along Abernethy Road and parallel to the railway line. These routes will include dedicated cycle infrastructure, integrated with the existing Perth Bicycle Network.

5.5 URBAN WATER MANAGEMENT

Urban water management is critical to the practical implementation of urban development across the site. The site's location at the foot of the Darling Ranges on the Swan Coastal Plain poses challenges for the conveyance and dispersion of stormwater runoff. The most significant consideration for stormwater management impacting the site is that at a district level.

Significant studies have been undertaken to ensure adequate areas of land are set aside for drainage purposes. Current urban water management studies have been reviewed and considered in the preparation of this Structure Plan, in conjunction with up to date stormwater modelling to provide for a well-considered and holistic approach to future urban water management.

Surface water runoff will be managed both on a development scale and individual lot scale. The principle behind the stormwater management strategy is to ensure post development flows are restricted to pre-development conditions. The strategy also ensures water discharged from the subject site is of suitable quality. The drainage system has been designed to achieve these objectives.

The proposed methodology for addressing stormwater runoff is through Water Sensitive Urban Design principles incorporating living streams within multiple use corridors. The multiple use corridors have been configured to provide for the dual functions of providing for public open space amenity and drainage to convey district stormwater runoff, whilst also attenuating subdivision drainage requirements.

5.5.1 LOCAL WATER MANAGEMENT STRATEGY

A Local Water Management Strategy (LWMS) has previously been approved for the site as part of the existing BTCLSP (GHD, 2014). The existing approved LWMS outlines the overall water management strategy for the site, including principles, objectives, description of the pre-development environment, a water conservation strategy, groundwater management strategy, monitoring and implementation.

Subsequently, an LWMS addendum has been prepared by Hyd2o, in support of the proposed Structure Plan. A copy of the LWMS addendum is provided at **Appendix 9**. The addendum seeks to update the LWMS to align the stormwater management strategy with both the updated Structure Plan and the *Byford District Water Management Strategy* (DWMS) (Urbaqua, 2018).

The DWMS provides the overall approach to water management for the site, with associated arterial drainage modelling.

The LWMS addendum provides an update to the LWMS through the refinement of stormwater modelling, surface water management and the groundwater management to both a district and local scale. The LWMS has been prepared in accordance with the Water Sensitive Urban Design practices as described in the *Stormwater Management Manual of WA* and *Better Urban Water Management*.

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

Refer **Appendix 9** – Local Water Management Strategy Addendum.

5.5.1.1 MULTIPLE USE CORRIDORS

To ensure adequate stormwater management of the site, development of landscaped bioretention basins within multiple use corridors will be constructed to manage up to the 1% Annual Exceedance Principle ('AEP') flood event as a result of urbanisation of the site, as well as the 20% AEP, which impacts the site through district drainage conveyance requirements. Two primary multiple use corridors traverse the site in a general east-west direction to manage the majority of the district drainage, whilst a north-south drainage link is provided to attenuate drainage flows through the site.

The design of the bioretention basins/swales within the multiple use corridors have been considered in a landscape context, which are illustrated in the Landscape Masterplan Concept at **Appendix 7**.

5.6 EDUCATION FACILITIES

The Byford Primary School is situated approximately 400 metres to the east of the subject site. Salvado Catholic College is also situated to the south of the site, providing for enrolments from Kindy to Year 6.

Further, the Byford Secondary College is situated within the town centre, south of Abernethy Road.

The future population of the Structure Plan area will be included within the catchments of the existing schools, and therefore, in accordance with the BDSP, no additional primary or high schools are proposed within the Structure Plan area.

5.7 ACTIVITY CENTRES AND EMPLOYMENT

Byford is identified as a District Centre within the *Sub Regional Planning Framework - Perth and Peel @3.5 million* and SPP 4.2. The site is also identified for a METRONET station as part of current State Government initiatives. Consideration has therefore been given to the objectives of the relevant planning framework to provide for integrated urban development which facilitates opportunities for employment within proximity to higher density housing and high frequency public transport.

The proposed Structure Plan seeks to support the objectives of SPP 4.2 through the optimisation of development generally in accordance with the draft BDSP. It provides for a commercial interface

with the adjoining district distributor road network and a transition from the town centre to mixed use/residential land uses, providing the ability to incorporate employment generators. The spatial layout of the Structure Plan incorporates commercial land uses appropriately located within proximity to proposed residential development, which offers a range of mixed-use development opportunities and housing choice within a walkable and legible catchment of the town centre and future railway station precinct.

The Structure Plan also provides for a METRONET station precinct. Whilst subject to further detailed planning, it is anticipated the station precinct will comprise a mix of uses, including: a library, community and innovation centre, town square, allied health hub, TAFE and technical skills education hub, police and justice hub, and mixed use development with ground floor food, beverage and entertainment.

The subject site is easily accessible and well-located on Abernethy Road, immediately to the west of the existing retail and commercial facilities within the existing Byford Town Centre. Future uses at the site are well placed to serve the substantial and rapidly growing population of Byford and the surrounding area.

In support of the proposed Structure Plan, a retail and commercial analysis has been undertaken for the site, provided at **Appendix 10**.

5.7.1 COMMERCIAL

The Byford district is undergoing sustained growth, which is expected to increase significantly in the future. To support this growth, the Structure Plan proposes additional commercial land, west of San Simeon Boulevard fronting Abernethy Road, to what was originally contemplated under the existing BTCLSP. By way of comparison, the Structure Plan proposes an approximate additional 3 hectares of commercially zoned land.

The proposal for additional commercial land has been investigated by retail consultant MacroPlan Dimasi, which has ascertained the site, and its location, orientation and interface with Abernethy Road provides for a logical transition in land use which is suitable for supporting retail and non-retail uses, including:

- A medical hub anchored by a medical centre and pharmacy (depending on location rules);
- A gymnasium of around 400m^2;
- Five (in the short term, and potentially more in the longer term) large format retail outlets of around 500m^2 – 1,000m^2 each;
- A service station; and
- Fast food outlets.

It is anticipated the inclusion of additional commercial land uses will complement and support the existing and future commercial development within close proximity to the site.

In the short to medium term, the proposed commercial area fronting Abernethy Road is envisaged to be created as a single lot, likely to accommodate a single showroom / warehouse development. Longer term, given the landholding will be in single ownership and unfragmented, this may facilitate

the transition of the holding to other uses which support the town centre, such as apartments or other commercial type land uses (as noted above).

Refer **Appendix 10** – Assessment of Commercial Development Potential.

5.8 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

The servicing and infrastructure requirements specific to the provision of sewer, water, power, telecommunications and gas have been considered and are understood to be generally unchanged from the endorsed BTCLSP.

An Engineering Servicing Summary has been prepared by TABEC Consulting Engineers, in support of this Structure Plan, which identifies the earthworks and servicing requirements to facilitate urban development and integration with the surrounding development.

Refer **Appendix 11** – Engineering Servicing Summary.

5.8.1 HIGH PRESSURE GAS PIPELINE

ATCO operates High Pressure gas pipeline/s (DN150ST HP 1900kPa) and associated gas infrastructure in the immediate area, located within the rail reserve to the immediate east of the site.

ATCO advised in its submission on the Structure Plan that it does not have any objection to the proposal, subject to any costs associated with additional protection (if required) for the existing High Pressure gas mains and gas infrastructure being recognised and met by the Proponent. This is to be reflected in any future detailed engineering design for the areas where the ATCO assets may be impacted.

ATCO also advised the site is situated within the High Pressure gas pipeline trigger distance (as specified under the WAPC's Draft *Development Control Policy 4.3: Planning for High Pressure Gas Pipelines*), which requires any change in the land use from when the HP gas pipeline was installed to meet design requirements that will not impact the existing 'Safety Case' of the High Pressure Gas Pipeline.

Any new impact (if any) to the gas infrastructure and network due to the proposed development will require the High Pressure gas pipeline and associated infrastructure to be protected. ATCO requests any proponents contact Engineering Services at ATCO to identify where this is identified, at the earliest possible opportunity.

Prior to commencement of any works within 15 metres either side of the HP gas pipeline or any ground truthing/disturbance occurring, Notification is required in accordance with ATCO procedures.

5.8.2 WATER PLANNING

The Water Corporation has prepared conceptual water and wastewater infrastructure planning for Byford, including provision to service the future development of the Town Centre and Station Precinct. The Water Corporation's planning provides a guide to land developers in the area. This conceptual planning can be adapted and modified as needed in consultation with the Water

Corporation at the subdivision and development stages. Any major departures from the Water Corporation's planning may necessitate a review of the planning to examine capacity issues and to determine if any network upgrades are required to enable servicing of the area.

Wastewater infrastructure for the servicing of the Town Centre and adjacent land includes the need for future 300mm and 375mm gravity sewers through the Town Centre area. These sewers will need to be laid within road reserves and/or public open space.

The Water Corporation has a current project to install approximately 1.5 kilometres of 400mm diameter water distribution main along Abernethy Rd from the corner of Soldiers Road westwards to the corner of Briggs Road. This project is in early stage of design.

In the long term (approximately 2040) a large water trunk main will be constructed to transfer bulk water from southern water sources to various metropolitan storage tanks and reservoirs. The trunk main will be extended from the Serpentine Trunk Main (located south of Mundijong) heading northwards for approximately 14 kilometres along the Water Corporation's Mundijong-Byford pipe corridor, then east along Abernethy Road to South Western Highway. A secure alignment is required for the 1400mm diameter trunk transfer main along Abernethy Road. The trunk main alignment has been the subject of previous discussions between the Water Corporation and the Shire of Serpentine-Jarrahdale.

5.9 DEVELOPER CONTRIBUTION ARRANGEMENTS

The Structure Plan is subject to two Development Contribution Plans/ Areas, being DCA 1 for traditional infrastructure and DCA 4 for community infrastructure. Contributions are therefore required to be paid in accordance with the requirements of Town Planning Scheme No. 2 and the relevant Development Contribution Scheme.

Notwithstanding the above, there is currently an amendment being progressed for DCA 1 (Amendment 208), which will likely impact cost contributions for the site. Further information should be sought regarding the status of the amendment and relevant cost implications at the time of subdivision.

APPENDIX 1

CERTIFICATES OF TITLE

ROWE GROUP DESIGN

APPENDIX 2

DRAFT BYFORD DISTRICT STRUCTURE PLAN

ROWE GROUP DESIGN

APPENDIX 3

EXISTING APPROVED BYFORD TOWN CENTRE LOCAL STRUCTURE PLAN

ROWE GROUP DESIGN

APPENDIX 4

APPROVED PLAN OF SUBDIVISION (WAPC REF: 153951)

ROWE GROUP DESIGN

APPENDIX 5

BUSHFIRE MANAGEMENT PLAN

ROWE GROUP DESIGN

APPENDIX 6

ENVIRONMENTAL MANAGEMENT PLAN

ROWE GROUP DESIGN

APPENDIX 7

LANDSCAPE CONCEPT MASTER PLAN

ROWE GROUP DESIGN

APPENDIX 8

TRANSPORT IMPACT ASSESSMENT

ROWE GROUP DESIGN

APPENDIX 9

LOCAL WATER MANAGEMENT STRATEGY ADDENDUM

ROWE GROUP DESIGN

APPENDIX 10

ASSESSMENT OF COMMERCIAL DEVELOPMENT POTENTIAL

ROWE GROUP DESIGN

APPENDIX 11

ENGINEERING SERVICING SUMMARY

ROWE GROUP DESIGN

Sydney

Level 23/201, Sussex St
Sydney, NSW 2000
Tel: +61 2 8233 9900
Fax: +61 2 8233 9966

Brisbane

Level 7, 123 Albert Street
Brisbane, QLD 4000
Tel: +61 7 3007 3800
Fax: +61 7 3007 3811

Melbourne

Level 12, 120 Collins Street
Melbourne, VIC 3000
Tel: +61 3 8663 4888
Fax: +61 3 8663 4999

Perth

Level 1, 55 St Georges Terrace
Perth, WA 6000
Tel: +61 8 9346 0500
Fax: +61 8 9221 1779

Australia · Asia · Middle East
www.urbis.com.au
info@urbis.com.au