LOCAL STRUCTURE PLAN

OLD BYFORD TOWNSITE 'NORTH'

STANLEY ROAD PRECINCT

GRAY&LEWIS
LAND USE PLANNERS

Modified July 2018

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Emerge Associates (Environment)
Shawmac (Traffic and Servicing)
Herring Storer Acoustics (Acoustic Assessment)
FirePlan WA (Bushfire Management)

Job Reference: 100778

Report file name	Report Status	Date
Local Structure Plan Old Byford Townsite "North' Stanley Road Precinct – September 2015	Version 1	8 September 2015
LSP Report – January 2017	Version 2	25 January 2017
LSP Report – February 2018	Version 3	22 February 2018
LSP Report – April 2018	Version 4	8 May 2018
LSP Report – April 2018	Version 5	17 July 2018

ENDORSEMENT PAGE

This structure plan is prepared under the provisions of the Shire of Serpentine Jarrahdale Town Planning Scheme No 2.

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

.....25 July 2018.....

Signed for and on behalf of the Western Australian Planning Commission

.....

An officer of the Commission duly authorised by the Commission pursuant to section 16 of the *Planning and Development Act 2005* for that purpose, in the presence of:

..... Witness

..... 25 July 2018 ..... Date

..... 25 July 2028 ..... Date OF Expiry

TABLE OF MODIFICATIONS TO LOCAL STRUCTURE PLAN:

Modification No.	Description of Modification	Date Adopted by Council	Date Endorsed by the WAPC (if required)

CONTENTS

LIST OF PLANS, FIGURES AND ATTACHMENTS

Plans

Figures

Attachments

EXECUTIVE SUMMARY

This Local Structure Plan (LSP) for the Old Byford Townsite 'North' – Stanley Road Precinct has been prepared on behalf of BC, RH & MM Offringa (Byford Land Development Company (WA)), Paul Roberts, Claire Gardiner and Eray Dervish who are the registered owners of Lots 22, 234 and 244 Walters Road, Lots 259 and 262 Orana Place, Lot 266 Stanley Road and Lot 256 Maree Close which form part of the Stanley Road Precinct.

The purpose of this LSP is to provide local structure planning over the whole of the Old Byford Townsite 'North' – Stanley Road Precinct, to provide guidance and flexibility for the future development of the area for residential purposes.

Local Structure Plan Summary Table:

Item	**Data**	**Section number referenced within the Structure Plan Report**
Gross Local Structure Plan Area	22.63 hectares	2.1
Area of each land use proposed: <u>Zones:</u> Residential <u>Reserves:</u> Amount of Public Open Space Amount of restricted Public Open Space *as per Liveable Neighbourhoods*	 15.7 hectares (67.58%) 3.08 hectares Less 1:1 ARI excluded area (2,344 m²) 1,431 m² (Nett POS provided 2.7856 hectares)	 5.2 5.4
Composition of Public Open Space: - District Parks - Neighbourhood Parks - Local Park	 Nil Nil 2.7856 hectares	 5.4

Estimated Lot Yield	320 lots	5.2
Estimated Residential Site Density - Dwellings per gross hectare *As Per Directions 2031* - Dwellings per site hectare *As Per Liveable Neighbourhoods*	13.77 dwellings per gross hectare 20.38 dwellings per site hectare	5.2
Estimated Population	1,000 people @ 2.8 people/household	5.2.1
Number of Secondary Schools	Nil	Nil
Number of Primary Schools	Nil	Nil

PART ONE – STATUTORY SECTION

1.0 Local Structure Plan Area

The Local Structure Plan for Old Byford Townsite 'North' – Stanley Road Precinct applies to the land contained within the inner edge of the red line denoting the Local Structure Plan boundary on the Local Structure Plan Map (Plan 1 – Local Structure Plan).

The land is bound by South West Highway to the west, Stanley Road to the north, Linton Street North to the east, and Walters Road to the south.

2.0 Local Structure Plan Content

The Local Structure Plan comprises the following sections:

(i) **Part One – Statutory Section.** This section includes only the Structure Plan (Plan 1) and any textual provisions and requirements that require statutory effect.

(ii) **Part Two – Explanatory Section** (Non – Statutory). This section provides the planning context and justification for the Structure Plan Map and the textual provisions contained in Part One of the Structure Plan. Part Two is to be used as a reference to guide interpretation and implementation of Part One.

(iii) **Part Three – Appendices.** This section includes all specialist Consultant reports and documentation used in the preparation of, and to support the land use outcomes of the Structure Plan.

3.0 Interpretation and Relationship with the Shire of Serpentine Jarrahdale Town Planning Scheme No. 2

3.1	Terms and Interpretations	Unless otherwise specified, the words and expressions used in this Local Structure Plan shall have the respective meanings given to them in the Shire of Serpentine Jarrahdale Town Planning Scheme No. 2, including any amendments gazetted thereto.
3.2	Relationship of the Local Structure Plan with Shire of Serpentine Jarrahdale Town Planning Scheme No.2	This Structure Plan has been prepared under Clause 5.17 of the Shire of Serpentine Jarrahdale Town Planning Scheme No.2 as the subject land is zoned 'Development' and contained within Development Area No. 3 which is shown on the Scheme Map and contained within Appendix No.15.

NOTES:
1. The Local Structure Plan has been prepared to demonstrate an efficient road layout that minimises the need for land exchanges and optimises the potential for individual landowners to subdivide independently.
2. The provision and location of POS is generally in accordance with the Byford Structure Plan with the addition of two sites adjacent to the South Western Highway, required to accommodate stormwater drainage in accordance with the LWMS prepared by Emerge Associates.

POS TABLE

AREA OF SUB PRECINCT A:	22.63ha
POS REQUIRED AT 12.27%:	2.77ha
POS PROVIDED:	3.02ha (13.34%)
(includes 1431m² restricted POS 1:5 ARI)	
LESS 1:1 ARI DRAINAGE:	2344m²
NETT POS PROVIDED:	2.7856ha

SUB AREA 'B'
PLANNING BY OTHERS

SUB AREA 'A'

PROPOSED POS 2104m²

TOTAL POS 2.61ha

EXISTING POS 1.04ha

POS 0.22ha

POS 0.19ha

ROAD WIDENING

EXISTING HOUSES FRONTING WALTERS ROAD COULD BE RETAINED OR DEMOLISHED AND SUBDIVIDED

LOCAL STRUCTURE PLAN ADOPTED BY THE COUNCIL AT THEIR ORDINARY MEETING HELD ON..... DAY OF.....20..... IN ACCORDANCE WITH CLAUSE 5.10.4.1 OF THE SCHEME

Executive Manager
Planning and Regulatory Services

Date

LOCAL STRUCTURE PLAN

STANLEY ROAD PRECINCT - SUB AREA 'A'

0 100m

SCALE 1:3000 @ A3

LEGEND

- STANLEY ROAD PRECINCT LSP BOUNDARY
- SUB AREA 'A' LSP BOUNDARY
- DENOTES DRAINAGE SWALE WITHIN POS
- ROAD WIDENING
- ROAD CLOSURE
- EXISTING LOT BOUNDARIES
- ROUNDABOUT
- TRAFFIC CALMING
- PRINCIPLE SHARED PATH (2.0m)
- PRINCIPLE SHARED PATH (POS)
- FOOTPATH (1.5m)
- RESIDENTIAL R20
- RESIDENTIAL R25
- RESIDENTIAL R30
- RESIDENTIAL R40
- POS / DRAINAGE

JOB REFERENCE: 100778 DATE: 24th JULY 2017

Plan 1

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perth@graylewis.com.au

This LSP has been prepared in collaboration with
Emerge Associates - Environmental & LWMS
Shawmac - Traffic & Servicing

3.3	Provisions	Pursuant to Clause 5.18 of the Shire of Serpentine Jarrahdale Town Planning Scheme No.2.
3.4	Land Use Permissibility	As per Clause 3.2 of the Shire of Serpentine Jarrahdale Town Planning Scheme No.2.

4.0 Operation

4.1	Operation Date	As per Clause 5.18.6 of the Shire of Serpentine Jarrahdale Town Planning Scheme No.2.
4.2	Variation to Structure Plan	As per Clause 5.18.4 of the Shire of Serpentine Jarrahdale Town Planning Scheme No.2.

5.0 Land Use

5.1	Public Open Space	The provision and location of POS is defined under the Byford Structure Plan.
5.2	Residential Density	Residential densities applicable to the Local Structure Plan area shall be those residential densities shown on the Local Structure Plan Map.

6.0 Subdivision / Development

6.1	Notifications on Title	In respect of applications for the subdivision of land the Council shall recommend to the Western Australian Planning Commission that a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate(s) of Title(s) to advise of the following: - 1. Land or lots deemed to be affected by a Bush Fire Hazard as identified in any Bushfire Management Plan provided and approved as part of future subdivision. 2. Building setbacks and construction standards required to achieve a Bushfire Attack Level (BAL) 19 or lower in accordance with Australian Standards (AS3959-2009): Construction of buildings in bushfire prone areas. 3. Lots affected by traffic noise from South Western Highway as identified in the Acoustic Report prepared by Herring Storer Acoustics and contained within Attachment 3.

6.2	Local Development Plan	1. Local Development Plans (LDP's) are required to be prepared and implemented pursuant to Clause 5.18.5 of the Shire of Serpentine Jarrahdale Town Planning Scheme No.2 for lots comprising one or more of the following site attributes: (i) Where lots abut Public Open Space or demonstrate unique site constraints such as excessive noise / quiet house design, an irregular shape or difficult site access.
6.3	Urban Water Management Plan	In respect of applications for the subdivision of land, the Council shall recommend to the Western Australian Planning Commission that a condition be imposed on the grant of subdivision approval for an Urban Water Management Plan (UWMP) to be prepared and approved for each stage of subdivision. The UWMP shall further refine the proposals contained within the Local Water Management Plan approved by the Department of Water and Environmental Regulation. This will include a review of the extent of drainage function contained on the existing public open space reserve (R34356).

7.0 Other Requirements

7.1	Development Contribution Items and Arrangements	The Local Structure Plan area is located within Development Contribution Area 1 (DCA1) – Byford as identified in the Shire of Serpentine Jarrahdale Town Planning Scheme No.2 maps.
7.2	Landowner Contributions to Local Structure Plan Preparation Costs	The Local Structure Plan Area (Stanley Road Precinct and all sub precincts within) are subject to the Byford Development Contribution Scheme as per the Shire of Serpentine Jarrahdale Town Planning Scheme No. 2. A differential rate for Precinct B shall be introduced in Table 3.5 of the Byford Tradition Infrastructure Development Contribution Plan so that each individual landowner within the Local Structure Plan area contributes towards the cost of professional fees expended during the preparation and progression of the Local Structure Plan.

7.3	Noise Attenuation Treatments	Noise attenuation treatments are as per the recommendations outlined in the Herring Storer Acoustic Assessment dated January 2018 including notifications on title, and quiet house design within Local Development Plans, but excluding the construction of a noise wall, shall be implemented as conditions of subdivision approval for any lots affected by South Western Highway unless an updated and more accurate Acoustic Assessment is provided with, and approved for, any future subdivision application for the lots in closest proximity of South Western Highway.
7.4	Other requirements (Bushfire assessment / treatment)	The Bushfire Management Plan associated with the Local Structure Plan pre-dated *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (SPP 3.7) and the associated Guidelines. Therefore, each stage/ subdivision application will need to provide bushfire assessment documentation and relevant (self-contained) treatments at each subsequent level of planning in accordance with *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* and the associated Guidelines.
7.5	Tree Retention	Where practical all significant mature trees that coincide with a road reserve should be maintained.
7.6	Road Standard (20m roads)	The 20 metre roads are to be constructed to boulevard standard incorporating rows of trees on both sides of the road reserve.

PART TWO – EXPLANATORY REPORT

1.0 INTRODUCTION

The Old Byford Townsite 'North' – Stanley Road Precinct ('the site') is zoned Urban Development under the Shire of Serpentine Jarrahdale Town Planning Scheme No.2 ('the Scheme').

Pursuant to Clause 5.18 and Appendix 15 of the Scheme, a Local Structure Plan is required to guide future subdivision and development of the site, and is supported by the Local Structure Plan Explanatory Report.

The purpose of this Local Structure Plan is to provide for the orderly and proper subdivision and development of the subject site primarily for residential purposes.

The Local Structure Plan proposes residential development generally at a base code of R25, with higher density (R30 and R40) proposed adjacent to South Western Highway and the higher amenity areas (POS). Lower density (R20) is proposed over the area fronting Walters Road east of Maree Close.

The provision and location of the proposed POS is in accordance with the Byford Structure Plan with the addition of two sites adjacent to South Western Highway which are required to accommodate stormwater drainage in accordance with the Local Water Management Strategy prepared by Emerge Associates.

This Explanatory Report provides a descriptive analysis of the Local Structure Plan, including site description, existing statutory planning framework, opportunities and constraints and proposed implementation, and has been informed by a number of technical and design investigations, which are referred to in this report, and the accompanying appendices.

2.0 LAND DESCRIPTION

2.1 Location

The site is located within the suburb of Byford, approximately 45 km southeast of Perth, and west of the main Darling Escarpment. Byford has its origins as a rural town outside the Perth metropolitan area and is currently undergoing a transition from small rural residential landholdings and some horticultural uses to residential development consistent with the zoning. The Byford townsite is located to the south west of the site, on the western side of South Western Highway – refer *Figure 1 - Location Plan.*

The Stanley Road Precinct site has direct frontage to South Western Highway and has a total area of 22.63ha (excluding existing road reserves).

Existing lot sizes range from 2,250m² to 1.4519ha, with the majority of properties being developed with a single dwelling and associated outbuildings.

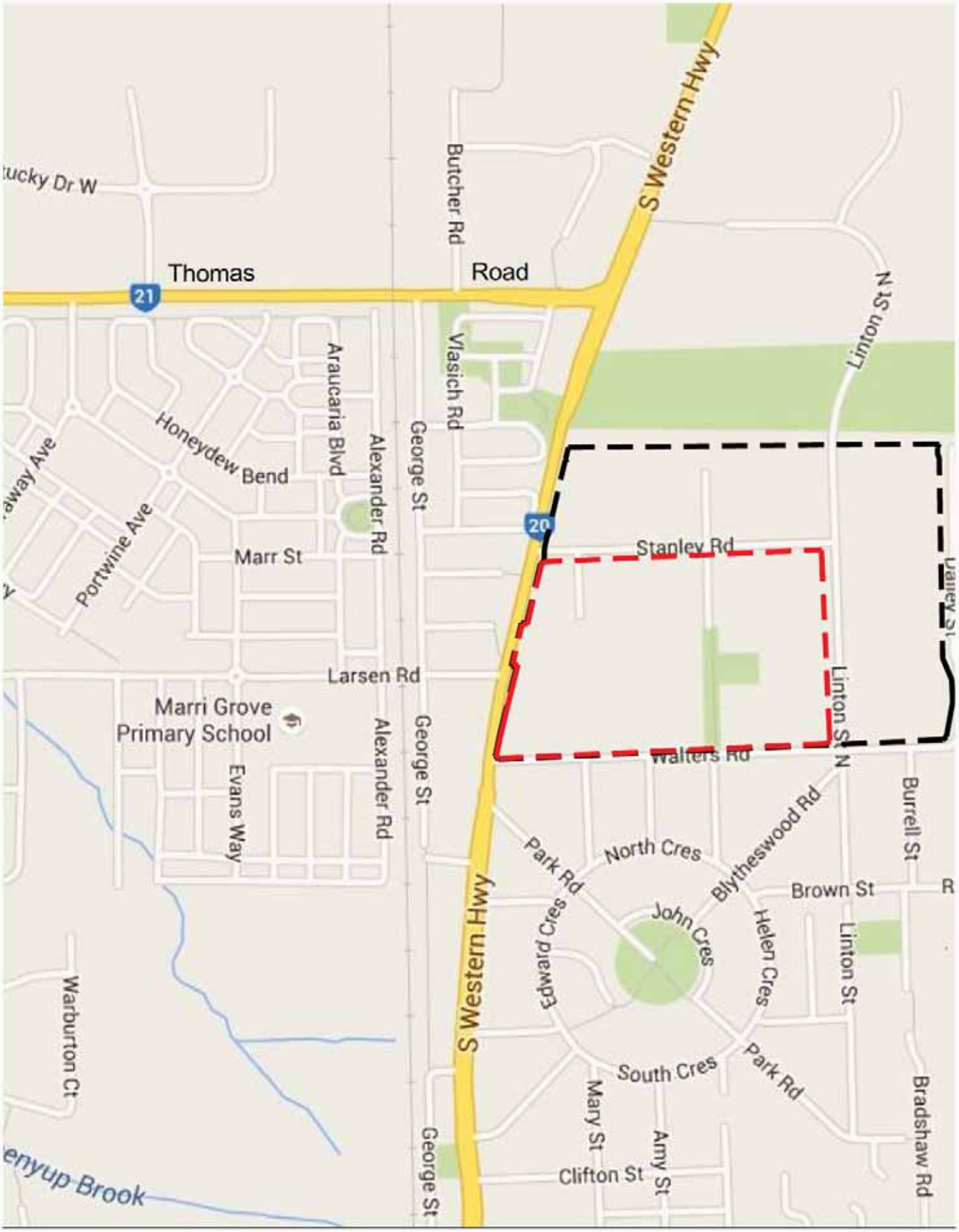

Figure 1

LOCATION PLAN

OLD BYFORD TOWNSITE 'NORTH'
STANLEY ROAD PRECINCT

LEGEND
PRECINCT AREA BOUNDARY
LSP AREA

0 250m
SCALE 1:10 000 @ A4

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JOB REFERENCE: 100770 DATE: 25th AUGUST 2015

2.2 Land Ownership

Landownership and legal description of the land within the Local Structure Plan is provided below, and highlighted in *Figure 2*.

Lot	Street Address	Landowner	Area
29	754 South Western Highway	M & BG Brookes	3,380 m²
28	10 Maree Close	LJ Cooper	4,430 m²
252	760 South Western Highway	DE & CPM Levy	6,160 m²
26	764 South Western Highway	MF Duncan	7,479 m²
11	768 South Western Highway	GA Steele	2,677 m²
12	770 South Western Highway	KV & J Carless	3,458 m²
13	2 Walters Road	EA & WA Gorton	3,609 m²
234	10 Walters Road	LJ & E Dervish	4,266 m²
235	14 Walters Road	DA & RC Bruce	4,266 m²
25	18 Walters Road	SL Guo & P Zhou	1.4519 ha
236	22 Walters Road	D & DC Rowe	4,266 m²
237	24 Walters Road	DB & RH Thorneloe	4,266 m²
238	28 Walters Road	KA & AJ Warburton	4,264 m²
239	32 Walters Road	BI & N Zahabe	4,264 m²
240	36 Walters Road	LJ & RM Evans	4,266 m²
241	42 Walters Road	Westbush WA Pty Ltd	4,266 m²
22	44 Walters Road	BC & RH Offringa	1.2495 ha
242	46 Walters Road	SA & LA Christian	4,266 m²
243	50 Walters Road	Westbush WA Pty Ltd	4,266 m²
244	54 Walters Road	BC & RH Offringa	4,264 m²
245	60 Walters Road	SM Spencer	4,265 m²
246	62 Walters Road	DG & K Grannell	4,268 m²
2471	66 Walters Road	CH & RD Dowling	2,000 m²
2472	58 Linton Street	SG & AM Smith	2,250 m²
14	62 Linton Street	ME Ross	6, 303 m²
27	62A Linton Street	GF & JE Sewell R & CV Davey	4,164 m²
264	64 Linton Street	LN Sexton MJ Thatcher	6,982 m²
265	68 Linton Street	FN & P Mella	6,982 m²
266	266 Stanley Road	P & EJ Roberts	6,982 m²
261	261 Stanley Road	JM & MB Mondeil	6,981 m²
262	L 262 Orana Place	RH Offringa	6,982 m²
17	17 Orana Place	EM & SF Lodge	6,679 m²
21	L 21 Orana Place	KE Lovegrove	7,387 m²
259	L 259 Orana Place	BC & MM Offringa	6,981 m²
260	L 260 Stanley Road	JC &BG Pernich	6,981 m²
255	3 Maree Close	Tricord Pty Ltd	6,981 m²
256	9 Maree Close	CB Gardiner	6,981 m²
24	13 Maree Close	MJ Allen	7,692 m²

Source: Landgate WA

LAND OWNERSHIP

OLD BYFORD TOWNSITE 'NORTH'

STANLEY ROAD PRECINCT

LEGEND

PRECINCT AREA BOUNDARY

LSP AREA

0 100m

SCALE 1:3000 @ A3

JOB REFERENCE: 100778 DATE: 25th AUGUST 2015

Figure 2

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This LSP has been prepared in collaboration with
Emerge Associates - Environmental & LWMS
Shawmac - Traffic & Servicing

2.3 Existing land uses

The site is bounded by South Western Highway to the west, Stanley Road to the north, Linton Street North to the east and Walters Road to the south. The existing lots that front South Western Highway have direct access to the Highway.

The site also contains two cul-de-sacs, Maree Close and Orana Place. With the exception of South Western Highway, the existing roads within the Structure Plan area are all rural standard roads.

Existing land uses comprise semi-rural activities, including stables.

Photo 1 - view west down Stanley Road

Photo 2 - Typical land use – horse stables Lot 22

There is a 1.04ha area of POS (Reserve 34356), with access from Orana Place or Walters Road, which has been developed to a basic standard.

Photo 3 – view across existing POS to the south-east

LOCAL CONTEXT PLAN

OLD BYFORD TOWNSITE 'NORTH'

STANLEY ROAD PRECINCT

LEGEND

LSP AREA

N

0 250m

SCALE 1:5000 @ A3

Figure 3

GRAY & LEWIS
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JOB REFERENCE: 100778 DATE: 25th AUGUST 2015

2.4 Surrounding Landuses

Land to the south of Walters Road is characterised by low density residential development, typical of a 1960's subdivision, with evidence of some more recent subdivision activity.

Land to the north and east is used for rural residential activities, with similar lot sizes to the Structure Plan area.

Land to the west of South Western Highway is rapidly being developed for residential purposes in accordance with approved Structure Plans.

The Byford Baptist Church is located on the northern side of Walters Road on the corner of South Western Highway. A hardware store/nursery and other showroom/warehouse activities are located on the western side of South Western Highway.

The Byford Town Centre is located to the south west of the site along South Western Highway – refer *Figure 3 – Local Context Plan.*

3.0 STATUTORY, STRATEGIC AND POLICY CONSIDERATIONS

3.1 Zoning

3.1.1 Metropolitan Region Scheme

All land within the Local Structure Plan area is zoned Urban under the Metropolitan Region Scheme. South Western Highway is reserved as a Primary Regional Road.

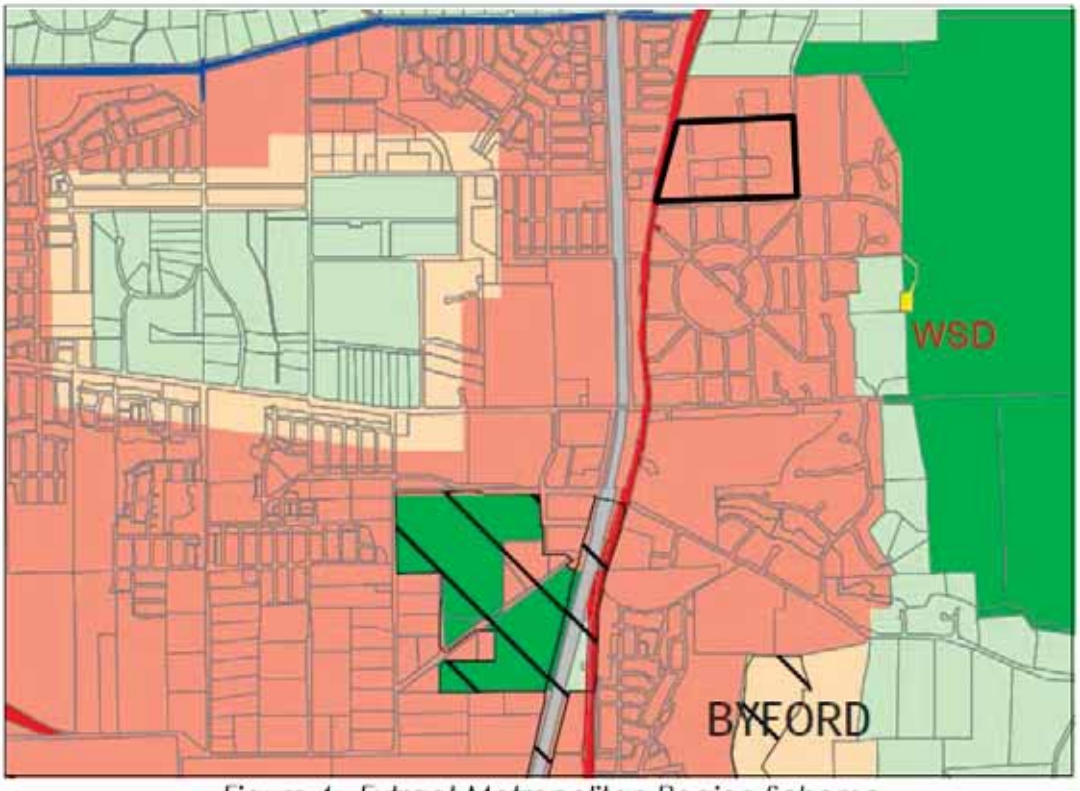

Figure 4 - Extract Metropolitan Region Scheme

3.1.2 Shire of Serpentine Jarrahdale Town Planning Scheme No. 2

All land within the Local Structure Plan area is zoned Urban Development under the Shire of Serpentine Jarrahdale Town Planning Scheme No. 2. Under the provisions of the Scheme, a Local Structure Plan is to be prepared to establish the pattern of development and zoning designations.

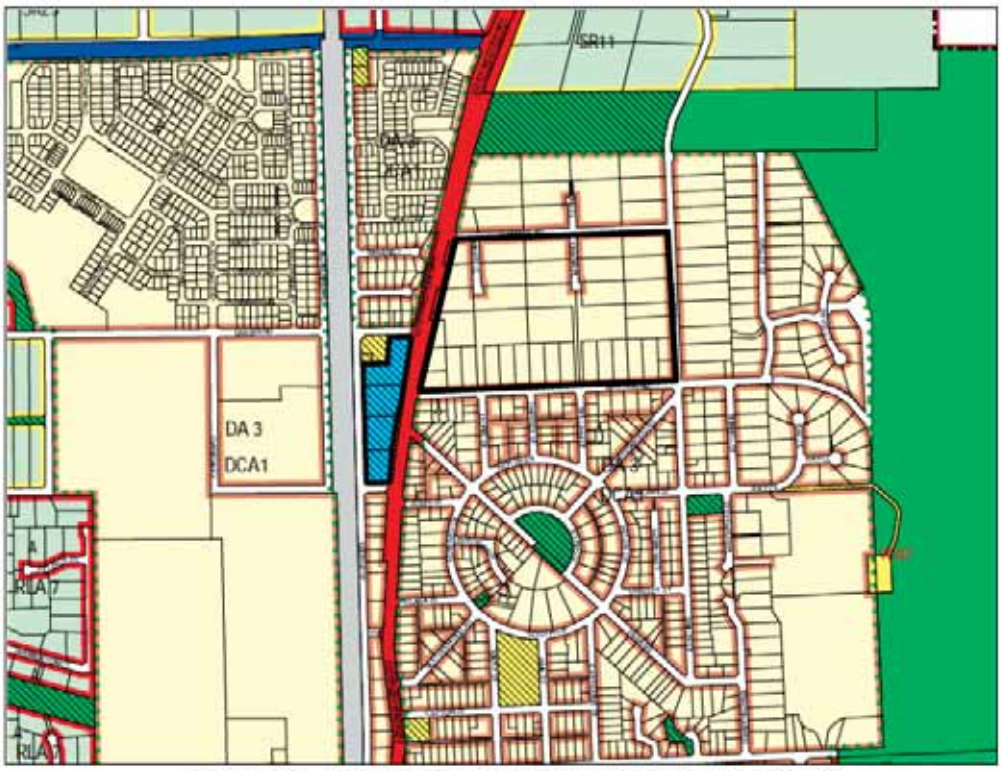

Figure 5 - Extract Town Planning Scheme No. 2

3.2 Key Local Government Strategies and Policies

3.2.1 Byford Structure Plan

The Byford Structure Plan was finalised in 2005 and provides an overall district planning framework for more detailed planning in the form of local structure plans and subsequent subdivision and development on a progressive basis. In total, the Byford Structure Plan anticipated that approximately 10,000 new residential lots would be created over an extended period.

The Structure Plan provides indicative zonings, residential density codings and detailed development standards and requirements. It identifies residential areas, the Byford Town Centre and two neighbourhood shopping centres, school sites, district open space, multiple use corridors/drains and public open space.

In respect to the subject land, the Byford Structure Plan identifies the land for residential purposes with a density code of R20. It also identifies an area of existing POS. Refer *Figure 6 – Byford Structure Plan.*

The Stanley Road precinct was identified as one of twelve precincts within the Byford development area.

LEGEND

- STRUCTURE PLAN AREA
- BOLEY/WARRINGTON ROAD PRECINCT BOUNDARY
- RURAL RESIDENTIAL
- RESIDENTIAL (R20)
- RESIDENTIAL (R30–60)
- LAND SUBJECT TO FURTHER STUDY. SEE NOTES 25 & 26 WHERE APPLICABLE
- TOWN CENTRE (TOWN CENTRE SUBJECT TO LOCAL STRUCTURE PLAN AND DETAILED AREA PLAN AND DESIGN GUIDELINES)
- NEIGHBOURHOOD CENTRE
- HIGHWAY COMMERCIAL
- COMMUNITY PURPOSE
- NEIGHBOURHOOD NODE
- SCHOOLS
  EPS – Existing Primary School
  PS – Primary School
  HS – High School
- MIXED BUSINESS
- MULTIPLE USE CORRIDOR (MUC)
- WATERWAY
- DRAINAGE BASIN INDICATIVE LOCATION
- FUTURE ROADS
- EXISTING MRS REGIONAL PARKS AND RECREATION RESERVE
- EXISTING LOCAL PUBLIC OPEN SPACE
- PROPOSED LOCAL PARK (Approx. 3000m²)
- PROPOSED LOCAL PARK WITHIN MUC
- PROPOSED NEIGHBOURHOOD PARK (Approx. 4000m²)
- PROPOSED NEIGHBOURHOOD PARK WITHIN MUC
- DISTRICT RECREATION (Approx. 4ha)
- CONSERVATION
- FORESHORE RESERVE
- PUBLIC PURPOSES
- BUFFER BETWEEN TROTTING COMPLEX EQUESTRIAN RELATED ACTIVITIES AND RESIDENTIAL AREA INCLUDED WITHIN EXISTING LOTS
- AREA OF LANDSCAPE SENSITIVITY
- DRAINAGE DIRECTION FLOW
- UNCONSTRUCTED ROAD / BRIDLE PATH
- TURNER ROAD – POSSIBLE CLOSURE SUBJECT TO FURTHER INVESTIGATIONS BY COUNCIL
- RAILWAY CROSSINGS
- POTENTIAL RAIL CROSSING SUBJECT TO FURTHER INVESTIGATIONS
- POSSIBLE FUTURE GRADE SEPERATED CROSSING
- POSSIBLE FUTURE RAILWAY STATION
- LAND SUBJECT TO FURTHER STUDY TO ADDRESS THE REQUIREMENTS FOR DRAINAGE AND DETAILED STRUCTURE PLANNING CONSIDERATION TO BE GIVEN TO THE PREFERRED ALIGNMENT OF THE TONKIN HIGHWAY PRIMARY REGIONAL ROAD RESERVATION.
- LAND SUBJECT TO FURTHER STUDY – PLANNING TO BE FINALISED SUBJECT TO RESOLUTION OF ALIGNMENT OF ORTON ROAD

This is a District Structure Plan and shall be used as a basis for more detailed planning when read in conjunction with other documents and the Byford Structure Plan report

This Plan should be read in conjunction with Schedule 1 - Operative Part

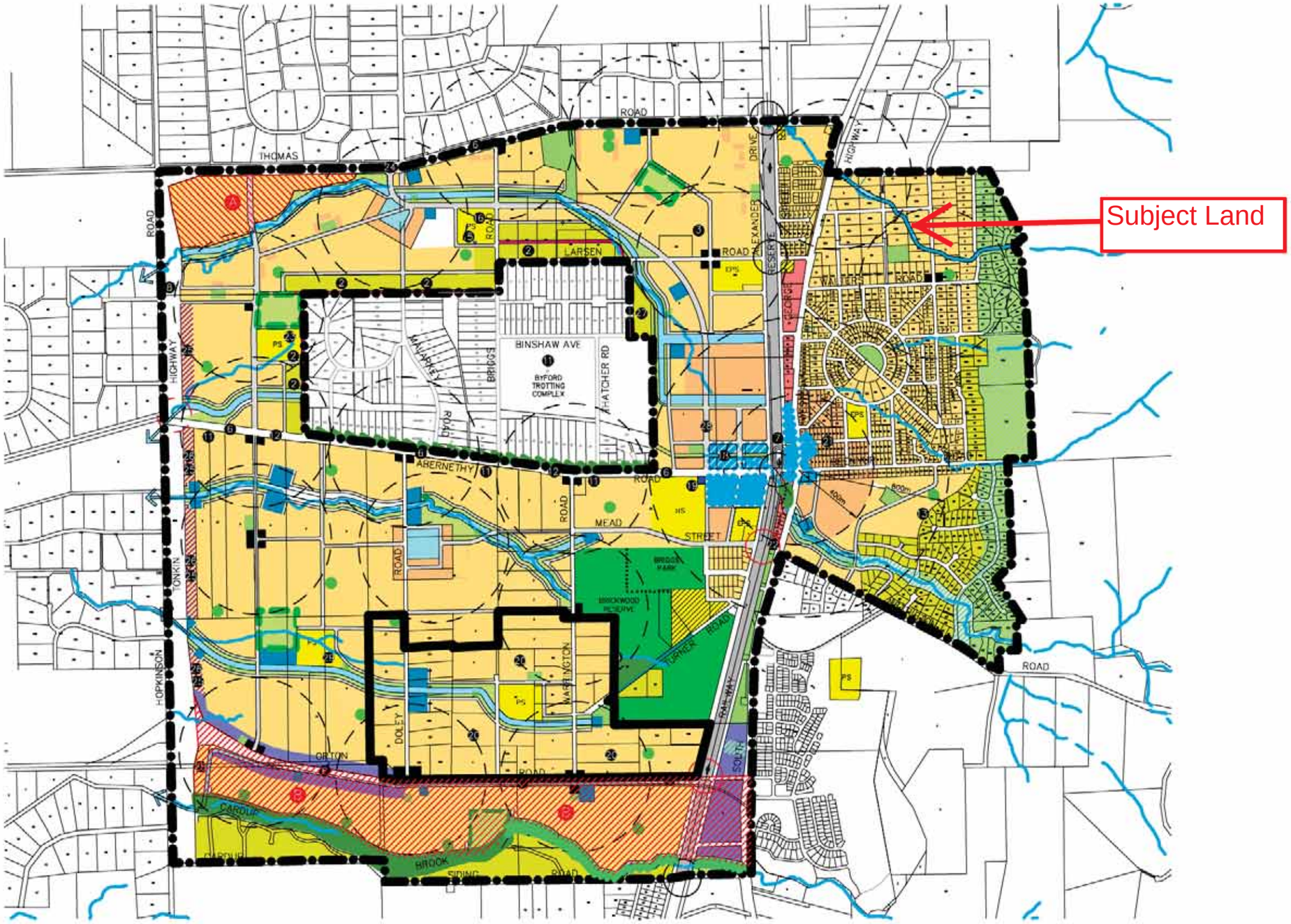

Figure 6

Figure 1

Byford Structure Plan

Adopted by Council (Original) - 22nd AUG 2005
Adopted by Council (Review No.1) - 13th FEB 2007
Updated 23 June, 2009

3.2.2 Byford Tradition Infrastructure Development Contribution Plan

Due to the existence of mulliple landholdings within the Byford District Structure Plan area, the Shire of Serpentine Jarrahdale has prepared a development contribution plan (DCP) to share the cost of infrastructure, land and other items required to support the development of the area.

The Byford development contribution development area has been divided into four precincts. The proposed Local Structure Plan for the old Byford townsite falls within DCP Area B – refer *Figure 7*.

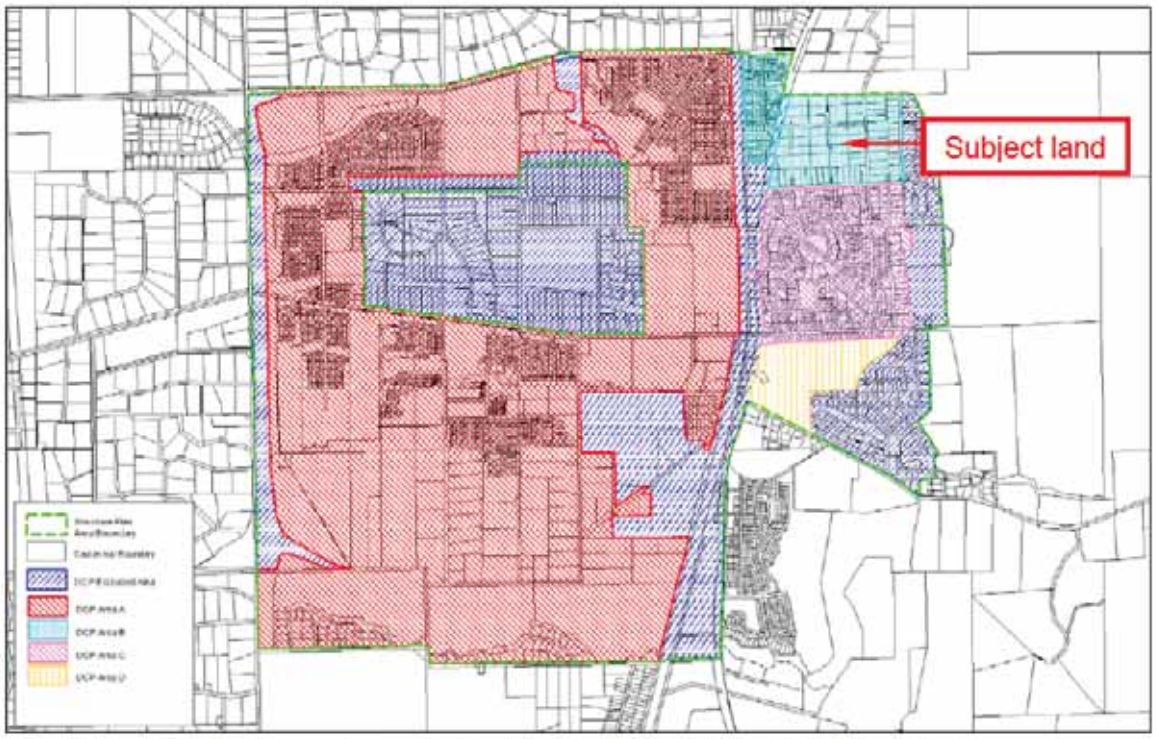

Figure 7 – Plan No. 16A – Byford Development Contribution Areas

Each precinct will contribute toward certain infrastructure and cost items based on the perceived need for and use of those items within the precinct. Each precinct will therefore have a different contribution rate.

The development contribution rate per lot/dwelling for Precinct B has been calculated as $9,266.

3.2.3 Byford Townsite Detailed Area Plan

Prior to the finalisation of the Byford Structure Plan, Council decided to prepare a Detailed Area Plan for the Byford Townsite due to the fragmented land ownership in the area of Byford east of the railway line, which makes co-ordinated subdivision and development difficult.

The Byford Townsite Detailed Area Plan was adopted by the Shire in 2004 which established Character Areas to identify differences between the residential, commercial and industrial components of the area.

The Stanley Road Precinct was identified as Character Area B and as an area capable of accommodating further subdivision and development. A conceptual layout was established – refer *Figure 8 – Conceptual Road Layout, Character Area B.*

The Detailed Area Plan identified the need for a wide range of technical matters to be addressed through the preparation of Local Structure Plans, prior to subdivision and development proceeding.

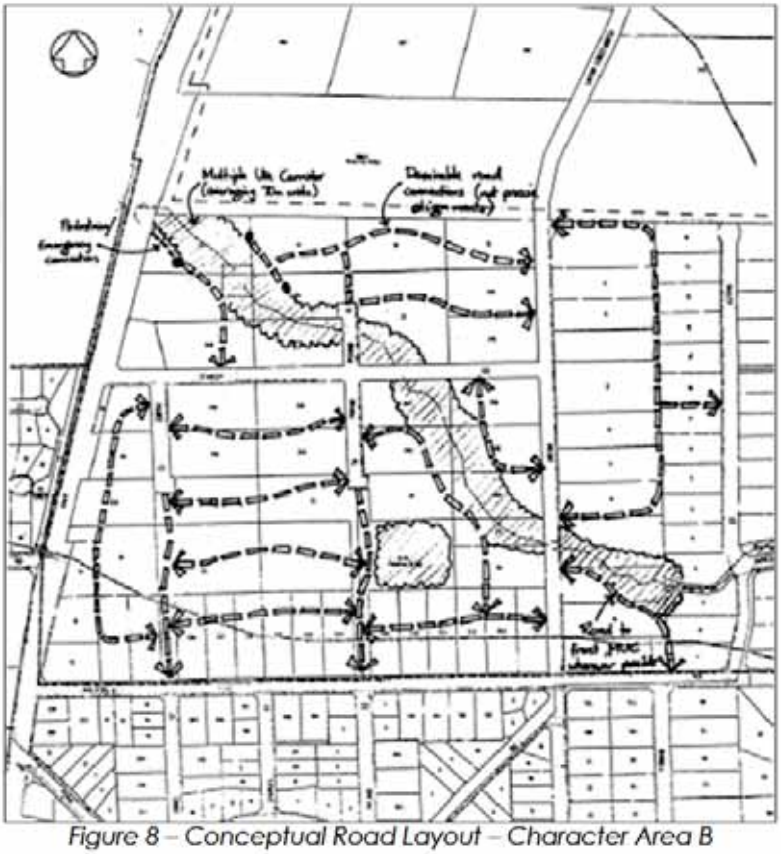

Figure 8 – Conceptual Road Layout – Character Area B

3.2.4 Shire of Serpentine Jarrahdale Local Planning Policy No. 74 – Stanley Road Precinct Planning Framework

Local Planning Policy No. 74 – Stanley Road Precinct was adopted by the Shire in November 2013. The objectives of this Policy are:

- To guide the orderly and proper planning for the Stanley Road Precinct in Byford, to provide a clear framework for detailed planning to progress and enable future subdivision and development;

- To clearly identify the matters that need to be addressed at each stage of the planning process, in an open and transparent manner;

- To assist stakeholders in understanding the planning processes and system and in turn, assist with landowner-initiated planning and development; and

- To recognise that the process to enable future subdivision and development requires the engagement of consultants and various stakeholders with the potential for diverse expectations.

The Policy area applies to all land use proposals within the Stanley Road Precinct, including Local Structure Plans, development applications and subdivision applications. LPP No. 74 identifies three sub-precincts for the Stanley Road Precinct, as identified in *Figure* 9. The proposed Local Structure Plan is for the largest of the three sub-precincts.

Figure 9 – Stanley Road Sub-Precincts

3.2.5 Other Relevant Council Policies

The following check-list of Council Policies has informed the Structure Plan design and/or will be considered as part of subdivision staging, development and ultimate residential built form:

- LPP No. 1 Serpentine Jarrahdale Shire Planning Framework
- LPP04 Revegetation
- LPP06 Water Sensitive Design
- LPP09 Multiple Use Trails
- LPP26 Biodiversity Planning
- LPP40 Detailed Area Plans
- LPP57 Housing Diversity
- LPP60 Public Open Space
- LPP61 Structure Plans
- LPP75 Interim Development Deeds – Byford Traditional Infrastructure Development Contribution Plan

3.3 Key State Government Strategies and policies

3.3.1 Directions 2031 and Beyond

Directions 2031 and Beyond is the highest level spatial framework and strategic plan for Metropolitan Perth and Peel region.

It provides a framework to guide more detailed planning and delivery of housing, infrastructure, services and employment to achieve a connected city pattern of growth.

It recognises the benefits of a more consolidated city whilst working from historic patterns of urban growth.

The framework sets achievable goals that will promote housing affordability over the longer term.

Six sub-regions are identified, with the Shire of Serpentine Jarrahdale being within the South East sub-region, which is guided by the draft Outer Metropolitan Perth and Peel Sub-regional 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%.

3.3.2 Draft Outer Metropolitan Perth and Peel Sub-regional Strategy

The draft Outer Metropolitan Perth and Peel Sub-regional Strategy forms an integral part of the Directions 2031 vision and has been prepared to guide state and local government and development industry actions and decisions to achieve Directions 2031 outcomes.

These outcomes include a balance between greenfield and infill development; protecting our natural environment and resources as well as providing housing and lifestyle choices.

It also looks beyond 2031 to meet housing needs of the community in the long term.

The Strategy provides information about the levels of expected population growth by local government area, and highlights development opportunities and increased densities in greenfield areas throughout the five outer sub-regions of north-west, north-east, south-east and south-west metropolitan Perth and Peel.

Together with the draft Central Metropolitan Perth Sub-regional Strategy, this strategy also promotes the achievement of the Directions 2031 housing targets.

The Outer Metropolitan Perth and Peel Sub-regional Strategy classifies the subject land as "existing developed area" – refer *Figure 10*.

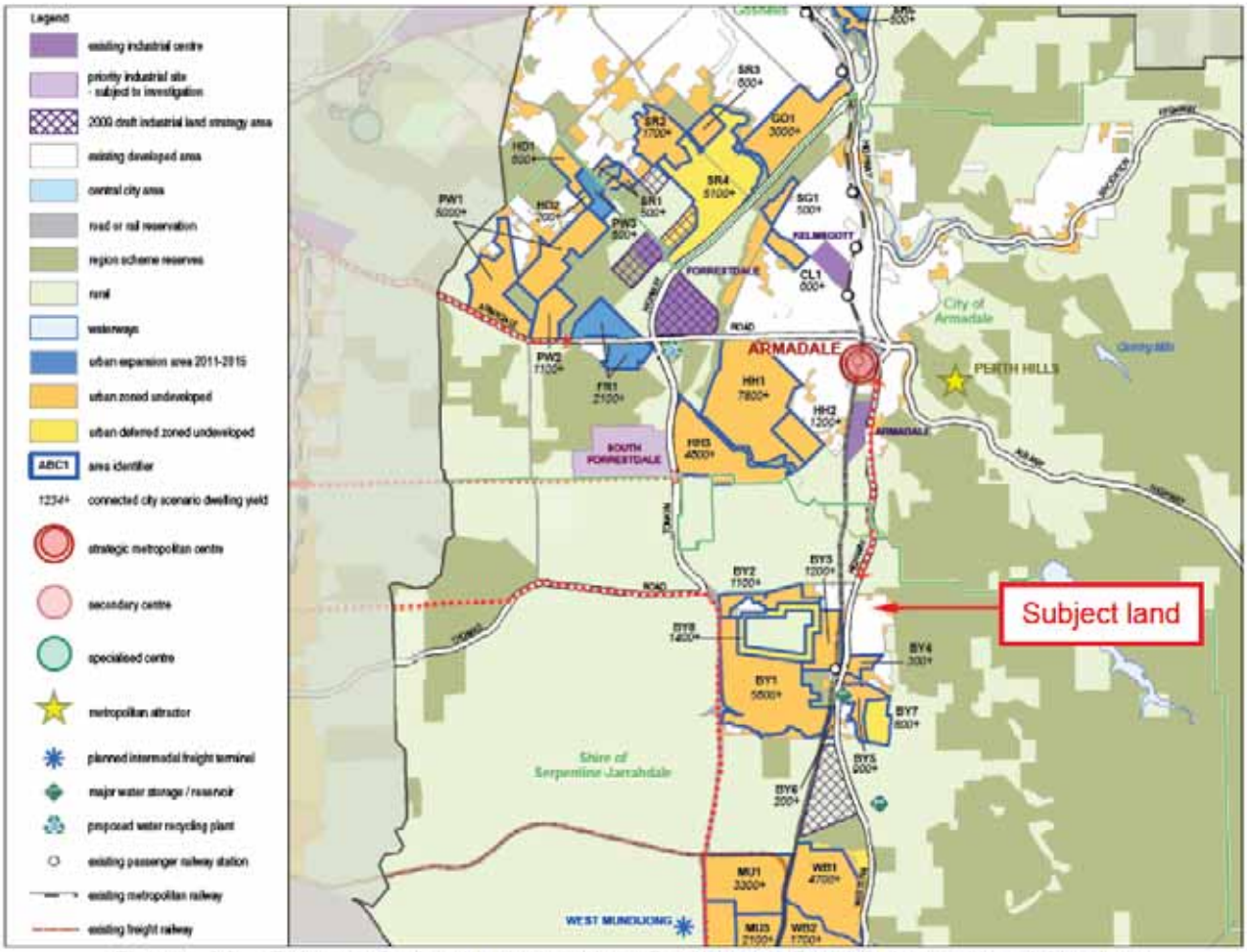

Figure 10 – Extract Outer Metropolitan Perth and Peel Sub-regional Strategy.

3.3.3 Draft Perth and Peel @3.5million

To realise the vision encapsulated in Directions 2031 and Beyond and the State Planning Strategy 2050, the Western Australian Planning Commission has created a series of detailed draft planning frameworks with a unified, long-term growth strategy for land use and infrastructure for the Perth and Peel regions.

The Perth and Peel @3.5million strategic suite of documents has been developed to engage the community in open discussion on expectations of what our city should look like in the future, on how our valued lifestyle can be maintained and how we can realistically accommodate a substantially increased population.

Together with the draft Perth and Peel @3.5million document, the strategic suite consists of four draft sub-regional planning frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions.

The draft frameworks provide guidance on where sustainable development should occur over the next 35 to 40 years to ensure the impact of urban growth on areas of environmental significance is minimised, to protect our heritage, and to maximise the benefits of available land and existing infrastructure.

The Old Byford Townsite North – Stanley Road Precinct falls within the South Metropolitan Peel sub-region and is recognised as Urban – refer *Figure 11*.

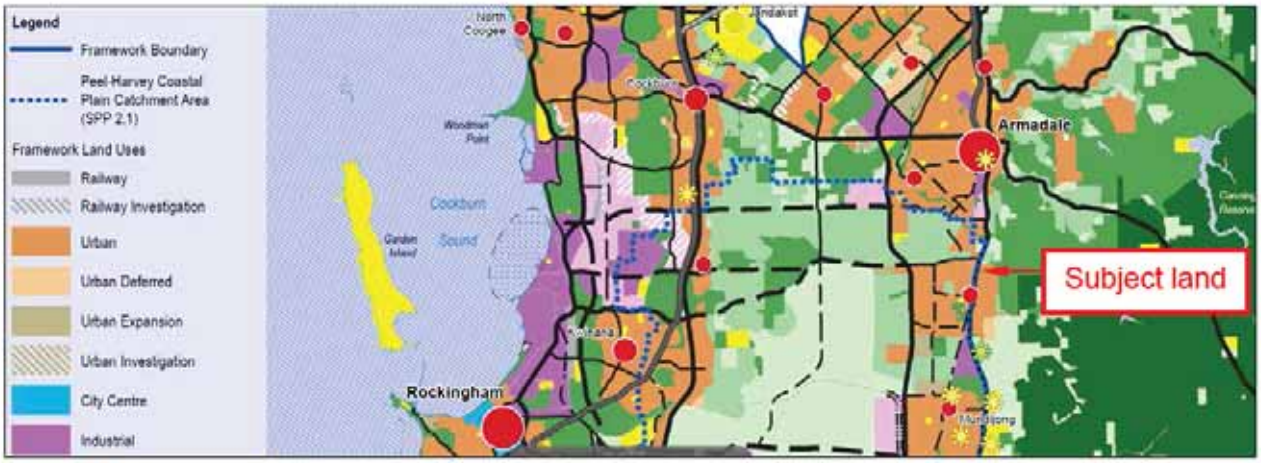

Figure 11 – Extract The Planning Framework - South Metropolitan Peel Sub Region

The draft South Metropolitan Peel Sub Region framework anticipates that infill development within established urban areas has the potential to contribute to housing diversity and respond to changing demographics and community aspirations.

It is expected infill will also contribute to economies of scale and provide opportunities for more affordable living within vibrant, revitalised neighbourhoods offering diverse housing options, mixed-uses, reduced car dependency, efficient public transport and increased opportunities for social interaction.

The urban infill dwelling target for the Shire of Serpentine Jarrahdale is 1,365 to cater for an estimated population of 3,003.

The existing number of dwellings in the Shire (as at 2011) is cited as 6,439 with an existing population of 18,495. By 2050 the Shire is projected to have a total of 42,242 dwellings and a total population of 113,058.

3.3.4 State Planning Policy 3.7 -Planning for Bushfire Prone Areas

State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) directs how land use should address bushfire risk management in Western Australia. It applies to all land which has been designated as bushfire prone by the Fire and Emergency Services (FES) Commissioner as highlighted on the Map of Bush Fire 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. It applies to all higher order strategic planning proposals, including structure plans, where the land falls within a designated bushfire prone area.

The accompanying Guidelines for Planning in Bushfire Prone Areas provide supporting information to assist in the interpretation of the objectives and policy measures outlined in SPP 3.7.

The primary focus of the Guidelines is to ensure that bushfire hazards are considered in planning decisions at all stages of the planning process, to avoid increased fire risk to life and property.

Bushfire Management Plans are generally required to be prepared to support local structure plans in accordance with the WAPC Policy for Bushfire Protection.

3.3.5 Liveable Neighbourhoods

Liveable Neighbourhoods has been adopted by the Western Australian Planning Commission as operational policy, and is to be followed in the design and approval of urban development. Liveable Neighbourhoods applies to structure planning and subdivision of greenfield sites, and the redevelopment of large urban infill sites in the metropolitan area and country centres.
The key Objectives of the Liveable Neighbourhoods Policy of particular relevance to the proposed Local Structure Plan include:

- To provide a variety of lot sizes and housing types to cater for the diverse housing needs of the community at a density that can ultimately support the provision of local services;

- To ensure a site-responsive approach to urban development that supports and enhances the context in which it is located, strengthens local character and identity, integrates with its context and promotes a sense of community;

- To ensure cost effective and resource efficient development to promote affordable housing;

- To provide a safe, convenient and legible movement network, and to provide attractive streetscapes;

- To integrate appropriate water management measures in an efficient urban structure and range of parkland types; and

- To maximise land efficiency.

4.0 SITE CONDITIONS AND ENVIRONMENT

An Environmental Assessment and Management Strategy has been prepared by Emerge Associates for the Local Structure Plan area in order to support the Local Structure Plan design and to outline future environmental management requirements for future subdivision within the site. (*Attachment 1* refers).

The following section provides a summary of key findings of this report.

4.1 Existing Environment - Local Context

The site and the surrounding adjacent areas are comprised of semi-rural residential land uses that are characterised by large lots (generally up to 1ha in area), typically containing a single-storey dwelling with ancillary sheds and outbuildings. The north eastern portion of the site is intersected by an upstream branch of Oaklands Drain, which flows through the site as a natural stream in a north-westerly direction.

Photo 4 - Oaklands Drain crossing Stanley Road

Photo 5 - Oaklands Drain, view west from North Street

Remnant vegetation values within the site are generally limited to the alignment of the Oaklands Drain and comprise only a small area.

The remainder of the site has been historically cleared, however, mature planted trees (native and exotic) are common throughout private gardens.

4.2 Topography, landforms and soils

4.2.1 Topography

The elevation of the site ranges from 76m AHD in the east to 56m AHD in the west, resulting in a westward aspect with a slope of approximately 3.4% - refer *Figure 12*. This is attributed to the location of the site within the foothills of the Darling Range.

4.2.2 Landforms and Soils

The majority of the site is situated within the Forrestfield soil-landform formation, which consists of laterised foothills of the Darling Scarp dominated by gravelly and sandy soils. The eastern extent of the site falls within the Darling Scarp formation, which consists of very steep slopes with shallow red and yellow earths and much rock outcrop.

SITE TOPOGRAPHY

OLD BYFORD TOWNSITE 'NORTH'
STANLEY ROAD PRECINCT

LEGEND

LSP AREA

0 100m

SCALE 1:3000 @ A4

Figure 12

GRAY & LEWIS
LAND USE PLANNERS

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This LSP has been prepared in collaboration with
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Shawmac - Traffic & Servicing

JOB REFERENCE: 100778 DATE: 26th AUGUST 2015

4.2.3 Surface soils and geology

A geotechnical investigation of the site was conducted by Douglas Partners in February 2014, which involved the assessment of 8 test pits. The soil logs generally found the site to be comprised of sand gravel, gravelly sand and or clayey sand underlying sand (to a depth of between 0.4m and 0.5m).

The site was found to be suitable for on-site infiltration, however, 6 of the 8 test pits were terminated prior to the target depth of 3.0m due to hardness (potentially laterite); this ranged from a depth of 1.5m to 2.5m. Therefore, it is possible that infiltrated stormwater will pond above this permeable layer.

4.2.4 Acid Sulfate Soils

Available information (Department of Environment Regulation 2015) indicates that the site has been classified as having no known risk of Acid Sulfate Soils occurring within 3 metres of the natural soil surface.

4.3 Biodiversity and natural assests

4.3.1 Flora and vegetation

A site visit was undertaken by 2 environmental consultants from Emerge Associates in June 2015 in order to identify any significant natural features of the site, including flora and vegetation values. Access during the site visit was limited to public road reserves and the existing public open space reserve. No detailed flora and vegetation surveys have been undertaken across the site, given the absence of remnant vegetation across the majority of the site as a result of historical clearing to accommodate agricultural and rural-residential land uses.

Based on observations made during the site investigation, remnant vegetation was found to be generally scattered and limited to the banks of Oaklands Drain. This vegetation is described as an open woodland to woodland dominated by *Corymbia calophylla* (marri) over introduced grasses and weeds.

This community is considered to be in 'Degraded' condition (based on Keighery (1994) vegetation condition scale), given the significant disturbance caused as a result of residential development and the subsequent clearing of understorey species and introduction of invasive grasses and weeds.

This disturbance is accentuated by the fragmentation of the stream and adjacent vegetation across 5 residential lots within the site, including a number of constructed driveways. The extent of this community is limited to the sloping banks of Oaklands Drain, as shown in Photos 6 and 7.

Photo 6 – Example of marri woodland community in 'Degraded' condition on the banks of Oaklands Drain near Linton Street north.

Photo 7 – Example of marri woodland community in 'Degraded' condition on the banks of Oaklands Drain.

The remainder of the site is described as parkland cleared and is comprised of cleared areas with scattered planted native and exotic tree species with an understorey dominated by pasture weeds or cultivated species.

This vegetation extends across the vast majority of the site, including within residential gardens and the existing POS reserve, and is in 'Completely Degraded' condition.

An example of parkland cleared vegetation within the site is shown in Photo 8.

Photo 8 - Example of parkland cleared vegetation in 'Completely Degraded' condition within the existing POS reserve.

The extent and condition of plant communities within the site is shown in *Figure 13.*

Figure 13 – Plant Communities and Vegetation Condition

4.3.2 Threatened and Priority Ecological Communities

A detailed flora and vegetation survey has not been undertaken across the site, however the only identified remnant plant community (marri woodland) is considered extremely unlikely to be representative of any Threatened Ecological Community or Priority Ecological Community.

This determination is based on the limited extent, highly disturbed nature and poor condition of remnant vegetation located within the site.

4.3.3 Significant Flora

A search was conducted of the Department of Parks and Wildlife's databases and the Environment Protection and Biodiversity Conservation Act list of Matters of National Environmental Significance (MNES) for Threatened and Priority flora species which did not identify any known occurrences recorded within the site.

It is considered unlikely that instances of 'Threatened' or "Priority' flora species occur within the site, given the site has been historically cleared of remnant vegetation to support agricultural and rural-residential land uses.

The small area of remnant vegetation that remains along the extent of the stream is unlikely to contain 'Threatened' or 'Priority' flora species, given the lack of native understorey species (as a result of clearing) and introduction of invasive grasses and weeds.

4.3.4 Bush Forever

The site is not located within or in proximity to any Bush Forever sites.

4.4 Terrestrial fauna – site specific investigations

Given the highly disturbed nature of the site and general lack of significant remnant vegetation, a fauna assessment has not been undertaken across the site. Based on the findings of the desktop review and the site visit undertaken by Emerge Associates in June 2015, fauna habitat values present within the site are generally not considered to be of local or regional significance, given:

- The vast majority of vegetation is comprised of mature planted trees of both exotic and native species, providing limited habitat value given the lack of understorey and flora diversity.
- Whilst planted trees may offer suitable habitat for some avifauna species, their fragmented distribution across the majority of the site means there is limited linkage between them, decreasing their ecological value.
- Property boundaries significantly inhibit the movement of fauna across the site and generally discourage the establishment of fauna habitat.

Small areas of remnant native vegetation associated with Oaklands Drain may be considered to be of value to fauna species, however, the highly impacted and disturbed nature of this vegetation as a result of historical residential development reduces any such value.

Some vegetation within the site is representative of potential black cockatoo habitat, especially large mature native trees scattered across the site and the area of marri woodland adjacent to the stream. However, no evidence of black cockatoo use, either historic or current (such as direct observations, chewed

fruits/nuts, chew marks around hollows or malted feathers), was observed during the site visit.

4.5 Hydrology

4.5.1 Groundwater

The Byford Townsite Drainage and Water Management Plan (Department of Water 2008) found groundwater in the Byford region to vary between 0m below ground level (BGL) and 6m BGL and noted that perched groundwater occurred during winter across the region. Groundwater contours to the west of the site range from approximately 26m AHD to 30m AHD (3m BGL to 5m BGL). Based on a consistent rise in the groundwater surface to the east (and beneath the site) it can be inferred that permanent groundwater beneath the site (if present) would be more than 15m BGL near Linton Street north.

Perched groundwater however, may be significantly closer to the surface due to the underlying geotechnical conditions. Groundwater or infiltrated stormwater is anticipated to pond above the low permeability layer, which occurs between 1.5m BGL to 2.5m BGL across the site. On this basis, stormwater management responses should focus on the underlying geotechnical conditions as opposed to the groundwater aquifer level.

4.5.2 Surface water and drainage networks

A northern branch of the Oaklands Drain intersects 5 lots in the north-eastern portion of the site and flows in a north-westerly direction from Linton Street North to Stanley Road. This branch originates as a natural stream in the Darling Range Regional Park and flows into and out of the site as a natural stream.

The portion of the Oaklands Drain located within the subject site is managed by the Shire of Serpentine Jarrahdale.

All streamlines in this region contribute to the Serpentine River System through a system of farm drains and ultimately discharge into the Peel Harvey Estuary.

4.5.3 Wetlands

There are no mapped wetland features within the site pursuant to either Department of Parks and Wildlife's Geomorphic wetlands dataset or the Environmental Protection (Swan Coastal Lakes) Policy 1992.

A large Multiple Use palusplain wetland is situated approximately 40m from the north-western boundary of the site, which extends over the greater western Byford region.

4.6 Indigenous heritage

There are no Registered Aboriginal Heritage Sites or Other Heritage Places within or adjacent to the site.

The nearest Registered Aboriginal Site (Place ID 17307) is located approximately 1.4km north-east of the site.

4.7 Historical land use - potential contamination

Based on the historical land use of the site, there is a very limited risk associated with contamination or uncontrolled fill. There is no evidence to suggest that the site was used for any land uses that present significant risk of contamination or uncontrolled fill, such as landfill or market gardening.

A search of the Department of Environment Regulation's Contaminated Sites Database found there to be no registered contaminated sites within the site.

4.8 Relevant environmental factors and considerations

The following table – *Figure 14*, summarises the environmental factors that have been considered for the site, and outlines the factors that will require further specific consideration as part of the future development of the site.

These environmental factors are further discussed in Section 4 of the Environmental Assessment and Management Strategy by Emerge Associates.

Figure 14 – Relevant Environmental Factors and Considerations:

Environmental Factor	Relevant Considerations
Climate	No issues posed. No further consideration is required.
Topography	No issues posed. No further consideration is required.
Geology	No issues posed. No further consideration is required.
Landform and soils	Geotechnical investigations identified impermeable layers (potentially laterite) at depths of 1.5m to 2.5m across the site, which has the potential to affect the infiltration of surface water.
Acid Sulfate Soils	The site has no know risk of ASS occurring within 3m of the natural soil surface. No further consideration of this factor is required.
Flora and vegetation	Remnant vegetation is limited to an area of marri woodland along the extent of the existing stream.
Bush Forever	No Bush Forever sites are located within or in close proximity to the site . No further consideration of this factor is required.
Biodiversity linkages	No Biodiversity Linkages are located within or in close proximity to the site . No further consideration is required.
Environmentally Sensitive Areas (ESAs)	No ESAs are located within or in close proximity to the site . No further consideration of this factor is required.
Local Natural Areas (LNAs)	No LNAs are located within or in close proximity to the site . No further consideration of this factor is required.
Terrestrial fauna	Areas of remnant vegetation within the site represents potential fauna habitat. This factor requires further consideration.
Groundwater	Clearance to the underlying groundwater aquifer is up tp 15m BGL in the eastern extent of the site. However clearance to perched groundwater as a result of the geotechnical characteristics of the site will require further investigation.

Surface water and drainage networks	An upstream branch of Oaklands Drain flows through the north eastern portion of the site as a natural stream. 100 year ARI flood modelling has been undertaken for this waterway and will require further investigation.
Wetlands	No wetlands occur within the site.
PDWSAs	No PDWSAs are located within the site.
Indigenous Heritage	No Registered Aboriginal Heritage sites have been identified within the site. No further consideration is required.
Non-indigenous Heritage	No Non-indigenous heritage values have been identified within the site. No further consideration is required.
Surrounding land uses	There is potential for noise impacats from South Western Highway to impact the prosposed urban land use of the site. An acoustic consultant has been engaged seperately to address this consideration.
Bushfire hazard	There is potential for vegetation within and surrounding the site to pose a budhfire hazard on the proposed urban land use of the site. A bushfire hazard and management consultant has been engaged separately to address this consideration.

Source: Emerge Associates

5.0 PROPOSED LOCAL STRUCTURE PLAN

5.1 Design Overview

The proposed Local Structure Plan has been prepared to guide the future development of the 22.63ha site for residential subdivision, with access to the full range of services and facilities planned for the future expansion of the Byford town centre.

It demonstrates an efficient road layout that minimises the need for land exchanges and optimises the potential for individual landowners to subdivide independently.

The provision and location of public open space is generally in accordance with the Byford Structure Plan, with the addition of two sites adjacent to South Western Highway.

A base density code of R25 is proposed in the Structure Plan, with the addition of R30 and R40 group housing sites and single dwelling lots adjacent to high amenity areas.

The key design principles which have guided the design of the proposed Structure Plan design for the Old Byford Townsite 'North' – Stanley Road Precinct are outlined as follows:

- To provide a framework for subdivision and development of the land that integrates with broader district and regional context, consistent with the Byford (District) Structure Plan;

- To provide a layout generally in accordance with the Byford Detailed Area Plan for Area B. The principle design elements comprise: the creation of a multiple use corridor along the existing creekline; the extension of Maree Close and Orana Place as 20m wide road reserves to provide a robust north-

south road connections with sufficient width to allow existing trees to be retained; and provision of an inter-connected local road structure based upon Liveable Neighbourhood principles.

- To provide for a variety of housing choice through a range of densities and lot sizes, whilst allowing for the retention of some existing dwellings;

- To provide an integrated open space and drainage network, balancing environmental, recreational and drainage objectives;

- To provide for passive surveillance of POS through the provision of higher density adjacent to the POS areas;

- To deliver a safe pedestrian and cycle movement network; and

- To provide housing design, lot layout and access arrangements which will create attractive streetscapes.

5.1.1 Environmental Assessment and Management Strategy

The design of the Local Structure Plan has been informed by the existing environmental attributes and values of the site. Specifically, the LSP allows for the flowing spatial provisions:

- A POS corridor in the north east of the site, which aligns with the extent of Oaklands Drain and associated riparian vegetation. This allows for:

    - The retention of mature marri trees along the existing banks of Oaklands Drain, subject to a number of considerations including drainage and flood management requirements, tree health and condition, and further consultation with the Shire of Serpentine Jarrahdale.

    - The maintenance of the hydrological function of Oaklands Drain, allowing the current pre-development drainage characteristics of the waterway to remain unchanged.

- An integrated drainage network to adequately manage surface runoff across the site. This includes the retention of Oaklands Drain and the provision of areas of POS, containing bio-retention areas and flood storage areas, to treat and detain stormwater runoff respectively.

The Environmental Assessment and Management Strategy outlines the proposed environmental framework to manage environmental values as part of future subdivision and development within the site.

Overall, the proposed landuses set out in the Local Structure Plan will allow for the enhancement of the environmental values of the site, which are currently limited as a result of historical and existing land uses.

The Proposed Structure Plan is included as *Plan 1*.

5.2 Density and Lot Yield

The proposed Local Structure Plan will facilitate future subdivision to create approximately 360 dwellings comprising mainly single residential lots at R20, R25, R30 and R40 density.

The total lot yield, however, is dependent on finalising a subdivision design which requires separate approval of the Western Australian Planning Commission (WAPC).

An Indicative Subdivision Plan is included as *Figure 15.*

5.2.1 Estimated Population

Based upon a total yield of approximately 360 dwellings, and an occupancy of 2.8 people per household, the estimated population for the Structure Plan area is approximately 1,000 persons.

5.3 Public Open Space - existing

A 1.04ha area of existing POS is centrally located within the Structure Plan area and has vehicular access from Orana Place and battle-axe access from Walters Road.

This area of POS will be retained and incorporated into a larger area of proposed POS which will accommodate the Oaklands Drain.

Photo 9 – view north-east across existing area of POS

INDICATIVE SUBDIVISION PLAN

STANLEY ROAD PRECINCT - SUB AREA 'A'

SCALE 1:3000 @ A3

0 100m

LEGEND

- STANLEY ROAD PRECINCT LSP BOUNDARY
- SUB AREA 'A' LSP BOUNDARY
- * DENOTES DRAINAGE SWALE WITHIN POS
- ROAD WIDENING
- ROAD CLOSURE
- EXISTING LOT BOUNDARIES
- RESIDENTIAL R20 - 35 LOTS
- RESIDENTIAL R25 - 224 LOTS
- RESIDENTIAL R30 - 86
- RESIDENTIAL R40 - 15 + 1 x GH
- POS / DRAINAGE

Figure 15

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Shawmac - Traffic & Servicing

JOB REFERENCE: 100778 DATE: 24th JULY 2017

Photo 10 – view north along battle-axe entry off Walters Road

5.4 Public Open Space - proposed

At subdivision stage and in accordance with Policy No DC 2.3, the Western Australian Planning Commission's normal requirement in residential areas is that 10 percent of the gross subdivisible area be given up free of cost by the subdivider and vested in the Crown under the provisions of Section 152 of the Planning and Development Act 2005 (as amended) as a Reserve for Recreation.

Notwithstanding the normal POS rate of 10 percent, POS allocation in this locality is guided by the Byford Traditional Infrastructure Development Contribution Plan and will be provided at the rate of 12.27 percent.

The main area of proposed POS will have an area of 2.61ha and will incorporate the existing POS area (1.04ha) and 1.56ha along the Oaklands Drain which will extend from Stanley Road to Linton Street North. Direct street frontage will be created for the existing area of POS with the extension of Orana Place through to Walters Road. This provision and location of this area of POS is in accordance with the Byford Structure Plan.

Two smaller areas of POS, which are in addition to that required under the Byford Structure Plan, are proposed along South Western Highway at the intersections of Stanley Road and Walters Road. These areas of POS will also are required to accommodate stormwater drainage in accordance with the Local Water Management Strategy prepared by Emerge Associates (refer Section 7.1).

Total Site area		22.63ha
Deductions (LN Element 4 – R43)		
Primary School	Nil	
Town centre and commercial	Nil	
Transmission corridors	Nil	
Other approved contingencies	Nil	

Nett Subdivisible area		22.63ha
Public open space @ 12.27 percent required		2.77ha
Public open space area contribution		3.02ha
Less 1:1 drainage	2,344m²	
Restricted POS (included in POS provision)		1,431m²
Nett Public open space provided		2.7856 ha

Under the Developer Contribution Plan established under the Byford Structure Plan, areas required for POS and drainage will be acquired through the Developer Contributions arrangements.

Note the existing area of public open space (1.04ha) has previously been ceded and will not be acquired DCA.

5.5 Road Network

The Local Structure Plan area has excellent connections to the regional road network due its close proximity to South Western Highway which directly abuts the western boundary.

The Local Structure Plan area is proposed to be served by the existing boundary road network (Stanley Road, Linton Street North and Walters Road) with access from South Western Highway, plus additional future connections of Maree Close and Orana Place to Walters Road.

South Western Highway is under the care and control of MRWA and vehicle access will be restricted in accordance with current MRWA policy.

Road and drainage works are required to meet the Shire's requirements and standards for urban development. Detailed engineering drawings will form part of standard subdivision works.

All local roads (except the cap road adjacent to South Western Highway) shall be 15.4 metres wide in accordance with Liveable Neighbourhoods. The 20 metre wide roads (Maree Close and Orana Place) shall be constructed to a boulevard standard incorporating rows of trees on both sides of the road reserve.

5.5.1 Traffic Impact Assessment

A Traffic Impact Assessment for the proposed Local Structure Plan has been prepared by Shawmac Consulting Civil and Traffic Engineers. A copy of the Traffic Impact Assessment is included as *Attachment 2*.

The primary objective of the traffic impact assessment is to assess the traffic impacts of the proposed subdivision on the adjacent local road network.

The assessment covers all transport aspects of the proposal, including estimation of the potential traffic generated from the site and its impact on the surrounding roads, assessment of the pedestrian/cyclist facilities, public transport availability and overall safety of the development. The proposed road network for the structure plan area is included as *Figure 16*.

Figure 16 – Proposed Road Network Plan

In order to assess the potential traffic impact associated with the Local Structure Plan on the boundary road network, a traffic generation and distribution exercise was undertaken.

The aim of this exercise was to establish the anticipated traffic volumes which would be generated from the proposed development of the Local Structure Plan in order to quantify the effect that the additional traffic has on the boundary road network. Based upon the proposed land uses, it has been estimated that the LSP area would generate in the order of 2,928 vpd daily.

The traffic impact assessment concludes that the proposed street network will provide an acceptable range of choices for travel and ensure that traffic volumes on individual streets can be kept below threshold levels to ensure the amenity of the area is preserved and safe movement options exist for pedestrians, cyclists and local traffic.

South Western Highway and Walters Road are likely to be the major traffic carrying routes adjacent to the site and Stanley Road and Linton Street North will need to be treated to provide impediments to the free flow of traffic to ensure it remains consistent with its classification as an access road. With the exception of these roads and connectors within the subdivision, all other streets are predicted to carry relatively low traffic volumes generally less than 1,000 vehicles per day. Thus, the

proposed road network is generally permeable and the design of the streets will reinforce distribution of traffic onto the higher hierarchy roads.

The sensitivity analysis at the intersection of Walters Road and South Western Highway predicts that increased traffic volumes at the intersection may result in unstable flow at the intersection. The intersection should be monitored once the site is fully developed to ensure it is operating at an appropriate Level of Service.

The assessment concludes that the proposed street network will provide an acceptable range of choices for travel and ensure that traffic volumes on individual streets can be kept below threshold levels to ensure the amenity of the area is preserved and safe movement options exist for pedestrians, cyclists and local traffic.

5.5.2 Pedestrian/cycle networks

The structure plan area is accessible to the footpath network with shared cycle and footpath facilities located within the western verge of South Western Highway.

Photo 11 – dual use path along South Western Highway

The existing footpath network also extends along Walters Road, terminating at Linton Street North.

In keeping with the recommendations of Liveable Neighbourhoods, it is recommended that the pedestrian facilities be constructed along each street to allow safe internal and external movement of pedestrians to and from the site, in accordance with *Figure 17*.

Figure 17 – Path Network

5.5.3 Acoustic Assessment

An Acoustic Assessment has been prepared by Herring Storer Acoustics for the Structure Plan area and provides an assessment of noise that would be received at the proposed development from road traffic noise associated with South Western Highway.

The results of the acoustic assessment indicate that without any noise amelioration, noise received at the residences in the future would comply with the noise "Limits" but would be above the noise "Target" as outlined in the Western Australian Planning Commission's Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

The results of the acoustic assessment indicate that without any noise amelioration, noise received at the residences in the future would exceed with the noise "Limits" by up to 7 dB(A). Therefore, noise modelling has been conducted to include a 2.2 metre barrier of wall at the development façade – refer *Figure 18.*

The construction of the 2.2m high noise wall adjacent to South Western Highway should be the responsibility of MRWA as part of future works to upgrade South Western Highway.

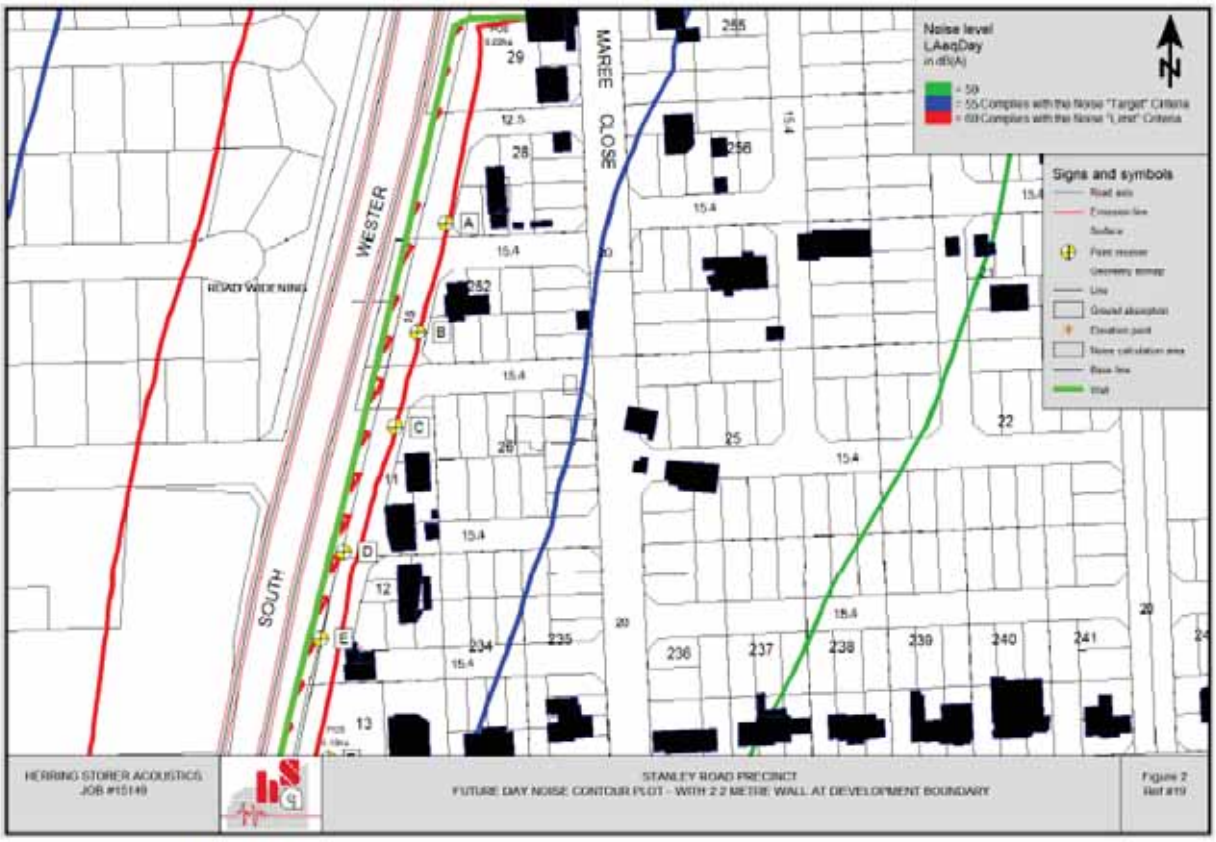


Figure 18 – Future day noise contour plot

With the inclusion of the wall, noise levels are reduced such that they meet the "Limit" noise criteria.

Based on the above, noise received at the ground floor of the residence would be within the 5 dB(A) margin (i.e. somewhere between the Noise Targets and Noise Limits) for façade Lots.

Further noise control in the form of quiet house design would be required. Package A, as per the SPP 5.4 Guidelines would be required for façade residences. As Package A is a deemed to satisfy construction, other designs may be suitable, although these would require confirmation from a suitably qualified acoustic consultant.

A copy of the Acoustic Assessment is included as *Attachment 3.*

6.0 SERVICE INFRASTRUCTURE

Shawmac Consulting Civil and Traffic Engineers have prepared a Servicing Report for the Local Structure Plan area – refer *Attachment 4.*

The purpose of the report is to consider infrastructure requirements for the site and where possible, to provide preliminary advice on the indicative subdivision concept and to identify the need to upgrade existing infrastructure where required.

6.1 Potable Water

A review of the water network indicates that potable water to the site is supplied from the Byford Storage reservoir located on Lot 702 Brown Street, north of the Byford townsite. The capacity of the storage reservoir may need to be increased into the future to cater for future development of the area.

The developer will need to discuss storage requirements with the Water Corporation prior to subdivision to ensure storage facilities are not compromised, however, the Byford Detailed Area Plan indicates that the Water Corporation has plans to upgrade its storage facilities on Brown Street by installing a new 7 megalitre High Level Tank.

6.2 Water reticulation

The existing water supply network internal to the site will not accommodate urban residential development and will need to be replaced. Infrastructure to service the site may potentially require a 150mm ring main and 200mm supply main (dependent on head) to meet the Water Corporation's minimum head and flow requirements.

6.3 Wastewater – sewer reticulation

The site currently grades naturally towards South Western Highway which facilitates gravity flow to sewer reticulation locations on Walters Road and the eastern side of South Western Highway. Flows of 3.93 L/s are estimated for the site thus it is anticipated that the site will be able to be serviced using minimum size water main (150mm). A pump station may be required where grades to connect to existing sewer reticulation cannot be achieved.

Sewer mains located on the western side of South Western Highway (Pira Loop and Makin Ct) are at a depth that may accommodate connection from the site, however Water Corporation has advised that the site will be serviced via a proposed 225 main (Point 1006) to the north.

6.4 Power

It is expected Western Power will require a logical extension from the existing network. Any upgrades required to the network for the proposed development can be ascertained once a Design Information Package is requested as part of the standard subdivision design process.

6.5 Telecommunications

Generally staged developments would pay for any upgrades to the network or extensions of cabling to the site. It is expected that logical extensions and upgrades from nearby the site will service the proposed development.

6.6 Gas

The network will be extended to the site to accommodate development as it progresses and may require upgrading to accommodate increased loading within the site.

7.0 LOCAL WATER MANAGEMENT STRATEGY

Emerge Associates has prepared a Local Water Management Strategy (LWMS) in support of the proposed Local Structure Plan and is included as *Attachment 5*.

The LWMS has been developed in consideration of the objectives and principles detailed in the overarching Drainage and Water Management Plan (DoW 2008b), and Better Urban Water Management (WAPC 2008).

The LWMS has been reviewed by the Department of Water and Environmental Regulation (DWER) who supports the strategy - *Attachment 6*.

The LWMS summarises the existing environmental features that are relevant to water management within the site:

- The site receives 828 mm (on average) annually with the majority of rainfall received in June and August (BoM 2013).
- The site has a 3% slope from the north-western corner (56 m Australian height datum (AHD)) to south-eastern corner (76 m AHD).
- Soil on site is classed as gravelly sandy clay. Six of the eight test pits encountered a harness layer (potentially laterite) at depths ranging from 1.5 m to 2.5 m below ground level (BGL).
- There is no known risk of acid sulfate soils occurring within 3 m of the natural surface within the site.
- A large multiple use wetland is located within 30 m of the north-western corner.
- The northern branch of Oaklands Drain flows through the site. The 100 year average recurrence interval (ARI) event peak flow entering the site at Linton Street North was estimated to be 7.23 m3/s.
- The major event (100 year ARI) peak flows discharging from the site include 7.56 m3/s from Oaklands Drain at Stanley Road, 2.18 m3/s at the corner of Stanley Road and South Western Highway and 0.36 m3/s at the corner of Walters Road and South Western Highway.
- Groundwater or infiltrated stormwater is anticipated to pond above the low permeability layer and is much closer to the surface than the permanent groundwater layer, which is inferred to be greater than 15 m BGL.

- The site has been utilised for residential purposes and currently features traditional lots ranging in size from 6,000 m2 to 1 hectare.

Post-development peak flow rates discharging from the site will be consistent with pre-development peak flow rates by retaining the small event (first 15 mm of rainfall) as close to source as possible and the implementation of three flood storage areas (FSAs) located within public open space.

The LWMS is a key supportive document for the proposed Local Structure Plan. The development of the LWMS has been undertaken with the intention of providing a structure within which subsequent development can occur consistent with an integrated water cycle management approach.

It is also intended to provide an overall guidance to the general stormwater management principles for the site and to guide the development of the future Urban Water Management Plans.

7.1 Stormwater Management Strategy

The findings of the LWMS were utilised to prepare a detailed Stormwater Management Strategy for the site, the principle of which is to treat the 1 year 1 hour ARI event as close to source as possible and detain surface flows from up to the 100 year ARI rainfall event to approximate the pre-development peak flow rate.

The utilisation of various water sensitive urban design strategies (WSUD) will achieve the design criteria as stated in Section 4.3 of the LWMS – refer *Figure 19*.

WSUD strategies utilised in the stormwater management strategy include:

- Soakwells;
- Bio-retention areas (BRAs);
- Flood storage areas (FSAs); and
- Natural stream.

7.1.1 Soakwells

Soakwells provided by the lot owner will be utilised to retain and treat the small event rainfall on the roof area at source. Soakwells are proposed as clearance to the low permeability layer is sufficient, being 1.5 m to 2.5 m (Douglas Partners 2014).

Smaller lots generally do not have adequate room to incorporate a soakwell to retain roof runoff. Consequently, higher density lots are only assumed to retain 50% of the small event rainfall on the roof area for the purposes of surface runoff modelling.

7.1.2 Bio-retention areas

Bio-retention areas (BRAs) will be located within public open space to retain and treat the small event rainfall on road pavement and excess from lots (i.e. paved portion at the front of lots).

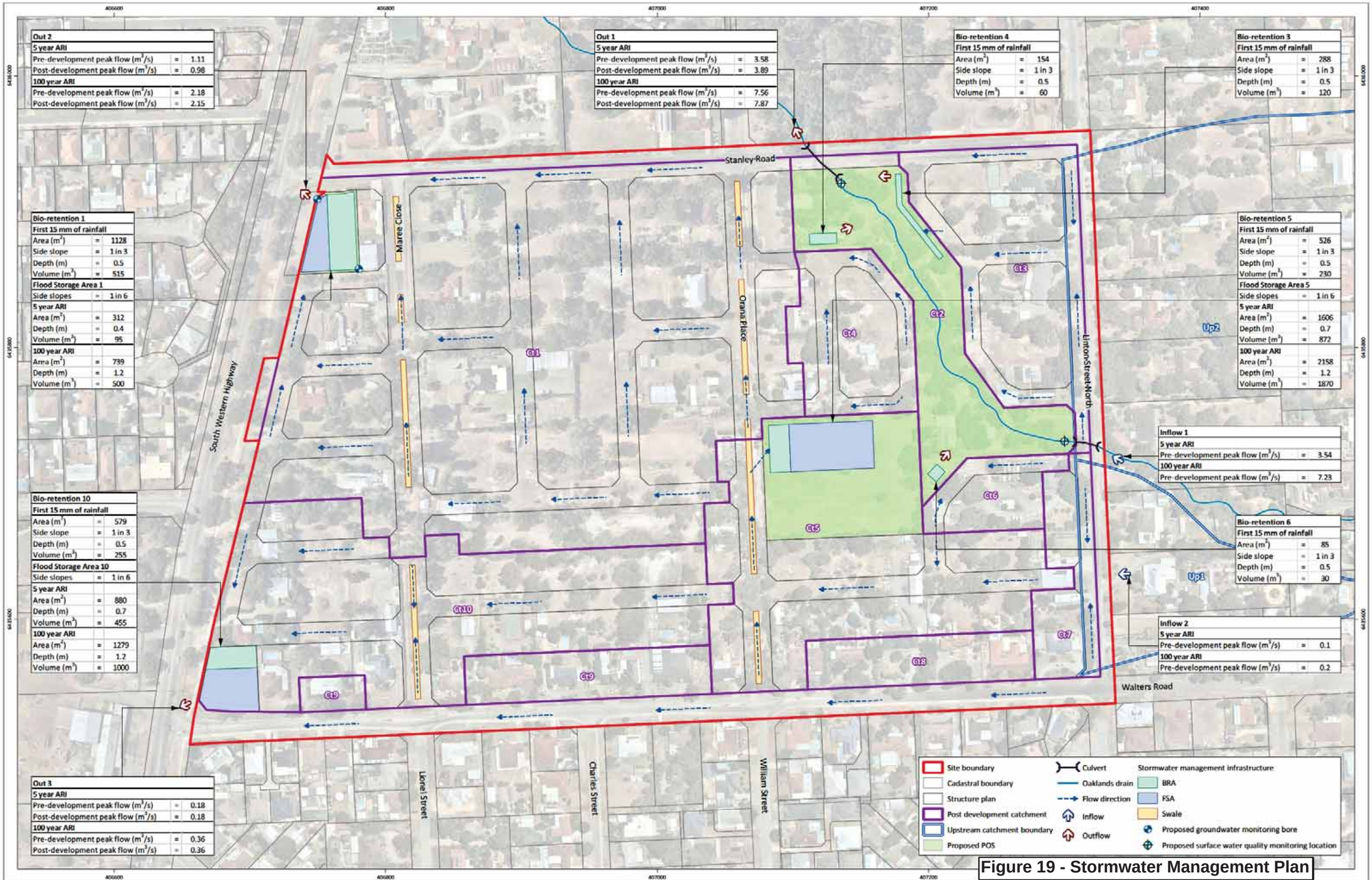


Figure 19 - Stormwater Management Plan

Figure 6: Stormwater Management Plan

Project:	Local Water Management Strategy Old Byford Townsite
Client:	Byford Land Development Company

Plan Number:	EP14-006(01)–F18d
Drawn:	KNM
Date:	26/03/2018
Checked:	ASC
Approved:	RLE
Date:	26/03/2018

N

0 50 100
Metres
Scale: 1:2,500@A3
GDA 1994 MGA Zone 50

emerge ASSOCIATES
Integrated Science & Design

The BRAs have been modelled with a maximum water depth of 500 mm, 1:3 side slopes and an infiltration rate of 2.5 x 10-5 m/s (approximately 2.16 m/day) with a 50% clogging factor.

BRAs will be planted with native vegetation to encourage biological nutrient uptake (Monash University 2014; Payne *et al.* 2015). An appropriate soil medium (either an engineered, amended or natural medium) with a phosphorous retention index (PRI) >10 will be used to line BRAs (400 mm in depth) and this will increase phosphorous removal from runoff during infiltration (Payne *et al.* 2015). This is underlain by a 150 mm layer of coarse sand that will act as a transition layer.

Due to the potential laterite found onsite subsoil drains are proposed to be located beneath the transition layer to ensure infiltration occurs and prevent ongoing ponding within BRAs. Subsoil drains should have free flowing outlets.

The subsoil system can be capped if it is not deemed necessary in the future (e.g. if observations made during the maintenance period suggest that infiltration occurs through the media, or vegetation shows signs of stress due to lack of water).

The use of WSUD strategies within verges (e.g. tree-pits, bio-pockets etc.) could decrease the volume required to be retained and treated within BRAs.

7.1.3 Flood storage areas

Rainfall beyond the small event will be conveyed by a pipe drainage network and/or overland flow to be detained within FSAs. FSAs will be utilised to detain major event flows in order to maintain the predevelopment hydrological regime.

FSAs have been modelled with maximum water depth of 1.2 m, 1:6 side slopes and an infiltration rate of 5 x 10-5 m/s. FSAs are designed such that maximum top water levels (TWLs) within basins will remain at least 500 mm below finished floor levels of adjacent lots to ensure protection from flooding during extreme rainfall events.

Three FSAs are proposed for the site. FSA 1 and 10 are proposed to discharge into the existing roadside drain within the South Western Highway road reserve.

Discharges from FSA 1 and 10 will be achieved through the use of a low flow pipe and via a weir (or alternative design that maintains the necessary flow rates). FSA 5 has been modelled as a retention basin (i.e. it does not discharge any runoff until the capacity of the FSA has been exceeded).

The volume retained within FSA 5 reduces the volume required within FSA 1 in order to meet pre-development peak flows at Outflow 2. A subsoil drain or low flow outlet that discharges into the adjacent pit and pipe network may be utilised to ensure FSA 5 dries out following rainfall events.

7.1.4 Natural stream

The Oaklands Drain flows through the site as a natural stream. The Shire of Serpentine Jarrahdale has indicated a preference for the alignment and profile of the existing natural stream to be retained as is, especially as this will retain the existing trees.

Therefore, it is proposed that this 1.57ha area of POS be designed to achieve the following outcomes:

- Retain alignment and profile of existing natural stream
- Retain existing trees (in consultation with the Shire)
- Integrate BRAs into the POS (as shown in *Figure 19)*
- Provide residents with access to the natural stream

The natural stream has been modelled as an open channel (using a natural stream profile) with a maximum depth of 2m. No infiltration was assumed within the natural stream. *Figure 19* provides a 30m natural stream corridor to allow for upstream flows and runoff from the site to be conveyed within the natural stream towards the existing culvert beneath Stanley Road.

7.2 Waterwise Landscaping (POS)

Water conservation can be reduced on a development scale within the various public open space areas.

In addition to using waterwise garden design (WWG) principles, the following measures will be utilised within estate landscaped areas:

- Garden beds within POS areas will utilise 'waterwise' plants, which are (where possible) locally native species or plants from regions with similar climates. These plants require less water with no ongoing irrigation following establishment, and lower fertiliser input than exotic species.

- Minimise water requirements for maintenance of turfed areas. This will be achieved by implementing an appropriate management and maintenance program for POS areas.

The implementation of WWG principles are illustrated in the landscape concepts provided – refer *Figure 20 & 21.*

The conceptual landscape designs provided show that the smaller public open space areas and the existing Oaklands Drain will have a dry landscaping approach that does not require ongoing irrigation post-establishment.

The existing public open space area is designed to be irrigated and available for active recreation use, thus most of the existing turf is proposed to be maintained. The 3,715 m2 of turf will be irrigated using groundwater, consistent with discussions held between Gray & Lewis and Shire Officers in September 2017.

7.3 Groundwater Management Strategy – Groundwater level management

The geotechnical investigation advised that stormwater infiltrated on the site is anticipated to pond above a low permeability layer encountered from 1.5m to 2.5m below the natural surface. Clearance from the low permeability layer to finished floor levels across the site will be 1.5m or greater. Sand fill will be required across portions of the site to ensure at-lot soakage structures and FSAs meet the minimum clearance to the low permeability layer of 500mm and consequently, to ensure these structures infiltrate.

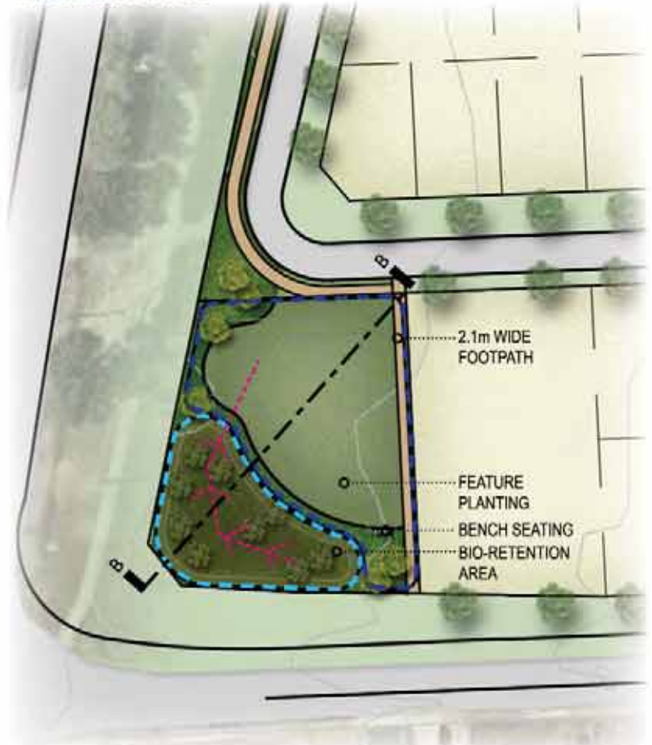
Figure 20 - Overall Landscape Concept Plan

OLD BYFORD TOWNSITE
OVERALL LANDSCAPE CONCEPT PLAN

DWG OBT-SK-01
REV C
DATE Apr 18
SCALE 1 : 2000 @ A3

emerge ASSOCIATES

CATCHMENT 1 POS



CATCHMENT 10 POS

CATCHMENT 3,4,5 & 6 POS

Figure 21 - Public Open Space Catchment Concept Plan

DWG QBT-SK-01
REV C
DATE Apr 18
SCALE 1 : 2000 @ A3

emerge ASSOCIATES

OLD BYFORD TOWNSITE

PUBLIC OPEN SPACE CATCHMENT CONCEPT PLAN

8.0 BUSHFIRE MANAGEMENT PLAN

A Bushfire Management Plan (BMP) has been prepared by FirePlan WA to detail the fire management strategies and requirements that will be implemented for the proposed Local Structure Plan.

The BMP satisfies the requirements of the Shire of Serpentine Jarrahdale and the Western Australian Planning Commission's Planning for Bushfire Protection Edition 2, 2010, and Planning for Bushfire Risk Management Guidelines - Draft May, 2014.

The objectives of the BMP are to:

- Achieve consistency with objectives and policy measures of SPP 3.7 and the *Planning for Bushfire Risk Management Guidelines May 2014*, and any local planning scheme provisions relating to bushfire.

- Understand and document the extent of bushfire risk for the BMP area;

- Prepare bushfire risk management measures for bushfire management and all land subject of the Plan, with due regard for people, property, infrastructure and the environment;

- Nominate individuals and organisations responsible for fire management and associated works within the plan area (e.g. Local government for land vested in it and private property owners for freehold land); and

- Define an assessment procedure which will evaluate the effectiveness and impact of proposed, as well as existing, bushfire risk management measures and strategies.

The Bushfire Management Plan essentially identified areas that may be affected by bushfire threat and specifies appropriate Bushfire Attack Levels (BALs) for the 100m Bushfire Protection Zone. Higher BAL ratings (requiring higher standards of dwelling construction and fire protection) are required for dwellings at greater risk.

The bushfire hazard assessment for the whole of the Local Structure Plan area is classsified as 'low' – Grassland Class G. To the north of Stanley Road there is an area of Woodland Class B which has a 'moderate' fire risk.

The bushfire hazard assessment of the site is shown in *Figure 22*.

Figure 22 – Bushfire Hazard Assessment

A minimum 20m setback from habitable buildings to classified vegetation north of Stanley Road (Seasonal Creek vegetation) is required to achieve a BAL 19 rating or with a 29m setback BAL 12.5 could be achieved.

As the POS and multiple use corridor will be managed to the Low Threat Vegetation Standard and Building Protection Zone standard, urban residential housing will be located in areas that will be cleared of vegetation and will not require a Setback from Vegetation other than those applicable to the relevant R Code for lot sizes.

These POS and multiple use corridor areas will comply with the Building Protection Zone standard, and habitable buildings within 100m will not be required to comply with AS 3959.

A copy of the Bushfire Management Plan is included as *Attachment 7*.

9.0 LANDOWNER CONTRIBUTIONS TO LOCAL STRUCTURE PLAN PREPARATION COSTS

A contribution is to be made by each individual landowner within the Local Structure Plan area towards the professional fees expended during the preparation and progression of the Local Structure Plan. The costs only relate to work that would be of benefit to the entire Structure Plan area.

Under Table 3.5 of the Byford Tradition Infrastructure Development Contribution Plan the current contribution rate per lot within Precinct B is $9,266 per lot. Based upon the anticipated lot yield and cost to prepare the Local Structure Plan, an additional contribution of approximately $1,000 per lot is to be levied through an additional development contribution item arrangement. A differential rate would apply to those landowners who have already contributed.

10.0 CONCLUSION

The Local Structure Plan report has been prepared in collaboration with the project team of specialist environmental, traffic, acoustic, fire management and engineering consultants in order to guide the future subdivision and development of the Old Byford Townsite 'North', Stanley Road Precinct.

The Local Structure Plan has been prepared in accordance with the Byford Structure Plan and will provide local structure planning over the whole of the Old Byford Townsite 'North' – Stanley Road Precinct, to provide guidance and flexibility for the future development of the area for residential purposes.