LOCAL STRUCTURE PLAN

Lot 9500 Thomas Road, Byford

23 September 2015

PREPARED BY G & G CORP

FOR

PINO GANGEMI

DEPARTMENT OF PLANNING
30 OCT 2015
FILE SPN/0329

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12 October 2015

Mr Regan Travers
Senior Planner
Shire of Serpentine Jarrahdale
6 Paterson Street
MUNDIJONG WA 6123

Dear Regan

LOT 9500 BRIGGS ROAD & THOMAS ROAD, BYFORD – WAPC NOTIFICATION OF APPROVAL OF LOCAL STRUCTURE PLAN AS PER SCHEDULE OF MODIFICATIONS

I refer to WAPC approval of our Local Structure Plan on 8 September 2015, subject to Schedule of Modifications.

Please find attached three (3) copies of the updated Local Structure Plan as per the Schedule of Modifications together with the technical appendices for your attention.

Can you please make necessary arrangement for them to be signed / executed and send a copy to the Western Australian Planning Commission and a copy to us as well.

Kind regards,

David Woo
G & g Corp Pty Ltd

Attach- Local Structure Plan (Updated 23 September 2015)
Appendices

DOCUMENT CONTROL HISTORY AND STATUS

Version	Date Issued	Reviewed by	Approved by	Date
1	31 May 2013	David Woo	Joe Gangemi	31 May 2013
2	19 August 2013	David Woo	Joe Gangemi	19 August 2013
3	25 March 2014	David Woo	Joe Gangemi	25 March 2014
4	10 November 2014	David Woo	Joe Gangemi	10 November 2014
5.	23 September 2015	David Woo	Joe Gangemi	23 September 2015

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RECORD OF MODIFICATIONS TO AGREED STRUCTURE PLAN

Modification No.	Description of Modification	Endorsed by Council	Endorsed by WAPC
1	Report updated with feedback from SJ Shire and DoP	23 June 2014	-
2	Report updated in accordance with Schedule 1 - Modifications required by DoP (September 2014)	10 November 2014	-
3	Report updated in accordance with Schedule 1 – proposed Modifications (version 2 – February 2015)		24 March 2015, SPC resolved to give "support in Principle"
4	Report updated in accordance with Attachment 4 – Schedule of Modifications (SPC on 8 September 2015)	29 June 2015, Council did not accept modifications requested by DoP on modified road layout	8 September 2015

Record of Endorsement

Council consent to advertise Local Structure Plan	11 November 2013
Advertising Period	19 Dec 2013 – 31 Jan 2014
Council Adoption of Local Structure Plan	23 June 2014
Referral to WAPC	3 July 2014
Endorsement by WAPC	8 September 2015
Final Adoption by Council	

Endorsement Page

Local Structure Plan
Lot 9500 Thomas Road, Byford

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:

8 September 2015

Signed for and on behalf of the Western Australian Planning Commission:

ALICE BROWN, PLANNING MANAGER, METRO S.E

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

Witness

12/11/2015
Date

19 October 2035
Date of Expiry

Executive Summary

Lot 9500 Thomas Road, Byford (Herein called "the site") is located within the metropolitan south east corridor, within the municipality of the Shire of Serpentine-Jarrahdale. The site is situated approximately 30 kilometres of the Perth Central Business District and approximately 8 kilometres from the Armadale Regional Centre north-east of the Byford Town Centre.

Thomas Road occupies approximately 30 metres of the 45 metre reservation. An additional 20 metre strip of land to the north of Lot 9500 is required to be ceded for the purpose of widening Thomas Road to 50 metres. This will increase the reservation from 45 metres to 50 metres which will require an omnibus MRS Amendment. The additional 20m strip of land required for road widening reflects the Byford Development Contribution Plan and the current design for Thomas Road.

The main entrance to the site is from a signalised intersection on Thomas Road and Malarkey Road north (proposed San Simeon Boulevard). A portion of Malarkey Road north reservation will need to be widened and increased from 20 metres to 30 metres. A 5 metre strip of land on both sides of Malarkey Road north is required for road widening. A 5 metre strip of land on the western boundary of Lot 9500 is to be ceded for the purpose of road widening to reflect the Byford Development Contribution Plan. The landowner/applicant is required to liaise with local government in relation to the specific land requirements pertaining to the intersection treatments at the corner of Thomas and Malarkey Roads.

The access arrangement at Thomas and Briggs Roads will also need to reflect the current design for left-in/left-out only. And the landowner/applicant is also required to liaise with local government in relation to the specific land requirements pertaining to the intersection treatments.

As a result of additional land required for Thomas Road and Malarkey Road north widening to reflect the Byford Development Contribution Plan, the Local Water Management Strategy that has already been approved by the Department of Water will need to be updated and approved by that agency prior to the approval of the LSP. The Department of Water have since approved the updated LWMS.

The Local Structure Plan (LSP) area predominantly consists of residential development, providing a variety of residential densities to maximise diversity in housing opportunities. The LSP also contains a primary school, neighbourhood centre and is largely affected by district drain and road widening on Thomas Road and Malarkey Road north. The LSP is consistent with the Liveable Neighbourhoods as it achieves a target of 27.9 dwellings per site hectare and 11.5 dwellings per gross hectare across the site in accordance with Directions 2031.

A Retail Needs Assessment has been prepared by Taktics4 which indicates that retail activity in the LSP will provide upwards of 188 jobs and a further 36 jobs are expected to be created from home business occupancy within the LSP area. The LSP will provide 583 resident employees generating a self-sufficiency target of 38% (224 jobs for 583 resident employees). Employment self-sufficiency targets are ideally suited to regions and large districts, where a broad range of diverse employment generators may be considered. Urban environments will generally provide for up to a third of employment creation in shops, schools, home business medical centres and local offices. A further

third of all employment opportunities will generally not be able to be created in urban environments as these jobs involve mines, airports, and corporate head offices, major hospitals that will never be able to be included in every urban environment. It is therefore considered that a target of 38% for an LSP of about 340 dwellings is significant contributor to the Byford district targets.

The LSP proposes an integrated Neighbourhood Centre at the intersection of Thomas Road and Malarkey Road north with a variety of uses including a supermarket on Lot 9500, local professional services and a range of other convenience services that meet the daily and weekly household needs. A road to the south of the Neighbourhood Centre site which links Malarkey Road north with the new road to the north of the multiple uses corridor is proposed. A Local Development Plan (LDP) will be required to investigate and propose the establishment of a co-ordinated and integrated Neighbourhood Centre to the east and/or west of Malarkey Road/San Simeon Boulevard.

A range of medium density residential lots, with areas of R30, R40 and R60 are proposed. These are predominantly located within walking distance to areas of high amenity, such as the public open space, neighbourhood centre. A variety of lot sizes from 150m^2 to 400m^2 will assist the LSP area to meet minimum dwelling/gross hectare targets. The LSP has made provision for a four hectare primary school site in the south east corner of the site.

The public open space is provided in a linear form through the LSP area, resulting in a network of open spaces, linking the residential areas to the main transport routes, primary school and neighbourhood centre. The POS areas formalise the existing drainage occurring on site, performing both a stormwater retention and passive open space function. This design approach provides a greater ratio of POS interface with residential areas throughout the LSP area, and provides residents with access to public open space facilities within a 400 metre or five (5) minute walk circle.

The LSP has been updated to comply with the requirements of the Byford District Structure Plan, Liveable Neighbourhoods and the statutory requirement for at least 10% POS provision having regard to the usable, functional and drainage requirements. The detailed subdivision plans will be required to adhere to the POS provision requirements.

TABLE 1: STRUCTURE PLAN SUMMARY TABLE

Item	Data	Section number referenced in report
Total area covered by the Structure Plan	29.39hectares	Refer 1.1.2
Area of each land use proposed:		
Residential	17ha	Refer POS Schedule
Neighbourhood Centre	1.5ha	
Estimated lot yield	About 340 lots	Refer 3.1.3
Estimated number of dwellings	About 340 dwellings	Refer 3.1.3
Estimated residential site density	27.9 dwellings per site hectare	Refer 3.1.3
Estimated dwelling (gross) per hectare	11.5 dwellings per gross hectare	Refer 3.1.3
Estimated population	745 people	Refer 3.1.3
Number of primary schools	1 primary school	Refer 3.3.2.4
Estimated commercial floor space (for neighbourhood centre)	4000sqm NLA	Refer 3.6
Employment self-sufficiency targets	224 jobs + 583 workers = 38%	Refer 3.6 and Retail Needs Analysis Assessment
Estimated area, number and % of public open space:		
Local parks	2.0ha, 10.05%	Refer 3.4

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PART 1

Statutory Section

1. Structure Plan Area

This part applies to the Byford Meadows Local Structure Plan (LSP) in Precinct 2 of the Byford District Structure Plan (DSP), in accordance with those precincts depicted in Plan 15A of the Shire of Serpentine-Jarrahdale Town Planning Scheme No. 2, being all land contained within the inner edge of the broken black line shown on the LSP. Refer Figure 1 – Local Structure Plan.

2. Structure Plan Content

This LSP comprises the following:

- Statutory Section (Part 1)
- Explanatory Section (Part 2)
- Technical Reports (Part 3 – Appendices)

Part 1 includes only the LSP map and provisions and requirements that need statutory effect.

Parts 2 and 3 of the LSP justifies and clarifies the provisions contained in Part 1, and are used as a reference guide to interpret and implement Part 1.

3. Interpretation and Relationship with the Scheme

The words and expressions used in this LSP shall have the respective meanings given to them in the Shire of Serpentine-Jarrahdale Town Planning Scheme No. 2 (TPS 2) including any amendments gazetted thereto.

Local Development Plan (referred to as Detailed Area Plan or DAP in TPS 2), is a term now used in the Structure Plan Preparation Guidelines by the Western Australian Planning Commission – August 2012. Both Parts 1 and 2 of the LSP will refer to this as (LDP).

The LSP map (Figure 1) outlines land use, zones and reserves applicable within the LSP area. The zones and reserves designated under this LSP apply to the land within it as if the zones and reserves were incorporated in the Scheme.

Pursuant to clause 5.18.6.2 of TPS 2:

a) The provisions, standards and requirements specified under Part 1 of this LSP shall have the same force and effect as if it were a provision, standard or requirement of TPS 2. In the event of there being any variations or conflict between the provisions, standards or requirements of the Scheme and the provisions, standards or requirements of this Local Structure Plan, then the provisions, standards or requirements of this LSP shall prevail.

b) Parts 2 and 3 of this LSP are for explanatory purposes and to provide a descriptive analysis of the LSP.

4. Operation Date

In accordance with sub-clause 5.18.6 of TPS 2, this LSP shall come into operation from the date of Council adoption pursuant to sub-clause 5.18.3.15 of TPS 2.

5. Land Use and Subdivision

The LSP delineates and depicts the zones, reserves and residential density codes applicable to the LSP area according to the legend thereon.

The zones, reserves and residential density codes designated under this LSP apply to the land within it as if the zones, reserves and residential density codes were incorporated in TPS 2.

All provisions, standards and requirements applicable to the zones, reserves and residential density codes in TPS 2 shall apply, unless specific provision is made to the contrary in this LSP.

The use class permissibility for each zone within the LSP is outlined within TPS 2.

6. Provisions

6.1 Subdivision and development shall generally be in accordance with the LSP or any variations as approved by the Shire of Serpentine-Jarrahdale and the Western Australian Planning Commission.

6.2 Development proposals that comply with the provisions of this LSP or an approved Local Development Plan (LDP) are exempt from obtaining Planning Approval under Clause 5.1.2 of the Scheme. Separate planning approval obtained through the lodgement of a Development Application shall only be required if variations to the approved Local Development Plan are proposed.

6.3 Residential densities shall be in accordance with the residential design codes shown on the LSP map (Figure 1).

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

i) A base density code of R25 shall be provided for all other residential lots within the LSP.
ii) Medium densities of R30 to R60 shall be provided in areas of high amenity including within 400 metres of a neighbourhood centre, around public open space, primary school and adjacent to major public transport routes.
iii) The residential lots directly fronting Eurythmic Road shall be allocated a density of R12.5.

6.4 The implementation of the LSP will be facilitated through the development and subdivision approvals which shall generally conform to the LSP. Applications shall generally comply with the following Character Statement and Development Principles:

Byford Meadows Estate will be a development encompassing the ambience of a modern and contemporary neighbourhood. It is equally important that the site's character and history is

captured and reflected or interpreted in the future development of the Precinct. It is an estate that will balance urban character with the natural environment.

The street network reflects a contemporary pattern, as well as the cadastral pattern of land uses, whilst importantly encompassing a high degree of solar access. Building design will include passive solar elements to facilitate heating and cooling of homes. This will be achieved by maximising solar efficiency of lot orientation.

A key design principle is to capture winter sun and block out summer sun by providing large number of lots with a north-south or east-west orientation. The lot layout within the Byford Meadows Estate is designed with most lots oriented to optimum solar access to ensure the LSP is consistent with climate responsive design requirements.

The overland drainage flows through the linear open space and multiple use corridors with living streams, bringing the traditional rural character into an urban environment, however recognising the area can experience long dry periods.

Landscaping and streetscape will be primarily aimed at bringing natural elements into a new urban environment. These will help to generate a strong sense of place and community identity for the new estate.

The housing stock will be focused on having a strong street presence and where appropriate, materials and design will be representative of the locality.

Density and lots abutting the open space will help emphasise the strong connection between the urban and the natural environment. The range of densities and housing product will also support a diverse community with a high level of housing choice and affordability.

The Objectives of the LSP are:

1. Provide a strong sense of place and community identity.
2. Provide a vibrant neighbourhood centre that integrates with the surrounding urban village.
3. Cater for lot diversity whilst still maintaining the existing character of the locality.
4. Use of alternative and innovative materials where appropriate.
5. Collective environmental sustainability.
6. Adequately address traffic management, servicing and drainage requirements, facilitating an efficient and responsive design.
7. Provide a balance distribution of open spaces.

Council may require the preparation of Design Guidelines to guide subdivision and development within the LSP. Design Guidelines shall have regard to the following:

- The Character Statement and development objectives detailed above;
- The design principles of the District Structure Plan
- Relevant planning and design considerations

7. Local Development Plan Requirements

7.1 Variations to Residential Design Codes 2013

Local Development Plans shall be prepared for R25, R30, R40 and R60 where variations to setbacks and deemed to comply provisions as listed in Clause 7.3.1 of the Residential Design Codes are required to facilitate target densities.

Any proposed variation to average lot size of site coverage will be progressed as part of a Local Planning Policy submitted to the local government for endorsement prior to its referral to the Western Australian Planning Commission for approval.

This Structure Plan amends the following deemed-to-comply provisions requiring the approval of the Western Australian Planning Commission:

Table 1 - R-Code Variations

Design Element	Current Provision	Amended deemed to–comply-provision
5.1.4 Open Space for the R25 density coding	50%	45%
5.1.4 Open space for the R30 density coding	45% minimum	35%
5.1.4 Open space for the R40 density coding	45% minimum	35%
5.1.4 Open space for the R60 density coding	40% minimum	30%

7.2 Local Development Plans (LDPs) shall be prepared to inform the subdivision and development for lots with one or more of the following attributes:

a) neighbourhood centre;
b) lots less than 260m^2 in land area;
c) lots with rear loaded (laneways) vehicular access;
d) lots with outdoor noise levels beyond the target prescribed in State Planning Policy 5.1 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning and as identified spatially in the Traffic Noise Impact Assessment by Herring Storer Acoustic Consultants dated July 2014;
e) lots abutting public open spaces.

LDPs will be prepared having regard to elements of Crime Prevention through Environmental Design (CPTED).

In accordance with the Liveable Neighbourhood (LN), information detailed in a LDP may include, but is not limited to:

- Building envelopes;
- Setbacks;
- Building orientation;
- Vehicle and pedestrian access arrangements;
- Retention of vegetation;
- Fencing;
- Additional land uses; and
- Development provisions

7.3 Neighbourhood Centre

Subdivision and development shall be in accordance with an integrated Local Development Plan (LDP), prepared and approved prior to the clearance of subdivision conditions or development applications, pursuant to the requirements of State Planning Policy No. 4.2 – Activity Centres for Perth and Peel; the Serpentine Jarrahdale Activity Centres Strategy; and Local Planning Policy No. 70 (LPP 70). The Shire of Serpentine-Jarrahdale LPP No. 70 has been prepared having regard to, and should be read in conjunction with the State Planning Policies, notably State Planning Policy SPP No. 1 - State Planning Framework and State Planning Policy No. 4.2 – Activity Centres for Perth and Peel.

Under SPP 4.2, an "Activity Centre Structure Plan" is not required for lower order centres such as a neighbourhood centre.

The LSP has been prepared in conformity with SPP 4.2, the Serpentine Jarrahdale Activity Centres Strategy, and the LPP 70 in relation to the role and function of the neighbourhood centres. Specifically, matters such as movement, activity and urban form have been taken into consideration. Other detailed design response will be prepared through a Local Development Plan (LDP).

The LDP will be required to investigate and propose the establishment of a coordinated and integrated Neighbourhood Centre to the east and/or west of Malarkey Road north/San Simeon Boulevard.

The LDP will be required to demonstrate how the centre satisfies Element 7 of Liveable Neighbourhood, SPP 4.2 and LPP 70, including the following matters:

- Floorspace;
- Land Use;
- Development Requirements;
- Traffic and Access
- Drainage and water management
- Noise Attenuation to Thomas Road
- Integration and coordination between different landholdings; and
- Any other matters as deemed relevant by the Shire to ensure an orderly and proper land use and development outcome for the site and surrounds.

7.4 Movement

The treatment of the intersection of the access road (along the southern edge of the Neighbourhood Centre and north of the multiple use corridor) is to be resolved through detailed design at subdivision stage to the satisfaction of the Local Government and must ensure safe and efficient traffic flow in relation to all relevant intersections along Malarkey Road /San Simeon Boulevard.

The treatment of the Eurythmic Road and Malarkey Road intersection is to be resolved through detailed design at subdivision stage to the satisfaction of the Local Government and is to discourage non-local use of the roads.

The treatment of the intersection of Malarkey Road / San Simeon Boulevard / Ballawarra Avenue is to be resolved through detailed design at subdivision stage to the satisfaction of the Local Government and is to:

(i) Give prominence to seamless traffic flows from Malarkey Road into San Simeon Boulevard;
(ii) Discourage through traffic south of San Simeon Boulevard; and
(iii) Address any frontage issues to the existing residential lots along Malarkey Road.

It is considered that the section of Malarkey Road north of San Simeon Boulevard should be renamed to San Simeon Boulevard.

8. Operation and Implementation

8.1 Generally prior to the commencement of works, the following investigations and management plans are required prior to development. There may be other matters that may warrant further investigations at subdivision approval and clearance stage:

Task	Local Structure Plan	Condition of Subdivision Approval	Approval Authority
Noise Management Plan	To be prepared and approved prior to the finalisation of the LSP	Implementation of requirements as a condition of subdivision approval	Shire of Serpentine-Jarrahdale
Acid Sulphate Soils Management Plan		Acid Sulphate Soils Management Plan to be undertaken as a condition of subdivision approval	Department of Environment and Conservation
Urban Water Management Plan	Updated Local Water Management Strategy will be approved by the Department of Water prior to the approval of the LSP.	Urban Water Management Plans to be prepared and implemented	Shire of Serpentine-Jarrahdale (with advice sought from Department of Water)
Construction Management Plan		Required to be prepared and implemented under the Health Act as part of subdivision works	Shire of Serpentine Jarrahdale
Landscape and Vegetation Management Plan	Landscape Master Plan prepared as part of the LSP	Preparation, approval and implementation of recommendations as a condition of subdivision approval	Shire of Serpentine Jarrahdale
Fire and Emergency Management Plan		Preparation, approval and implementation as a conditions of subdivision approval	Shire of Serpentine Jarrahdale

8.2 Notifications on Title

For any new residential lots created within 200 metres of the Byford Trotting Complex, a notification is to be placed on the Certificate of Title at the time of subdivision in accordance with Provision 4.4 of the Byford District Structure Plan, which states that:

'Prospective purchasers of all new residential lots created within 200 metres of any lot contained within the Byford Trotting Complex will be required to be notified that they are within proximity of the Trotting Complex and associated land uses. The 200 metres shall be measured from the dashed line around the Trotting Complex, depicting the boundary of the Structure Plan area.'

8.3 Public Open Space

The local Public Open Space (POS), as depicted on Figure 1 – Local Structure Plan, will be broadly broken down as follows:

- Multiple Use Corridor
- Southern POS

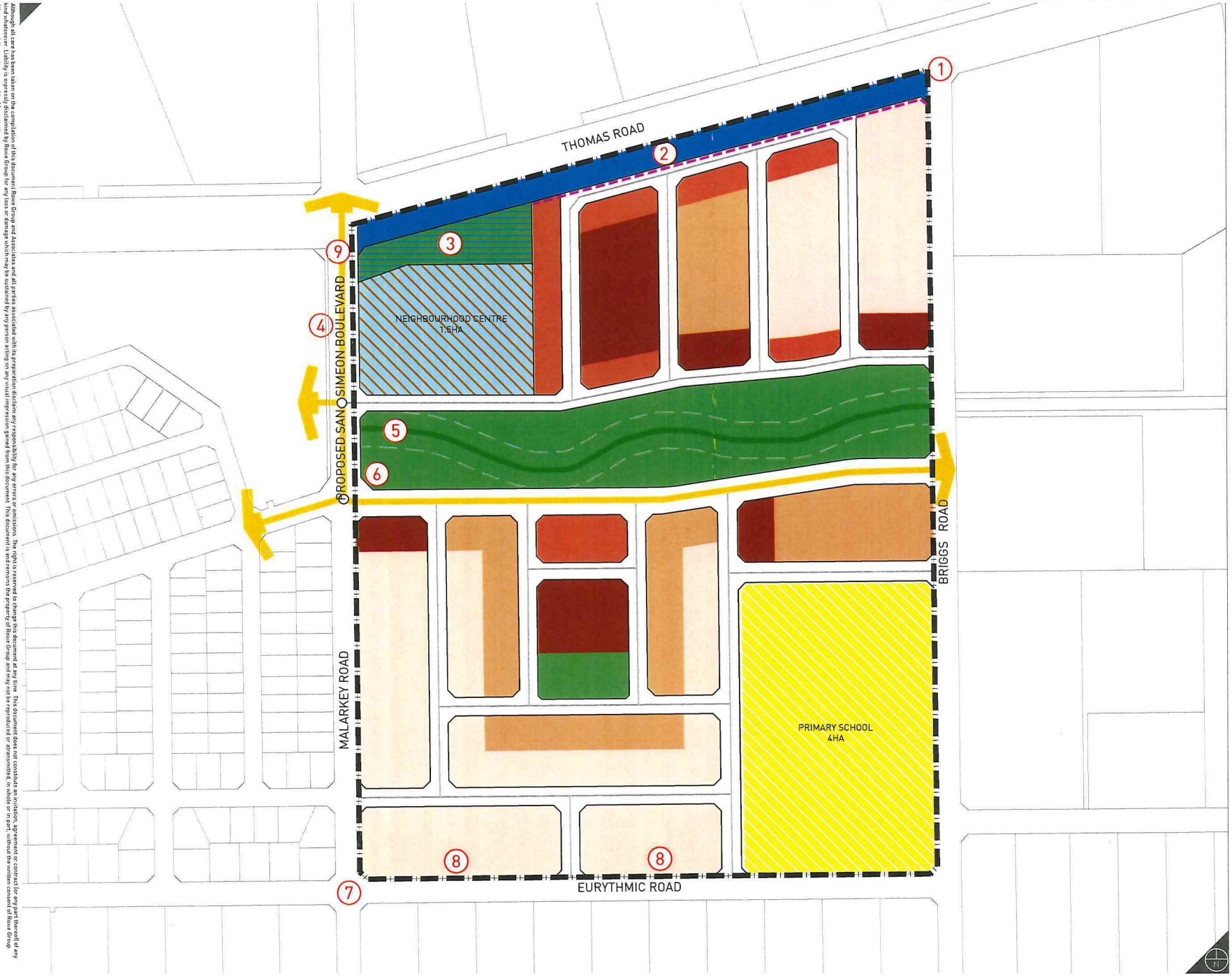
The POS areas will be subject to further refinement by detailed engineering design and discussions with the Shire of Serpentine-Jarrahdale at subdivision stage.

8.4 Noise Attenuation Treatments

Noise attenuation treatments as per the recommendations outlined in the Herring Storer Acoustic Assessment dated July 2014 including but not limited to the construction of a 1.8 metre high noise wall along Thomas Road adjacent to any residential development, notification of title, and quiet house design and height limit provisions within Local Development Plans, shall be implemented as conditions of subdivision approval for any lots affected by the presence of Thomas Road.

Figure 1 Local Structure Plan – Statutory Plan

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All areas and dimensions are subject to survey



Local Structure Plan

Lot 9500 Thomas Road, Byford
Plan 1

Planning Design Delivery



LEGEND

RESIDENTIAL
- Residential - Low Density (R12.5 - R25)
- Residential - Medium Density (R30)
- Residential - Medium Density (R40)
- Residential - High Density (R60)

COMMERCIAL
- Commercial - Business

PUBLIC PURPOSE
- PS Educational/Institutional
- PS Primary School

PARKS,RECREATION & CONSERVATION
- Public Open Space
- Drainage

TRANSPORT
- District Distributor Integrator A
- Neighbourhood Connector
- Access Street - Local Road
- Access Street - Local Road

OTHER
- Structure Plan Boundary
- 1.8m High Noise Attenuation Wall

1. LEFT IN / LEFT OUT ACCESS ONLY
2. THOMAS ROAD 20 METRE WIDENING
3. THOMAS ROAD DRAIN
4. ACCESS TO NEIGHBOURHOOD CENTRE 150M SEPARATION DISTANCE FROM THOMAS RD INTERSECTION
5. OAKLANDS DRAIN TO MEANDER IN MUC OFFLINE DRAINAGE TO BE PROVIDED IN POS
6. SAN SIMEON BOULEVARD AND MALARKEY ROAD INTERSECTION DESIGN TO BE ADDRESSED THROUGH SUBDIVISION DESIGN
7. TREATMENT OF MALARKEY ROAD AND EURYTHMIC ROAD TO BE ADDRESSED THROUGH SUBDIVISION DESIGN
8. R12.5 RESIDENTIAL DENSITY FOR LOTS FRONTING EURYTHMIC ROAD
9. 5 METRE WIDENING OF PROPOSED SAN SIMEON BOULEVARD NORTH OF MALARKEY ROAD

0 75 150 Metres

ROWEGROUP
PLANNING DESIGN DELIVERY

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Date Drawn:	2014-10-16
Job Ref:	7769
Scale:	1:3000 A3
Client:	G & G Corp.
Designer:	K. Kyle
Drawn:	K. Trenberth
Projection:	MGA50 GDA94
Plan ID:	7769-LSP-03-C

Data supplied by Landgate

PART 2

Explanatory Section

1. Planning Background

1.1 Introduction and Purpose

1.1.1 Purpose of the Local Structure Plan

This Local Structure Plan (LSP) has been prepared by G & G Corp on behalf of Pino Gangemi, as a precursor to subdivision for land zoned "Urban Development" under the provisions of the Shire of Serpentine-Jarrahdale Town Planning Scheme No. 2.

The purpose of the LSP is to refine the provisions under the district framework and ensure a comprehensive approach to planning and development is undertaken, with input from landowners, government agencies and other key stakeholders.

The LSP is a statutory planning document that will guide future land use and development within Precinct 2 of the Byford District Structure Plan (DSP), in accordance with those precincts depicted in Plan 15A of the Shire of Serpentine –Jarrahdale Town Planning Scheme No. 2, and to provide a framework for more detailed planning at subdivision.

1.1.2 Extent of the LSP Area

For the purpose of this report, the LSP area is defined as the general area bounded by Thomas Road to the north, Briggs Road to the east, Malarkey Road to the west, and Eurythmic Road to the south.

The LSP area is approximately 29.39 hectares and it comprises Lot 9500 Thomas Road, Byford herein referred to as "the subject site". Ten one (1) acre lots were previously created by Mr Gangemi on the south side Eurythmic Road as transition buffer lots to the Byford Trotting Complex.

1.1.3 The Study Team

G & G Corp Pty Ltd has established a consultant team comprising experts across a variety of disciplines. Members of the Study Team are listed below:

Discipline	Consultant
Geotechnical	Coffey Geoscience Pty Ltd
Hydrological	HyD20
Traffic	Tarsc Pty Ltd
Town Planning	Rowe Group
Civil Engineering	McDowall Affleck Pty Ltd
Surveyors	PGS Hope & Partners Pty Ltd

G & G Corp is the principal point of contact for all enquiries relating to this Application.

1.2 Land Description

1.2.1 Location

The subject site is located within the metropolitan south-east corridor, within the municipality of the Shire of Serpentine-Jarrahdale (the Shire). The site is situated approximately 30 kilometres south-east of the Perth Central Business District, and is accessible by the Tonkin Highway and Thomas Road or via the South Western Highway. The site is 8 kilometres to the south-west of the Armadale Regional Centre.

Refer Figure 1 – Regional Location.

1.2.2 Local Location

The subject site is bounded by Thomas Road to the north, Malarkey Road to the west, Briggs Road to the east and Eurythmic Road to the south.

The site is situated approximately 2 kilometres north-west of the Byford Town Centre.

Refer Figure 2 – Local Location

1.2.3 Area and Land Use

The subject site covers an area of approximately 29.39 hectares.

The site is generally vacant, with an existing brick and tile homestead building. The land is largely cleared, with a few existing stands of trees around the homestead.

The subject site is strategically placed to accommodate urban development given its proximity to the Byford Town Centre and is within the Byford Urban area.

Refer to Figure 3 for an aerial view of the subject site.

1.2.4 Legal Description and Ownership

The subject land comprises one (1) lot parcel. The site is legally described as Lot 9500 on DP60363 comprised in Certificate of Title Volume 2727 Folio 955.

The subject land is owned by Pino Gangemi.

Refer Appendix 1 – Certificate of Title.

1.3 Planning Framework

1.3.1 Zoning and Reservation

The subject site is zoned 'Urban' under the provisions of the Metropolitan Region Scheme (MRS). Land to the east, west and south of the subject site are also zoned Urban. The Byford Trotting Complex located to the south-east of the site is zoned Rural.

To the west of the Structure Plan area is the Tonkin Highway and to the east is the South West Highway, which are both 'Primary Regional Roads' reservations under the MRS.

Thomas Road is designated as 'Other Regional Roads' under the MRS reservation. A fifteen (15) metre wide reservation is along the northern boundary of the subject site for future widening of Thomas Road. Land required for the widening of Thomas Road is being included in the Byford Development Contribution Plan supported by the Department of Planning and the Shire of Serpentine-Jarrahdale. Matters relating to reimbursement for land acquisition will require further discussions with the Department of Planning and the Shire of Serpentine-Jarrahdale.

Refer Figure 4 – Metropolitan Region Scheme zoning.

The subject site is zoned 'Urban Development' (DA 3) under the provisions of the Shire of Serpentine-Jarrahdale Town Planning Scheme No.2 (TPS 2)

Refer Figure 5 – TPS 2 Zoning

The purpose of the 'Urban Development' zone 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."*

The zone allows 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.

The proposed LSP is consistent with the above objectives and allocates land uses, provides a flexible mechanism of planning, and identifies the provision of service infrastructure within the subject site. These will be dealt with in greater detail throughout this report.

1.3.2 Regional and Sub-Regional Planning

1.3.2.1 Directions 2031 and Beyond – A Spatial Framework for Perth and Peel

Directions 2031 and Beyond is a long term strategic document for the Perth Metropolitan and Peel Regions that provides a broad framework for urban growth. The document primarily seeks to manage urban growth by maximising infill or existing urban zoned land. Accordingly, Directions 2031 and Beyond has set a density target of 15 dwellings per gross hectare and encourages more intensive development closer to Activity Centres.

The subject site is situated within the south-east sub-region, as identified in Directions 2031.

Directions 2031 indicate the south-east sub-region will require an additional 35,000 dwellings to accommodate an anticipated population of 228,000 by 2031. Growth will be accommodated by a combination of infill and greenfields development. The subject site is identified as urban under Directions 2031, and as such the development of the site will contribute to meeting these growth targets for the wider region.

Directions 2031 also identifies an employment self sufficiency of 55% for the sub-region, which will require 31,000 new jobs by 2031. This will be facilitated through the growth of existing activity centres and other employment generation opportunities within the sub-region. Byford is identified as an emerging District Centre under Directions 2031.

1.3.2.2 Outer Metropolitan Perth and Peel Sub Regional Strategy

The draft Outer Metropolitan Perth and Peel Sub-Regional Strategy (OMPPSRS) has been prepared to guide state and local government, and development industry actions and decisions to achieve Directions 2031 outcomes. The subject site is identified as 'Urban Zone Undeveloped' under the OMPPSRS.

The OMPPSRS indicates potential dwelling yields have been calculated using a range between the 'business as usual' scenario of 10 dwellings per gross urban zoned hectare to the 'connected city' scenario of 15 dwellings per gross urban zoned hectare in greenfields development. Based on these density targets, within the Shire region, the OMPPSRS estimates there will be a need for 30,000 medium density dwellings over the next 25 years within greenfields sites.

For the south–east sub-region, the OMPPSRS identifies planned urban growth areas in Byford, Southern River/Forrestdale, Mundijong and the Armadale Redevelopment Authority Area. The OMPPSRS states the following for Byford:

> *The Byford District Structure Plan has identified growth capacity for a future population, which is anticipated to be sufficient to accommodate demand beyond 2031.*

Notwithstanding the growth timeframes projected under the OMPPSRS, development of the Byford Urban cell is underway, facilitated through the District Structure Plan and subsequent local structure planning.

Further to the above, it is believed that the 2010 draft Outer Metropolitan Perth and Peel Sub-regional Strategy is likely to be replaced by a new strategy that relates planning for 3.5 million people for the Perth and Peel region. At the time of preparing this report, it is not known when the release of this strategy is likely to occur.

At the same time, the preparation of the draft South Metropolitan Peel Structure Plan (SMPSP) is underway according to the Department of Planning. Considerable work has been undertaken to date on preparing a draft SMPSP, in consultation with State government agencies. However, further work is still required and the draft SMPSP will be subject to Strategic Environmental Assessment, which is also underway. The release of the SMPSP is unknown at this stage.

1.3.2.3 State Planning Policy

The Western Australian Planning Commission has prepared a suite of State Planning Policies (SPPs) and Development Policies (DCs), which are to be considered in the preparation and implementation of any LSPs within the Shire.

A number of SPPs and DC were considered in the preparation of this LSP, and will continue to be considered and implemented through further detailed design at subdivision and detailed area planning, including the following:

Development Control Policy 2.3 – Public Open Space in Residential Areas

State Planning Policy 3 – Urban Growth and Settlement

State Planning Policy 3.6 – Development Contributions for Infrastructure

State Planning Policy 4.2 – Activity Centres for Perth and Peel

The Activity Centres Policy is a state planning policy for the planning and development of activity centres throughout Perth and Peel.

The purpose of the policy 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. It is primarily concerned with the distribution, function, broad land use and urban design criteria of activity centres, and with coordinating their land use and infrastructure planning.

Other purposes of the policy include the integration of activity centres with public transport; ensuring they contain a range of activities to promote community benefits through infrastructure efficiency and economic benefits of business clusters; and lower transport energy use and associated carbon emissions.

The policy also reflects the Western Australian Planning Commission's (WAPC) intention to encourage and consolidate residential and commercial development in activity centres so that they contribute to a balanced network.

The Local Structure Plan addresses SPP 4.2 by providing for:

- Being part of a hierarchy of distributed activity centres to meet different levels of community need and enable employment, goods and services to be accessed efficiently and equitably by the community.
- A long term and integrated approach to the development of economic and social infrastructure.
- Increased density and diversity of residential development, allowing for a variety of housing choice through land use efficiency.
- Development intensity and land use to support future frequency of public transport.
- Access to activity centres by a variety of modes of travel.
- A legible street network and quality public spaces; and
- Concentration of activities within designated activity centres to reduce reliance on car ownership.

State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning

1.3.2.4 Byford District Structure Plan

The Byford Structure Plan (DSP) was previously prepared by Taylor Burrell in 2003 on behalf of the Shire of Serpentine-Jarrahdale and formally adopted in 2005. Some amendments have since occurred with the current plan formally adopted and updated by Council in September 2009.

The DSP comprises a number of 'Precincts', and defines a framework by which urban subdivision and development is able to occur in an orderly and coordinated manner. The LSP is situated in 'Precinct 2' of the DSP. The DSP is intended to be used as a guide in the preparation of more detailed Local Structure Plans. Within 'Precinct 2', consideration for retention of a homestead building within the subject site is required. And further detail as to the proposed function and suitability of the building for community purposes should also be considered. The location of the homestead building has been identified in the LSP with potential to be used for educational and community purposes reflecting the intention of the DSP. Notwithstanding, demolition of the homestead building may be considered if its retention is ultimately not supported by the Department of Education (DOE). The

location of the primary school site is also identified in the LSP with support from the Department of Education.

The DSP provides the broad district level planning framework for urban development of the subject area. A key element of the DSP is the identification of Multiple Use Corridors (MUC), one of which extends through the subject site in an east-west alignment. A MUC serves a number of functions; specifically, providing corridors for regional drainage movement, providing detention basins and both passive and active open space functions. A key benefit of providing for Public Open Space in this manner is that the corridors provide excellent walking and cycling paths linking adjoining areas.

As evident on the DSP, the subject land is located in a developing area and is well located with respect to regional roads connecting the site to the wider region.

Refer Figure 6 – Byford District Structure Plan

1.3.2.5 Serpentine-Jarrahdale Shire Community Facilities and Service Plan

The Serpentine-Jarrahdale Shire Community Facilities and Services Plan 2020 (CFSP) was prepared by CCS Strategic Management and Geografia in July 2008, with a goal to provide more in-depth discussion in regard to the needs, outcomes and strategies relevant to the Shire. The document includes an outline of various growth scenarios, services demands and needs, implementation strategies, and cost recovery mechanisms.

It provides an overview of the Byford area and details the current supply shortages of services, as well as solutions for providing those services in high demand.

The CFSP was consistent in the preparation of the DSP, with those considerations translating through to the LSP including consideration for the retention of the homestead building during Local Structure Planning on the primary school site.

1.3.2.6 Local Planning Policies

The Shire of Serpentine-Jarrahdale have prepared a suite of Local Planning Policies (LPPs), some adopted and some are still in draft form, which are to be considered in the preparation and implementation of any LSPs within the Shire.

The following LPPs were considered in the preparation of this LSP, and will continue to be considered and implemented through further detailed design at subdivision and local development planning.

- LPP 4 Revegetation Policy
- LPP 6 Water Sensitive Design
- LPP 21 Management Plans
- LPP 24 Designing Out Crime (Draft)
- LPP 27 Stakeholder Engagement in Land Use Planning

- ❖ LPP 40 Detailed Area Plans
- ❖ LPP 43 Hazards and Natural Disasters
- ❖ LPP 57 Housing Diversity
- ❖ LPP 60 Public Open Space
- ❖ LPP 61 Local Structure Plans
- ❖ LPP 62 Urban Water Management (Draft)
- ❖ LPP 63 Integrated Transport and Land Use Planning (Draft)
- ❖ LPP 67 Landscape and Vegetation
- ❖ LPP 68 Sustainability Assessment
- ❖ LPP 70 Activity Centres

1.3.2.7 Local Structure Plan

A Local Structure Plan for the subject land was first lodged with the Shire of Serpentine-Jarrahdale in June 2011, but was not formally adopted for the purpose of advertising by Council due to issues associated with lifestyle villages being a gated community and was inconsistent with the principles of the Liveable Neighbourhood.

This LSP has been amended by replacing the lifestyle village and highway commercial on Thomas Road with residential development through a range of residential densities and can now be satisfactorily progressed.

The LSP has been prepared in accordance with provisions of Liveable Neighbourhoods (LN), which are guided under eight design elements:

- Community design
- Movement network
- Lot layout
- Public parkland
- Urban water management
- Utilities
- Activity centres and employment
- Schools

The implementation of each of these elements and fulfilment of the overall principles of LN will be fundamental to ensuring that development of the Byford Meadows Estate and the wider metropolitan region occurs in a thoughtful and sustainable manner. Application of the LN principles is therefore to all levels of planning for Byford Meadows from local structure planning through to detailed lot and building design.

1.3.2.8 Byford Development Contribution Plan

The DSP outlines an implementation strategy, the principal component of which is the introduction of cost sharing arrangements for Common Infrastructure in accordance with clause 5.19 of the Shire's Town Planning Scheme No.2 (TPS2), referred to as the Development Contribution Plan (DCP).

The Shire of Serpentine-Jarrahdale previously initiated Amendment 167 which gives the general TPS capacity to undertake DCPs. Amendment 168 is the DCP for Byford aiming to share the cost of infrastructure, land and other items required to support the development of the area. Both are being finalised by the Shire of Serpentine-Jarrahdale.

The DCP Report is being finalised by the Shire of Serpentine-Jarrahdale which has been prepared to set out in detail the infrastructure, land and other items for which development contributions are to be collected, how land values are calculated, the valuation methodology applied, and the cost estimates of infrastructure, land costs for Public Open Space, upgrading/construction and land acquisition costs for Thomas Road, drainage and so on.

Development Contribution arrangements will include 'traditional infrastructure', through statutory processes and in accordance with State Planning Policy 3.6 Development Contributions for Infrastructure.

The owner of the subject site will liaise with the Shire in respect to contributions required under this plan during the subdivision approval process.

2. Site Conditions and Environment

2.1 Environment Assessment

The following chapter describes the characteristics of the site pre-development environment, which identifies the key constraints and opportunities of the site to support the LSP. The following section provides a brief overview.

2.1.1 Soil and Topography

The topography is generally flat with minor undulations. Elevations range between approximately 34m AHD in the west to 30m AHD in the east (Landgate, 2005).

A detailed Geotechnical site investigation has been carried out over the site by Coffey Geosciences Pty Ltd.

Coffey Geosciences (2004) summarise the subsurface profile as follows:

- **Topsoil/clayey sand**, from surface with a typical thickness of 0.1-0.2 m described as fine to coarse grained and brown.
- **Clayey sand/sandy clay,** from a depth of 0.1m with a typical thickness of 0.5m described as fine to coarse grained sub-angular sand, medium plasticity clay, grey to light brown in colour and dense to very dense.
- **Gravelly clayey sand,** from a depth of 0.6m to a maximum depth of 2.3m, described as fine to medium grained sub-angular sand and laterite gravel, medium plasticity clay, dense to very dense.

Refer Appendix 2 – Geotech Assessment Report.

2.1.2 Acid Sulphate Soils

As prescribed by the WAPC Planning Bulletin No. 64: Acid Sulphate Soils (ASS), the subject site has predominantly been classified as having a moderate to low risk of ASS occurring within 3m of natural soil surface (or deeper).

Activities disturbing soils at depths greater than 3m carry a high to moderate risk of disturbing ASS. The nearest occurrence of 'low to no risk' is 1.5 km east of the property.

The nearest high risk areas are located to the west and north-west of the site approximately 6.5km and 4.5km, respectively. Depending on the depth of services (sewer) installation, local site specific ASS investigations may need to be undertaken to determine whether or not ASS are present, an ASS Management Plan may also be required in accordance with DEC (2003) guidelines.

There are no features evident that would preclude the proposed development of the land for urban purposes that cannot be appropriately managed. An Acid Sulphate Soil Management Plan will be

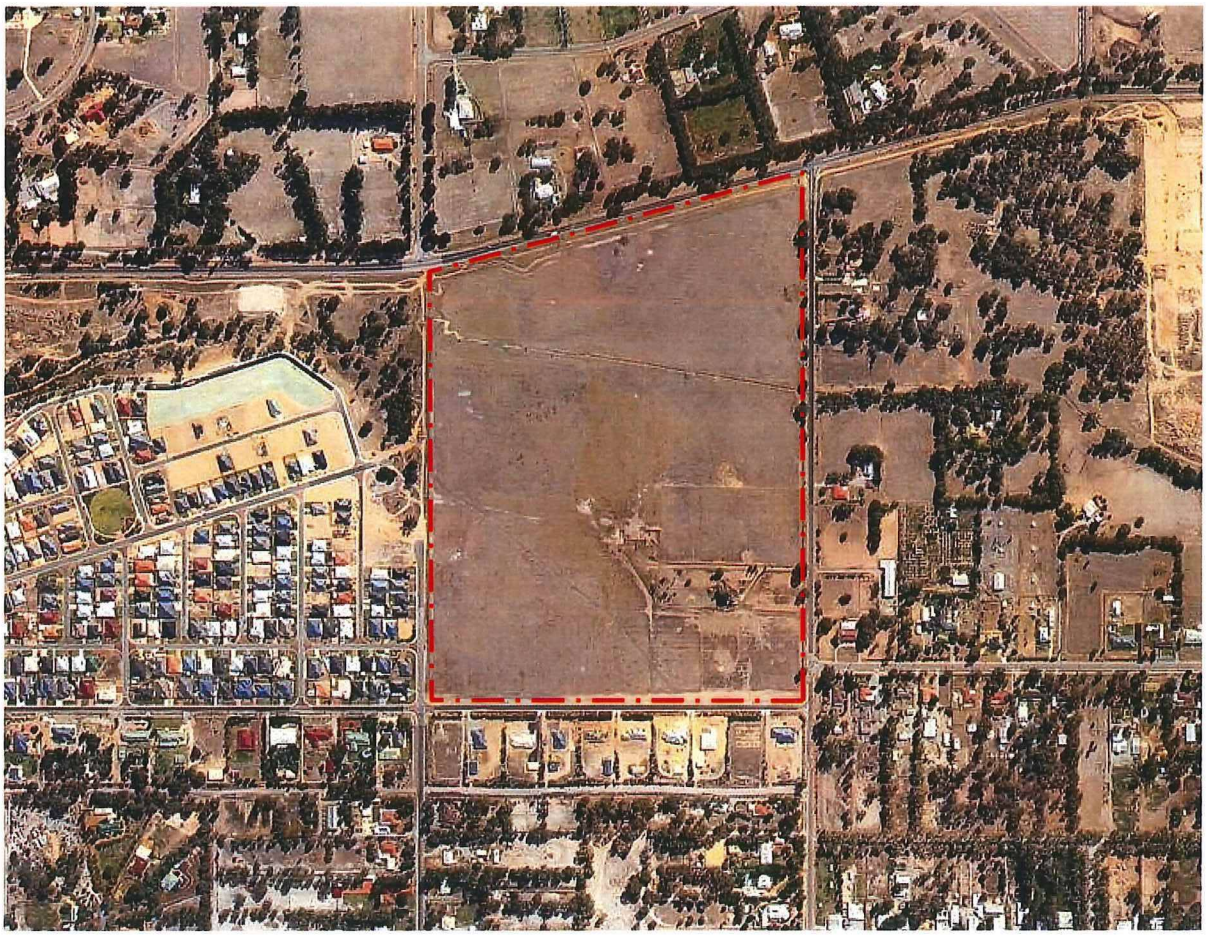
prepared as a condition of subdivision approval by qualified geotechnical engineering consultant in conjunction with an Urban Water Management Plan having regard to detailed environmental site conditions.

2.1.3 Vegetation

The subject land originally comprised vegetation of the Guildford Vegetation Complex. Historically, the Guildford Vegetation Complex is dominated by a mixture of an open-forest of marri-wandoo-jarrah and a woodland of wandoo, with minor components including the fringing woodland of *Eucalyptus-rudis-Melaleuca rhaphiophylla* along the streams.

The property was previously used for grazing purposes and past clearing practices have removed all indigenous species.

Some remnant trees remain within the road reserves (Briggs Road) should be retained where possible and subject to detailed design at subdivision stage. The conditions and health of the trees will determine its suitability for retention as a feature of subdivision that will be assessed as part of a Landscape and Vegetation Management Plan.



(Courtesy: Nearmap.com – Aerial photo April 2011)

2.1.4 Fauna

The extensive clearing of the site has resulted in the loss of native habitat-sensitive fauna.

Native mammals are unlikely to be present on the site due to the past removal of vegetation and suitable habitats. Given that the site is totally cleared, fauna does not present a constraint to development.

2.1.5 Wetlands

A review of DEC wetland mapping indicates that the whole of site is classified a multiple use wetland which does not provide any constraint to development. There are no Conservation Category or Resource Enhancement wetlands located either within the site or in close proximity.

Multiple Use wetlands are described as having few natural attributes remaining. Development and management is to be considered in the context of ecologically sustainable development and best management practice catchment planning, focusing on the retention of hydrological functions. Multiple Use wetlands are afforded no statutory and minimal policy protection by the EPA and DEC.

There are no Environmental Protection Policy Lakes (1992) within the site.

2.1.6 Surface Water Hydrology

As indicated earlier, the topography is generally flat with minor undulations (See Appendix 2 - LWMS). Elevations range between approximately 34m AHD in the west to 30m AHD in the east (Landgate, 2005). This naturally declining topography indicates that surface water would flow from the east to the west. This is evidenced by the east-west natural drainage line seen on the property.



Existing drainage line through the northern part of the property



Drainage Culvert under Briggs Road

Drainage culverts are located under Briggs Road and Thomas Road which discharge stormwater drainage through Lot 9500 with outflow into Oaklands Main Drain to the west near the north western corner of Lot 9500.



Briggs Road with open drainage within road reserve with Existing Trees



Drainage Culvert under Thomas Road

Existing surface water features for the site are shown in Appendix 3 - LWMS. The site has two major watercourses which form part of the Oaklands Drain system. Both of these watercourses have significant catchments upstream of the site and flow in a westerly direction into Redgum Brook Estate near the corner of Thomas Road and Malarkey Road. This is discussed in greater detail in the Local Water Management Strategy.

A flood corridor width of 30m has been provided adjacent to Thomas Rd to convey the 100 year flood flows detailed in GHD (2008) from this drain. The LSP also allows for opportunities to reduce the width of the landscaped corridor in this area to be investigated with a view to maximising the neighbourhood centre site and its landscape and drainage integration while not compromising flood management outcomes.

Refer Appendix 3 – Local Water Management Strategy (Hyd2o, 2014).

2.1.7 Groundwater

A predevelopment groundwater monitoring program (levels and quality) for the superficial aquifer was commenced by Ace Environmental in June 2009 and run for an 18 month period to December 2010. Groundwater quality was recorded on a quarterly basis and groundwater levels recorded monthly.

Groundwater contouring for the site based on predevelopment monitoring data is shown in relation to regional groundwater mapping in Appendix 3 – LWMS (Hyd2o, Nov 2014). This groundwater

mapping represents the maximum recorded levels during the monitoring period, and has considered the impact of the existing watercourses, open drains, and culverts on locally controlling groundwater rise in some areas.

Groundwater levels range from approximately 33m AHD in the southeast corner to 25m AHD along the northern side of the site. Groundwater flow is generally in a north westerly direction. Groundwater ranges from 1m to 5m below ground surface with annual groundwater fluctuation ranging from 2 m to 5 m. This is discussed in greater in the Local Water Management Strategy.

Refer Appendix 3 –Local Water Management Strategy (Hyd2o, 2014).

2.1.8 Contamination

The Department of Environment and Conservation newly implemented DEC Contaminated Sites Database were searched to identify potentially contaminated sites within 1km radius of the property.

The searches indicate that the subject land has not been registered as a contaminated site or as a site suspected of being contaminated.

2.1.9 Hazards and Natural Disasters

The risk of hazards and natural disasters impacting human health and the built and the natural environment is considered to be low. The site is located within largely urbanised areas to the west and south. Large rural residential lots are located on the northern side of Thomas Road in Darling Downs with limited vegetation present. Properties to the east contained some vegetation and these are earmarked for future development with an approved local structure plan for aged persons unit development.

Notwithstanding, a Fire and Emergency Management Plan will be prepared and implemented as a conditions of subdivision approval.

2.2 Conservation and Heritage Assessment

The subject site is not affected by Bush Forever provisions.

There are no Regional Parks in the immediate vicinity of the property. The Darling Range Regional Park is approximately 4km to the east of the property and the Jandakot Regional Park is approximately 10km to the west.

The *Aboriginal Heritage Act 1972* is the Western Australian legislation in place to protect places and objects customarily used by or traditional to, the original inhabitants of Australia. Such places and objects are maintained in a register under the Act, however, all sites are protected under the Act whether or not they have been registered.

The Act is administered by the Department of Aboriginal Affairs (DIA). A search using the DIA Aboriginal Inquiry System indicates that while heritage survey has been undertaken within the property, no sites have been registered.

Heritage in Western Australian is protected under the *Heritage of Western Australia Act 1990,* administered by the Heritage Council of WA. 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 Place was undertaken for the subject land. No State registered heritage places were registered on the property (HCWA, 2006). The closest registered heritage site is located on the corner of Kargotich and Thomas Roads in Oakford.

The subject site is not identified in Appendix 13 of the Shire of Serpentine-Jarrahdale Schedule of Places of Natural Beauty, Historic Buildings and Objects of Historical or Scientific Interest. However, it is identified in the Byford Structure Plan under Section 6.2 that consideration be given for the retention of the homestead building during Local Structure Planning. Details of the proposed function and suitability of its use are discussed in the next section of the report.

2.3 Accessibility Assessment

Tarsc Pty Ltd has prepared a Traffic Assessment Report, which details the accessibility and traffic movement to support the LSP. The following section provides a brief overview. Please refer to Appendix 4 – Traffic Assessment (Tarsc, October 2014) for further detail.

2.3.1 Thomas Road

Thomas Road abuts the subject site on its northern boundary. It is identified as 'Other Regional Road' under the MRS with an existing reservation width of 45 metres. The existing Thomas Road carriageway occupies approximately 30 metres of the reservation. An additional 20 metre strip of land to the north of Lot 9500 is required to be ceded for the purpose of widening Thomas Road to 50 metres. An omnibus MRS Amendment may be required to bring Thomas Road to a 50 metre wide reservation. The additional 20m strip of land required for road widening reflects the Byford Development Contribution Plan and the current design for Thomas Road.

Widening of Thomas Road which include upgrading/construction and land acquisition costs are included in the Byford Development Contribution Plan supported by the Department of Planning and the Shire of Serpentine-Jarrahdale. Matters relating to reimbursement for land acquisition will require further discussions with the Department of Planning and the Shire of Serpentine-Jarrahdale.

Thomas Road has a District Distributor 'A' classification between Tonkin Highway and South Western Highway in the Main Roads WA Metropolitan Functional Road Hierarchy. It is currently classified as a Blue Road under the care and control of the Shire of Serpentine-Jarrahdale, except for planning where it is under the control of the Department of Planning. It is a single carriageway rural road with a 7.4m sealed width, unsealed shoulders and table drains. Thomas Road has a speed limit of 90km/h east of Tonkin Highway and 70km/h on the western approach to South Western Highway. Main Roads Western Australia has advised that the average daily traffic volumes on Thomas Road in 2008/09 were approximately 10,320 vehicles per day (vpd) between Tonkin Highway and South Western Highway. The expected traffic floe on Thomas Road following development of the subject site is 13,800 vehicles per day.

2.3.2 Malarkey Road North (Proposed San Simeon Boulevard)

The proposed San Simeon Boulevard north of existing Malarkey Road has a 20 metre road reservation. An additional 5 metre strip of land for road widening is required on both sides of Malarkey Road north to reflect the Byford Development Contribution Plan. A 5 metre strip of land to the western boundary of Lot 9500 is to be ceded for the purpose of widening Malarkey Road north to 30 metres as is required on Redgum Brook side. The landowner/applicant is required to liaise with local government in relation to the specific land requirements pertaining to the intersection treatments at the corner of Thomas Road and Malarkey Road north. It is noted that this portion of Malarkey Road north as indicated on the Local Structure Plan is proposed to be renamed to San Simeon Boulevard and is subject to the agreement and approval of the Geographic Names Committee at Landgate.

Malarkey Road is a partially constructed road and has an Access Road classification along the western boundary of the subject site in the Main Roads WA Metropolitan Functional Road Hierarchy. It is a single carriageway rural road with an approximate 7.4m sealed width, unsealed shoulder on the east side of the road and kerbed on the south side of the road with a footpath. Eurythmic Road has a speed limit of 50km/h. The Shire of Serpentine-Jarrahdale has advised that there are no traffic counts for the road. However it is expected that there would be approximately 100 vehicles per day north of Eurythmic Road. Malarkey Road intersects with Eurythmic Road at a four-way Give Way controlled junction with Eurythmic Road under Give Way control and Malarkey Road the through road. Ultimately, north of Malarkey Road is proposed to connect to Thomas Road as the proposed San Simeon Boulevard. The expected traffic flow on Malarkey Road following development of the subject site is 12,600 vehicles per day.

2.3.3 Eurythmic Road

Eurythmic Road has an Access Road classification along the southern boundary of the subject site in the Main Roads WA Metropolitan Functional Road Hierarchy. It is a single carriageway rural road with a 7.4m sealed width, unsealed shoulder on the north side of the road and kerbed on the south side of the road. Eurythmic Road has a speed limit of 50km/h. The Shire of Serpentine-Jarrahdale has advised that there are no traffic counts for the road. However it is expected that there would be approximately 1,000 vpd west of Briggs Road. Eurythmic Road intersects with Briggs Road at a priority controlled T-junction with Eurythmic Road forming the terminating road.

2.3.4 Briggs Road

Briggs Road has a Local Distributor classification south of Thomas Road in the Main Roads WA Metropolitan Functional Road Hierarchy. It is a single carriageway rural road with a 7.2m sealed width, unsealed shoulders and table drains. Briggs Road has a speed limit of 50km/h. The Shire of Serpentine- Jarrahdale has advised that the average daily traffic volumes on Briggs Road in 2010 were approximately 1,900 vehicles per day south of Thomas Road. The expected traffic flow on Malarkey Road following development of the subject site is 3,000 vehicles per day.

The intersection of Thomas Road and Briggs Road will need to reflect the current design for left-in/left-out access only. The landowner/applicant is required to liaise with local government in relation to the specific land requirements pertaining to the intersection treatments.

2.3.5 Public Transport

The subject site has no existing public transport within walkable distance. The nearest bus stops are located on South Western Highway approximately 2km from the centre of the subject site to stops on South Western Highway near Larson Road. Route 251 services these stops, running approximately every one hour between Byford and Armadale. Route 252 terminates at Paterson and Whitby Streets, Mundijong. Route 253 terminates at Jarrahdale and Brady Roads, Jarrahdale. The Byford Structure Plan proposes a new bus route along the new San Simeon Boulevard. It is intended that the bus route would service the site as the bus route runs through it and bus stops within the LSP area.

As urban development increases in the locality it is anticipated bus services will be extended to cater for the new residential areas.

2.3.6 Pedestrian and Cycle Network

There is currently little provision for pedestrians or cyclists with current roads having no footpaths. Thomas Road is defined as a Medium riding environment and it connects to Tonkin Highway that is part of the Principal Shared Path (PSP) with excellent off-road shared paths.

The pedestrian and bicycle access and connectivity to the town centre is made with the use of footpaths and shared paths throughout the LSP as indicated in Appendix I of the Traffic Assessment Report. The footpaths and shared paths will link to Malarkey, Eurythmic and Briggs Roads which ultimately provide access to town centre.

Refer Appendix 4 – Traffic Assessment Report (Tarsc, October 2014)

2.4 Servicing Assessment

2.4.1 Water

The Water Corporation has reticulated water supply extended to service Redgum Brook Estate via a 150mm main from Larsen Road/Briggs Road to Malarkey Road. An extension to a distribution-sized main (300dia) part of the adjacent Byford Central project has now connected early stages. This mains extension will ensure water supply can be readily provided in relation to the subdivision of the land.

2.4.2 Sewer

The Water Corporation has developed conceptual planning for its eventual sewer extension of the corridor between Byford and Mundijong. This involves a series of pumping stations intended to convey the wastewater southwards to a significant facility proposed to be constructed on the edge of the Mundijong Urban Village. From this location the wastewater is intended to be conveyed westwards across to Baldivis and then onto the East Rockingham Wastewater Treatment Plant.

The Water Corporation has a sewer pumping station located in the south-west corner of the existing Redgum Brook Estate development. A main gravity sewer extends along from Byford Central along

Thomas Road and through Redgum Brook Estate to discharge into the sewer pump station. All of the subject land can gravitate into this main sewer. All lots will be connected to reticulated sewer.

2.4.3 Electricity and Gas

Western Power has high voltage (HV) lines in Larsen Road and as the extent of development increases, Western Power will need to carry out various system reinforcement measures to maintain adequate supply.

Existing gas distribution infrastructure terminates at Nettleton Road and pressure gas mains are present in Malarkey, Briggs and Eurthymic Roads. The gas supplier (Atco Gas) has typically required developers to fund any extensions required to bring its supply mains to the boundary of new developments.

2.4.4 Telecommunication

Telstra has existing optic fibre cable on the north side of the existing Thomas Road reservation, extending between Wungong South Road and South Western Highway. Distribution cables are located on the south side of Larsen Road.

2.5 Employment Assessment

In consideration to the sites accessibility to the Perth City Centre, Kwinana, Armadale and Canningvale, and the other key activity centres, offered by access to Thomas Road, Tonkin Highway, Kwinana Freeway and the South Western Highway, there are a number of regional employment opportunities available to the community. Key employment areas for the subject site will likely be situated within Kwinana along the Western Trade Coast Area and Armadale. Armadale is recognised as a Strategic Metropolitan Centre and Kwinana as a Secondary Centre under the State Planning Policy 4.2 Activity Centres for Perth and Peel.

- Perth City Centre 30 km
- Armadale 8 km
- Kwinana 15 km
- Rockingham 20km
- Cockburn Central 14km
- Canningvale 22 km

In addition to the employment generators immediately within the strategic centres mentioned above, the Kwinana Industrial Area provides approximately 26,000 employment positions and is located about 15 km from the LSP area. The LSP area is located approximately 15 km from the Latitude 32 Industrial Area (Hope Valley Wattleup Redevelopment Area), which are expected to ultimately provide for 10,000 additional jobs.

At a local level, there are a number of employment opportunities within the existing Byford and Mundijong town centres together with development of the Cardup industrial area. The Byford town centre is situated approximately 2 kilometres south-east of the site and the Mundijong town centre approximately 7 kilometres to the south. Employment opportunities are relatively diverse with

opportunities for residents to be employed within the commercial sector, home based businesses and industrial and mixed business areas provided adjacent to the DSP area.

The subject site is situated within close proximity to the West Mundijong Strategic Industrial Area (western side of Tonkin Highway reserve) and the Cardup Industrial Area. On completion these areas will provide local industrial employment opportunities for the site.

Local employment opportunities will be further generated and encouraged through the growth of the Byford town centre and the urban development of the DSP area generally. Similarly, the growth of the Mundijong town centre will also provide for local employment opportunities.

2.6 School Site Assessment

A primary school site of 4 hectares is identified in the LSP situated in the south-east corner of the site. This is consistent with the DSP which identified a total of three primary school sites north of Abernethy Road. An existing primary school is located on Larsen Road and Evans Way. A second primary school is identified on Kardan Boulevard, corner of Efficient Way. The proposed third primary school site is identified in the south-east location of the subject site, as indicated on the LSP.

Numerous discussions have taken place with the Department of Education (DoE) to determine the appropriate catchment requirements and consider how these may be accommodated within the framework provided by the DSP. DoE has indicated that a primary school site is required on the subject site and will have its own catchment area. The location of the primary school is deemed suitable by DoE following extensive consultation with that agency.

The location of the primary school has been determined in accordance with the location criteria of LN. Briggs Road will function as a neighbourhood connector as it connects Thomas Road (a primary road) to San Simeon Boulevard (an Integrator Arterial) and has a longer street length than a shorter Access Road with traffic volumes in the order of 3000vpd and will extend further south into Byford connecting with Abernethy Road over a distance of 1800 metres. The primary school will have four street frontages and centrally located between two other primary schools, one to the east and the other to the west of the subject site.

3 Local Structure Plan

3.1 Community Design

The LSP sets out major land uses, residential densities, drainage, public open space, estimated lot yields, public and private transport provision, road network and servicing requirements

The following section has been prepared in support of the LSP and addresses the relevant elements of Liveable Neighbourhoods.

Refer to Figure 7 for the Indicative Lot Layout.

3.1.1 Design Philosophy

The fundamental objective of the LSP is to facilitate development of the land in accordance with the layout and principles of the Byford Structure Plan, in a manner that is responsive to the existing physical character of the site and sympathetic to surrounding land uses and development. Key elements of the Byford Structure Plan such as Multiple Use Corridors (MUCs), residential densities and selected road locations have been directly reflected in the LSP where appropriate. The design objectives of the LSP are:

- Provide a strong sense of place and community identity.
- Provide a vibrant neighbourhood centre that integrates with the surrounding urban village.
- Housing Diversity
- Adequately address traffic management, servicing and drainage requirements, facilitating an efficient and responsive design.

3.1.2 Site Design and Context Analysis

In preparing the LSP, due consideration has been given to ensure integration of land uses facilities with the surrounding locality.

3.1.2.1 Drainage

Multiple Use Corridors have been provided throughout the LSP area to take advantage of existing drainage movements across the site. These areas will be constructed as natural swales and living streams in keeping with the existing character of the locality. The multiple use corridors will provide for the recreation requirements of the community.

In relation to the northern MUC for the Thomas Road drain, the alignment within the subject site has been provided consistent with the "Alternative Stormwater Strategy" as detailed in the approved Redgum North LWMS (GHD, 2011), and this maintains the general alignment of the drain within the subject site.

With respect to future pipework within the Malarkey Road north reserve required to connect the Thomas Road drain exiting Lot 9500 to the Redgum Brook watercourse, Hyd2o made an amendment

to the original LWMS (Hyd2o 2011) in accordance with advice from the Shire of Serpentine Jarrahdale attached as Appendix 3 – Addendum Report to Local Water Management Strategy.

A flood corridor width of 30m has been provided adjacent to Thomas Road to convey the 100 year flood flows detailed in GHD (2008) from this drain. The LSP also allows for opportunities to reduce the width of the landscaped corridor in this area to be investigated with a view to maximising the neighbourhood centre site and its landscape and drainage integration while not compromising flood management outcomes.

Additional land required for Thomas Road and the proposed San Simeon Boulevard widening will need to reflect the Byford Development Contribution Plan, the Local Water Management Strategy which has already been approved by the Department of Water be updated and approved by that agency prior to the approval of the LSP.

3.1.2.2 Adjacent Development

The local structure planning of the land immediately to the east of the site was approved by the Shire and the WAPC a few years ago. Land to the west at Redgum Brook North was recently approved for its local structure plan for the remaining land parcel north of the MUC. Ongoing consultation and dialogue with Redgum Brook consultant is taking place to ensure road hierarchy and offsets, and servicing is well integrated. Land to the south of the site was subdivided into ten one acre (4000sqm) allotments in 2009. Those lots have been created as transition buffer between the existing Byford Trotting Complex and the urban areas.

3.1.2.3 Potential Noise Impact

The current and anticipated future noise levels resulting from road traffic (from the adjoining Thomas Road) will be investigated and discussed in relation to potential noise management for the site. Under State Planning Policy 5.4: Road and Rail Transport Noise and Freight Considerations in Land Use Planning (SPP 5.4), residential use is a noise sensitive premise, and appropriate mitigation measures will be used to manage potential noise and keep it to acceptable levels. The provision of suitable noise mitigation measures through the preparation of a Noise Management Plan (NMP) will be required and approved prior to the finalisation of the LSP.

The assessment is to be carried out in accordance with State Planning Policy No. 5.4 Road and Rail Transport Noise and Freight Considerations. Houses within noise affected area closer to Thomas Road will be managed through a combination of treatment and "Quiet House' design principles that may include laminated glazing, closed eaves and mechanical ventilation. The extent of treatment will vary according to the degree of noise impact. The visual amenity on Thomas Road may be treated through appropriate vegetation screening within the road reserve similar to Byford on the Scarp on South Western Highway. Details of landscaping and vegetation screening will be addressed in Landscape and Vegetation Management Plan to be provided by the subdivider as a condition of subdivision.

Therefore, in accordance with SPP 5.4, the Shire requires an approved Noise Management Plan (NMP) to be implemented as a condition of subdivision approval.

3.1.3 Density

Residential densities for the site have been determined generally in accordance with the requirements of Liveable Neighbourhoods, which states:

- 12 to 20 dwellings per site hectare for standard lot layouts, distributed to achieve any required urban density of dwelling yield;
- 20 to 30 dwellings per site hectare within 400m of neighbourhood centres; and
- 30 to 40 dwellings per site hectare for areas within 400 of town centres and metropolitan railway stations.

Liveable Neighbourhoods further stipulates an average density of R22 dwellings per site hectare to be achieved in new urban areas.

The LSP achieves a residential density of 29.16 dwellings per site hectare. Higher densities are proposed around the neighbourhood centre and long major public transport routes. It is also considered appropriate for higher densities to be situated in proximity to areas of higher amenity and accessibility such as the primary school and public open space.

Moreover, Directions 2031 sets a density target at least 15 dwellings per gross hectare. The subject site is in accordance with this target, with 18 dwellings (gross) per hectare.

An R25 density is applicable to the majority of the site, with areas of R30, R40 and R60 allocated to those areas with higher amenity, such as adjacent to public open space, the primary school and the neighbourhood centre. The LSP has the potential to yield in the order of 340 lots, subject to detailed design at subdivision. The LSP is estimated to have 340 dwellings with a population of 748 people.

It is anticipated Local Development Plans will be required for some lots prior to development approval to ensure a high amenity in built form outcomes.

Refer to Figure 7 for the Indicative Lot Layout Zoning Plan, identifying proposed densities across the site.

3.2 Movement Network

The road layout as shown on the LSP is reflective of that shown on the Byford Structure Plan in terms of key regional and distributor road locations. Importantly, the LSP layout provides a highly permeable road network in order to provide for ease in traffic movement and also encourage pedestrian and cycling movement through the provision of clear and direct access routes.

The LSP establishes a highly interconnected road network that provides choice, reducing vehicle flows on individual routes and strong visual, pedestrian and cycle links to the Multiple Use Corridors, and provides east-west linkages beyond the LSP area. There are requirements in LN relating to provision of footpaths or shared paths based on street hierarchy. The shared paths or footpaths networks connect with adjoining developments at Redgum Brook Estate to the west and other developments such as the Byford Central, Marri Park Estate to the east and ultimately to the Byford Town Centre (refer Appendix I – Share Paths and Footpaths in the Transport Assessment Report).

San Simeon Boulevard is located in the northern portion of the DSP area, providing a northwest-southeast connection between Thomas Road and Abernethy Road. The road is also referred to as the Thomas Road deviation and is identified in the DSP. San Simeon Boulevard will play an important role by providing a safe and direct connection into the Byford Town Centre via a signalised intersection at Malarkey Road north and Thomas Road. The road will function as a 'District Distributor Integrator B' (as defined by Liveable Neighbourhoods) reflective of the DSP and subject to design is likely to have a road reserve of 22.5m for this class of roads including a boulevard treatment with a central median, on road cycle lanes and on street parking as shown in Appendix 4. The road reserve width of San Simeon Boulevard is to be resolved through final design at subdivision stage in consultation with the Shire of Serpentine Jarrahdale. Items for the construction of San Simeon Boulevard and signalised intersection at Malarkey Road north and Thomas Roads are included the DCP and the LSP will comply with the approved DCP in accordance with SPP 3.6. The east-west alignment of the San Simeon Boulevard as reflected in the LSP is generally reflective of the adopted DSP.

Tarsc Pty Ltd has indicated that the reserve width of San Simeon Boulevard near the Byford Town Centre is in the order of 30m. This caters for an Integrator B (Outside Centre) widths for roads up to about 60km/h in accordance with LN. Malarkey Road with its continuation onto San Simeon Boulevard within the LSP is proposed as an Integrator B (Town Centre Main Street) as prescribed in LN. That section of Malarkey Road should also be part of the DCP and any land acquisition should be taken on both sides of Malarkey Road.

Under section R5 of Element 8 of Liveable Neighbourhoods (LN), there are three options governing primary school site:

- Outside of the 400m radius from neighbourhood centre catchments;
- On a neighbourhood connector (NC) between two neighbourhoods ;
- At the centre of a neighbourhood.

The location of the primary school has been determined in accordance with the location criteria of LN. The primary school will have four street frontages and centrally located between two other primary schools, one to the east and the other to the west of the subject site.

With respect to the function of Briggs Road, there is strong evidence that Briggs Road will function as a NC as it connects Thomas Road (a primary road) to San Simeon Rd (an Integrator Arterial) and will extend further south into Byford connecting with Abernethy Road over a distance of about 1800m. This street length is much longer than a shorter Access Street (under LN) with traffic volumes in the order of 3,000vpd, again much more than a lower order Access Street. It is also classified as a Local Distributor under the Functional Road Hierarchy with a predominant purpose to move traffic within local areas and connect access roads to higher order Distributors; this being very similar to NC under LN its function is to provide the lower order sub-arterial network and not an Access Road.

Tarsc Pty Ltd has indicated that a road does not need to have a bus route to be classified as a NC, but it is the ultimate function of the road. If NCs do not have bus routes this would allow the flexibility to reduce road reserve width. For example, a NC would normally have a reservation width of 24.4m, but this can be reduced to 22.4m if there are no buses traversing it. By extension, Briggs Road as a NC B, may or may not have a bus route, in this case Briggs Road is not proposed to cater for a bus route, hence its narrower reserve width.

The other roads are classified as 'Access Street D' which is access routes providing local traffic only. These are distributed across the LSP providing easy traffic movement throughout the LSP area.

All laneways will have widths of 6.0m. The proposed intersection controls for the key LSP intersections are detailed in Appendix 4. In establishing the proposed intersection controls, consideration was given to the road network layout and classifications, estimated traffic volumes, effective traffic management and road safety. There are no cul-de-sacs proposed within the LSP and rubbish truck access is readily available from the street front or laneways.

The treatment of Malarkey Road and Eurythmic Road is to be addressed through subdivision design in consultation with the local government and is to discourage non-local use of the roads.

The treatment of the intersection of Malarkey Road / San Simeon Boulevard / Ballawarra Avenue is to be resolved through detailed design at subdivision stage to the satisfaction of the Local Government and is to:

(i) Give prominence to seamless traffic flows from Malarkey Road into San Simeon Boulevard;
(ii) Discourage through traffic south of San Simeon Boulevard; and
(iii) Address any frontage issues to the existing residential lots along Malarkey Road.

TRAFFIC VOLUMES

Based on traffic modelling undertaken for the site, by Tarsc Pty Ltd, the following information is provided:

Trip Generation	No. of Trips Per Day
Trips generated by proposed development exiting the LSP area	7015
Internal trips generated within the LSP per day either to/from the neighbourhood centre or one way trips (to or from the neighbourhood centre) linked to an external trip.	1239
Trips due to passing trade	3958
Total No. of trips per day for entering and exiting the LSP area	12210

The passing trade figure would form part of the total traffic flows on Malarkey Road (south of Thomas Road) and thus would be focused near the neighbourhood centre.

In order to minimise any conflicts and maximise safety within the locality, Local Area Traffic Management measures will be implemented. Appropriate treatments such as Give Way or Stop holding lines with approach barrier separation line are recommended for the minor legs of intersections. Details of intersection treatments are outlined in Appendix G of the Transport

Assessment Report by Tarsc Pty Ltd. The implementation of the intersection treatments will be addressed at detailed subdivision design stage.

CONNECTIVITY

The local road network has been designed with a high level of connectivity to facilitate walking and cycling and enable relatively direct local vehicle trips. The LSP proposes a number of connections to Malarkey Road, Briggs Road and Eurythmic Road, providing connectivity to the Byford town centre, neighbourhood centre and regional road network.

The public open space links through the site and the proposed shared paths will provide a strong connectivity within the LSP area to recreation and other services.

PEDESTRIAN AND CYCLING NETWORK

The overall pedestrian and cyclist network within the LSP area aims to connect centres of attraction within and immediately the LSP area and to provide good linkages with external generators. Specifically, this includes the primary school, neighbourhood centre and the public open space.

Shared paths are proposed on both sides of San Simeon Boulevard connecting to Thomas Road, providing for safe travel by pedestrian and cyclists north-south and east-west through the site and into surrounding network.

Shared paths are proposed to link the neighbourhood centre, bus route, on the north-south and east-west roads near the primary school. Footpaths should be provided on at least one side of all access streets, except laneways (refer Appendix I of Transport Assessment Report). A footpath on Briggs Road should extend from Eurythmic Road to San Simeon Boulevard on the western side of Briggs Road (the school side). This will provide a link to the existing footpaths in Larsen Road. This can be addressed at subdivision stage.

PUBLIC TRANSPORT

The Public Transport Authority is planning two or three routes to service Byford west of the existing town centre. Subject to the final development pattern and availability of funds, it is most likely that the new routes would operate in the town centre and then connect to route 251 into Armadale or continue on to Armadale. The Public Transport Authority prefers this latter option.

As urban development increases in the locality it is anticipated that bus services will be extended to cater for the new residential areas.

3.3 Lot Layout

3.3.1 Lot Size and Diversity

The LSP proposes a range of densities across the site from R12.5, R25, R30, R40 and R60 sites.

The density range has been prepared broadly in line with the DSP and LN with medium density (such as R30, R40 and R60) and small lot development made more appealing by being located in close proximity to the Neighbourhood Centre, District Distributor, Primary School and public open space

areas. This will ensure residential lots have a suitable level of amenity, services and accessibility to support these facilities. The LSP proposes to provide a variety of lot product and housing choice for an increasingly diversified market place. Particular emphasis has been taken to ensure lots are orientated in a north-south / east-west configuration to assist in the solar passive design of homes.

The proposed densities will facilitate subdivision to create lots with a range of sizes, as detailed below:

- Lots directly fronting Eurythmic Road shall be limited to a density coding of R12.5.
- Lots within the R25 zone to typically comprise areas of $300m^2$ - $510m^2$
- Lots within the R30 zone to typically comprise areas of $260m^2$ - $375m^2$, and are generally in the vicinity of public open space, neighbourhood centre or other areas of amenity.
- Lots within the R40 zone to typically comprise areas of $180m^2$ – $260m^2$ and will provide an alternative coding between R30 and R60, particularly for application to both ends of a street block and introduction of squat lots will also assist the LSP area to meet minimum dwelling/site hectare targets.
- Lots within the R60 zone to typically comprise areas of $150m^2$ - $300m^2$, and are generally situated adjoining main bus route, neighbourhood centre and public open space.

Based on the above densities, an approximate average lot area of $370m^2$ is anticipated across the site.

3.3.2 Major Land Uses

3.3.2.1 Residential

The LSP predominantly consists of residential development, providing a variety of low and medium density housing opportunities. Medium density single residential lots are predominantly located within walking distance to areas of higher amenity, such as public open, neighbourhood centre and public transport route.

The LSP has been configured to provide a range of densities and lot sizes, providing residential densities from R25 at the perimeter where slightly larger lots are utilised to address transition from the Byford Trotting Complex to the one acre allotments on Eurythmic Road south of the LSP. Higher density residential development is provided closer to the neighbourhood centre, public transport route and open space areas.

The density target and resultant yield reflect the objectives of both the Byford Structure Plan and Directions 2031 of increasing residential densities, to meet a future population target for Byford. This is achieved despite several constraints imposed on the LSP area including land (and therefore yield) affected road widening, primary school site, multiple use corridor and San Simeon Boulevard.

The LSP proposes development appropriate to the surrounding context and established patterns of development in the locality. It is also vital that the development proposed in the LSP meets market expectations to ensure the vision articulated in the LSP is realised.

3.3.2.2 Neighbourhood Centre

The Shire of Serpentine-Jarrahdale Local Planning Policy 19 classifies the centre as a medium neighbourhood centre, defined as follows:

> *"Medium Neighbourhood Centre – shopping floorspace of between 1500m2 to 2500m2 and comprising a supermarket of between 1500m2 to 2000m2 together with a limited range of support shops and local services (i.e. hairdresser, chemist, newsagency) as set out in the Land Use/Zoning table..."*

The Byford DSP report and the Serpentine Jarrahdale – Activity Centres Strategy identify two (2) neighbourhood centres of 5000m^2 within the DSP area. One is located on Redgum North/Lot 9500 that straddles across San Simeon Boulevard and the other located at The Glades at Byford on Doley Road.

The intersection of Thomas Road and Malarkey/Masters Road is to be signalised as required by Main Roads and is ideally suited for a neighbourhood centre as it provides a safe and convenient passage of access into the Byford Town Centre. Complementary activity on the opposite side of the street will assist in establishing an entry statement and Community focus at this end of Byford, which is in a low speed controlled environment due to the impact of the traffic lights at one end and the roundabout at the other end of the neighbourhood centre.

A Retail Needs Assessment (RNA) recently carried out by Taktics4 has revealed that the neighbourhood centre at the Malarkey Road north and Thomas Road intersection is capable of sustaining a supermarket based centre of approximately 4000m^2 on Lot 9500 comprising a supermarket and a number of smaller tenancies comprising shops, takeaway food plus other non-retail activity. The centre will primarily service the immediate local catchment and will complement the surrounding retail offer planned for Byford, and will capture approximately 5% of the retail sales ultimately generated by the fully developed Byford population of 30,000. The RNA has concluded that the delivery of the neighbourhood centre will have no adverse impact on the delivery of the Byford Town Centre and Glades Village Centre. In consideration of the site layout, the regular shape of Lot 9500 lends itself to accommodating the main retail centre that will meet the daily and weekly household shopping needs of the Community.

The neighbourhood centre on Lot 9500 could have a main street concept with access overlooking the landscaped Multiple Use Corridor. Traffic movement will be controlled by a future roundabout providing safe passage of ingress and egress for the neighbourhood centre on both sides of San Simeon Boulevard. Figure 8 shows the indicative location of the roundabout servicing the proposed neighbourhood centre. Access to the neighbourhood centre will have sufficient distance from the Thomas Road intersection. A traffic analysis undertaken by Tarsc Pty Ltd in consultation with Main Roads WA, has revealed that this is the most appropriate treatment outcome. In consideration to the signalised intersection and roundabout having a district level function in managing traffic flow, it is anticipated that they would form common infrastructures as part of the development contribution arrangement.

The design detail of the Neighbourhood Centre will be the subject of a future Local Development Plan which will be prepared for the Neighbourhood Centre in consultation with the adjoining owner of the Redgum Brook North Estate and the Shire.

3.3.2.3 Multiple Use Corridor

The LSP proposes to incorporate the existing drain within a Multiple Use Corridor (MUC) in accordance with the requirements of the DSP and local planning policies. The system will involve use of linear POS areas for detention, retention, conveyance, and treatment of stormwater within the MUC.

The MUC will provide a drainage function as well as providing public open space in conjunction with the urban water management system and will provide public open space that is suitable for recreation and amenity purposes. It has been designed to incorporate land for a connected linear open space for walking and cycling linking other development from Hopkinson Road in the west to other developments in the east leading to the town centre. The MUC has been designed to encourage community node infrastructure such as children's play and shade structures as resting places, small intimate spaces to allow pedestrian connectivity and create a sense of place.

Detailed design of the MUC will enhance the ecological function of the drain as a green corridor. This will include replanting and reseeding with local provenance stock. The Multiple Use Corridor connect to the MUC within Redgum Brook Estate to the west and will be landscaped and planted with native shrubs and trees indigenous to the SJ Shire region.

More detail of the MUC's and living streams will be provided during the development of the UWMP, including refinement of stormwater modelling, preparation of landscape plans (species selection and treatments), and detailed design drawings will be prepared and submitted at subdivision stage.

3.3.2.4 Primary School

The LSP makes provision for a primary school site in the south-east corner of the development. The location of the primary school is consistent with the DSP and is deemed suitable by DoE following extensive consultation with that agency. It is consistent with the Shire's Community Facilities and Services Plan to 2020 which identified possible retention of the homestead building on the primary school site as a cultural and heritage importance to the local community. The homestead building could be used for educational and community purposes. Notwithstanding, demolition of the homestead building may be considered if its retention is ultimately not supported by the Department of Education (DOE).

3.3.2.5 Climate Responsive Design

Under the provisions of Liveable Neighbourhoods lots should be oriented to facilitate the siting of dwellings and private open space to maximise solar access.

Liveable Neighbourhoods prescribed the following orientation requirements for lots:

- New streets have a north-south and /or east-west orientation.
- Lots are square to rectangular in shape.

- ❖ Dwellings can be located on the southern portion of the lot, with useable open space and solar access on the northern portion.
- ❖ Lots on south-facing slopes are wider to allow solar access on the northern face of the dwelling.
- ❖ Where dwellings are expected to have two storeys the lots are shaped to allow the standard to the met.

Solar orientation is now defined by the R-Codes and explanatory guidelines of the recently gazetted R-Codes. Figure 9 identifies the solar orientation of lots within the LSP. It is confirmed all lots located within the optimum 0-10 degrees solar access range.

3.3.2.6 Local Development Plans

In order to achieve a range of lot sizes to enable a variety of housing choice and to address built form outcomes, Local Development Plans (LDP) referred to as DAPs in TPS 2 are required to guide further development. LDPs can also help in realising density targets by way of modifying standard R-Code provision to deliver more efficient use of urban area by way of reduced setbacks and site coverage.

LDPs also present the opportunity to achieve better residential, particularly in relation to smaller lot sizes. And in the case of the neighbourhood centre, detailed design such as crossover location, carparking, building orientation, interface with adjacent property are just some of the design considerations for the centre. Therefore, Local Development Plans will be prepared for:

- ❖ Lots abutting public open space areas;
- ❖ Lots under 260m^2;
- ❖ Grouped Housing sites;
- ❖ Narrow lots that require special conditions to be set;
- ❖ Neighbourhood centre
- ❖ Rear loaded or Laneways lots
- ❖ Residential lots adjacent to Thomas Road

LDP's will address, but are not limited, design aspects such as access, dwelling orientation, fencing, landscaping, visitor parking, location of outdoor living areas, storage areas, bin storage and elements of Crime Prevention Through Environmental Design (CPTED).

LDP's will be submitted, as required, to enable the clearance of conditions of subdivision approval.

3.4 Public Open Space

Under the provision of Liveable Neighbourhoods, a range of site responsive urban parkland is required which appropriately addresses the district, neighbourhood and local needs of residents. Urban parkland is to comprise a mixture of unrestricted and restricted open space.

The amount and location of Public Open Space (POS) throughout the LSP area is dictated by the Byford Structure Plan and adopted UWMP. The LSP incorporates the following key POS features:

- ❖ Creation of a new district stormwater 'living stream' through the alignment of an existing gully, which will be retained within the proposed MUC;
- ❖ Integration of best practice urban water management in accordance with the adopted UWMP;
- ❖ Continuation of the linear POS network established through the Byford Structure Plan thereby encouraging walking and cycling.

The POS is predominantly provided in a linear form through the LSP area, resulting in a network of open space, linking the residents' areas to the main transport routes, primary school and neighbourhood centre. The POS areas formalise the existing drainage occurring on site, performing both a stormwater retention and passive open space function. This design approach provides a greater ratio of POS interface with residential areas throughout the LSP area, and provides residents with access to public open space facilities within a 400 metre or five minute walk circle.

Element 4 of Liveable Neighbourhoods requires that:

"A minimum contribution of 10% of the gross subdivisible area must be given up by the subdivider and may comprise a minimum of eight percent active and passive recreational purposes with the remaining two percent comprise restricted use public open space uses as outlined in R5."

Liveable Neighbourhoods (Element 4, R5) outlines the following types of restricted POS that can contribute towards 2% of the total requirement:

- ❖ natural areas and cultural features;
- ❖ urban water management measures such as swales and or detention areas;
- ❖ artificial lakes/permanent drainage ponds; and
- ❖ natural wetlands.

The drainage channels through the site will be developed as a natural swales, or "living 'streams', through the use of local native plantings or suitable species. Native sedges and rushes are proposed to assist with nutrient stripping and midge and mosquito control. Boulders and low walls will act to control the flow of storm water through the living stream. The proposed drainage swales will be unfenced and landscaped in accordance with Liveable Neighbourhoods to allow for informal active and passive recreational uses.

The requirements under Liveable Neighbourhoods for restricted and unrestricted POS are summarised in the following schedule. The total POS area provided complies with the requirements of the Byford District Structure Plan, Liveable neighbourhoods and the statutory requirement for 10% POS provision. An increased area to some alignments to the Multiple Use Corridor has now been made to satisfy the Shire's requirement.

Details associated with bio-retention areas are discussed in Hyd2o's updated Local Water Management Strategy submitted to the Shire of Serpentine-Jarrahdale and the Department of Water. Hard stand surface such as a path is proposed between housing lots and the MUC reserve to ensure adequate fire separation is maintained. The POS areas will be subject to further refinement by detailed engineering design and discussions with the Shire at subdivision. The detailed subdivision plans will be required to adhere to the POS provision requirements.

The Local Structure Plan has been designed and now meets the objectives of Liveable Neighbourhoods generally. A public interface between residential lots and POS is proposed in a clear legible manner with residential lots adjacent to POS being proposed sparingly. Lots incursion within POS has been avoided.

Public Open Space Schedule

Total Site Area			29.3912ha
Deductions			
	School Site	4 ha	
	Thomas Road Widening (MRS)	1.02 ha	
	Thomas Road Drain (Contribution Item)	0.5 ha	
	Neighbourhood Centre	1.5 ha	
	Local Drainage (1:1 yr)	0.23ha	
	District Drain (Contribution Item)	1.5 ha	
	San Simeon Boulevard Widening (Contribution Item for additional 5m adjacent to neighbourhood centre and 2.5m adjacent to POS)	0.72ha	
	Total	**9.47 ha**	
Net Site Area			19.9 ha
POS Required Under LN			
8% Unrestricted POS		1.59 ha	
2% Restricted		0.4 ha	
	Total	1.99 ha	
POS Provided Under LSP			
	Unrestricted	Restricted (1:5yr Drainage)	
MUC (1.73 ha)	1.66	0.07	
Southern POS (0.28 ha)	0.27	0.006	
TOTAL	**1.93** **(9.7%)**	**0.076 ha** **(0.35%)**	**2 ha** **(10.05%)**

3.5 Fire Management

As the site is cleared and is not situated within close proximity to any bushland, the bush fire hazard is considered as 'low risk'. The land surrounding the site has been subdivided and developed in recent years. Some rural lands to the east of Briggs Road remain undeveloped although a local structure plan approval has been endorsed on that land.

Lots backing onto public open space will have a hard urban edge with low flammable native species, to be used for planting within the 30m building fire separation zone in accordance with the Shire of Serpentine Jarrahdale's Local Flammability Local Native Species List (2010).

The key recommendations for fire management are as follows:

- Public open space management to detail fire and bush loads within open space areas;
- Fire hydrants to be installed every 200 metres apart in roads that interface with public open space.

A Fire and Emergency Management Plan will be required to be prepared and implemented as a condition of subdivision approval.

3.6 Activity Centres and Employment

The Shire has prepared an Activity Centre Strategy bringing its approach to activity centre planning and development in line with State Planning Policy 4.2 for Perth and Peel (SPP 4.2). This is supported by Serpentine Jarrahdale Activity Centres Local Planning Policy No. 70 (LPP 70) which has been prepared having regard, and should be read in conjunction with the SPP 1 and SPP 4.2.

The LSP has been prepared in conformity with these documents in relation to the Activity Centres within Serpentine Jarrahdale. Key considerations include distribution of neighbourhood centres, support for higher order network and walkability, DSP's population target and so on. Specifically, matters such as movement, activity and urban forms have been taken into consideration. Other detailed design response will be prepared through a Local Development Plan (LDP).

The DSP identified a neighbourhood centre in the northern precinct on the extension of the Malarkey Road and Thomas Road. This location is highly accessible from all areas within the northern section of the DSP between Thomas Road and Abernethy Road. The Neighbourhood Centre is proposed at 5000m^{2}NLA which is one of two neighbourhood centres identified in the DSP. The other is located at the Glades at Byford.

This activity centre is in addition to the Byford District Town Centre located approximately 2 kilometres south –east of the site.

The Shire of Serpentine-Jarrahdale Local Planning Policy 19 classifies the centre as a medium neighbourhood centre, defined as follows:

> *"Medium Neighbourhood Centre – shopping floorspace of between 1500m2 to 2500m2 and comprising a supermarket of between 1500m2 to 2000m2 together with a limited range of*

support shops and local services (i.e. hairdresser, chemist, newsagency) as set out in the Land Use/Zoning table..."

The Byford DSP report and the Serpentine Jarrahdale – Activity Centres Strategy identify two (2) neighbourhood centres of 5000m^2 within the DSP area. One is located on Redgum North/Lot 9500 that straddles across San Simeon Boulevard and the other located at The Glades at Byford on Doley Road.

The intersection of Thomas Road and Malarkey/Masters Road is to be signalised as required by Main Roads and is ideally suited for a neighbourhood centre as it provides a safe and convenient passage of access into the Byford Town Centre. Complementary activity on the opposite side of the street will assist in establishing an entry statement and Community focus at this end of Byford, which is in a low speed controlled environment due to the impact of the traffic lights at one end and the roundabout at the other end of the neighbourhood centre. This will allow flexibility in tenancy mix as population grows and ensure that employment and expenditure retention is maximised within the Shire rather than escaping elsewhere.

A Retail Needs Assessment (RNA) recently carried out by Taktics4 has revealed that the neighbourhood centre at the Malarkey and Thomas Road intersection is capable of sustaining a supermarket based centre of approximately 4000m^2 on Lot 9500 comprising a supermarket and a number of smaller tenancies comprising shops, takeaway food plus other non-retail activity. The centre will primarily service the immediate local catchment and will complement the surrounding retail offer planned for Byford, and will capture approximately 5% of the retail sales ultimately generated by the fully developed Byford population of 30,000. The RNA has concluded that the delivery of the neighbourhood centre will have no adverse impact on the delivery of the Byford Town Centre and Glades Village Centre. In consideration of the site layout, the regular shape of Lot 9500 lends itself to accommodating the main retail centre that will meet the daily and weekly household shopping needs of the Community.

The neighbourhood centre on Lot 9500 could have a main street concept with access overlooking the landscaped Multiple Use Corridor. Traffic movement will be controlled by a future roundabout providing safe passage of ingress and egress for the neighbourhood centre on both sides of San Simeon Boulevard. Figure 8 shows the indicative location of the roundabout servicing the proposed neighbourhood centre. Access to the neighbourhood centre will have sufficient distance from the Thomas Road intersection. A traffic analysis undertaken by Tarsc Pty Ltd in consultation with Main Roads WA, has revealed that this is the most appropriate treatment outcome. In consideration to the signalised intersection and roundabout having a district level function in managing traffic flow, it is anticipated that they would form common infrastructures as part of the development contribution arrangement.

The design detail of the Neighbourhood Centre will be the subject of a future Local Development Plan which will be prepared for the Neighbourhood Centre in consultation with the adjoining owner of the Redgum Brook North Estate and the Shire.

3.6.1 Employment

Local employment opportunities will be created through the planned growth of the Byford Town Centre and the urban development of the DSP area generally. Similarly, the growth of the

Mundijong Town Centre, Cardup Industrial Area, south of the LSP area will also provide local employment opportunities. The Byford Town Centre is situated approximately 2 kilometres south-east of the site and the Mundijong Town Centre and Armadale Regional Centre approximately 8 kilometres to the north and south.

The site has good access to the Perth City Centre, Kwinana, Armadale and Canning Vale, and the other key activity centres, offered by access to Thomas Road, Tonkin Highway, Kwinana Freeway and the South Western Highway.

Key employment areas for the site will likely be situated within Kwinana along the Western Trade Coast Area and Armadale. Armadale is recognised as a Strategic Metropolitan Centre and Kwinana as a Secondary Centre under the State Planning Policy 4.2 Activity Centres for Perth and Peel.

❖ Perth City Centre	30 km
❖ Armadale	8 km
❖ Kwinana	15 km
❖ Rockingham	20km
❖ Cockburn Central	14km
❖ Canning Vale	22 km

In addition to the employment generators immediately within the strategic centres mentioned above, the Kwinana Industrial Area provides approximately 26,000 employment positions and is located about 15 km from the LSP area. The LSP area is located approximately 15 km from the Latitude 32 Industrial Area (Hope Valley Wattleup Redevelopment Area), which are expected to ultimately provide for 10,000 additional jobs.

At a local level, a Retail Needs Assessment has been prepared by Taktics4 which indicates that retail activity in the LSP will provide upwards of 188 jobs and a further 36 jobs are expected to be created from home business occupancy within the LSP area. The LSP will provide 583 resident employees generating a self-sufficiency target of 38% (224 jobs for 583 resident employees). Employment self-sufficiency targets are ideally suited to regions and large districts, where a broad range of diverse employment generators may be considered. Urban environments will generally provide for up to a third of employment creation in shops, schools, home business medical centres and local offices. A further third of all employment opportunities will generally not be able to be created in urban environments as these jobs involve mines, airports, and corporate head offices, major hospitals that will never be able to be included in every urban environment. It is therefore considered that a target of 38% for an LSP of 360 dwellings is significant contributor to the Byford district targets.

3.7 Urban Water Management

This section addresses the proposed urban water management network, maintenance of this network, groundwater recharge, runoff water quality, environmental values and physical characteristics of receiving watercourses, protection from stormwater and flooding and ongoing management arrangements.

Hyd2o has updated the Local Water Management Strategy previously approved by the Department of Water in 2011. The LWMS (Hyd2o, 2014) contains information to accommodate recent changes

to the LSP, and has been prepared in consultation with the Shire of Serpentine-Jarrahdale and the Department of Water (DOW).

Refer Appendix 3 - Local Water Management Strategy (Hyd2o, Nov 2014).

The updated LWMS provides a summary of the revised LSP for the site, identifying changes to stormwater flows and catchments. Revised stormwater modelling is detailed to guide engineering design and the development of a future Urban Water Management Plan (UWMP) for the site.

3.7.1 Water Management Strategies and Planning

The LWMS uses the following key documents to define its context, key principles and objectives.

3.7.1.1 Stormwater Management Manual for Western Australia (2007)

The Waters and Rivers Commission (now Department of Water, 'DOW') released *A Manual for Managing Urban Stormwater Quality in Western Australia* in 1998 to define and practically describe Best Management Practices (BMP's) to reduce pollutant and nutrient inputs to stormwater drainage systems. The Manual also aimed to provide guidelines for the incorporation of improved water quality from urban environment.

3.7.1.2 Better Urban Water Management (2008)

The guideline document Better Urban Water Management (WAPC, 2008) focuses on the process of integration between land use and water planning and specifying the level of investigations and documentation required at various decision points in the planning process, rather than the provision of any specific design objectives and criteria for urban water management.

The LWMS complies with the BUWM process.

3.7.1.3 Byford Townsite Drainage and Water Management Plan (DoW, 2008)

The Byford Townsite Drainage and Water Management Plan was prepared in accordance with the responsibilities for drainage planning the Department of Water's guidance for the Serpentine Jarrahdale Shire, the Western Australian Planning Commission, land developers and other state agencies about water management issues to help development proceed within the Byford Townsite area.

3.7.2 Groundwater Management

The LWMS, prepared by Hyd2o, has been prepared in accordance with the principles, objectives, and key criteria of the overarching Byford Townsite District Water Management Plan (BDWMP) (Department of Water 2008) and Better Urban Water Management (WAPC 2008).

Minimum separation between building floor levels for development and groundwater will be achieved by a combination of fill, lot connection and subsoil drainage to provide protection against any post development groundwater rise.

Given the clayey nature of existing soils it is likely that subsoil drainage will need to be established at close to the existing natural surface. Note that this is above the regional water table which is located below the existing natural surface. Subsoil design will be undertaken as part of civil engineering design at UWMP stage. All subsoil flow will be treated in bio-retention systems prior to discharge to Oaklands Drain, and subsoil design levels will established to ensure subsoil will be free draining.

In broad terms, fill in the order of 1m is likely to be required in areas north of the Multiple Use Corridor, while less fill may be required for the more elevated land south of the MUC, where fill requirements will be largely determined by engineering, subsoil and groundwater level control requirements in this area.

Finished lot levels, fill requirements, and subsoil drainage design are a detailed civil engineering design issue which will be addressed during preparation of the UWMP and submitted for council approval at that stage.

3.7.3 Monitoring

Post development monitoring locations and parameters are detailed in Appendix 3.

The monitoring program is consistent with BDWMP (DoW 2008) requirements which seek to assess the impact of proposed development on surface water quality discharging from the site. Similarly to the approved Redgum Brook North LWMS (GHD 2011), the Department of Water have indicated no post development monitoring of groundwater will be required as subsoil drainage will be used to control any post development perching of water above the Guildford formation clays.

The monitoring program of surface water quality is designed to operate over a three year post development period. The timing of commencement of the monitoring program for each individual subdivision area will be negotiated at UWMP stage with DOW and the Shire of Serpentine - Jarrahdale.

3.7.4 Ongoing Management and Responsibilities

The operation and maintenance of the drainage system will initially be the responsibility of the developer, ultimately reverting to the local authority, the Shire.

The ongoing water management and responsibilities are detailed in Appendix 4 of the Local Water Management Strategy.

3.8 Servicing / Utilities

3.8.1 Transport Infrastructure

The LSP recognises San Simeon Boulevard will play an important role by providing a direct connection for residents and traffic into the Byford Town Centre. The Shire, subject to final design, has required a road width of 25 metres from Thomas Road to Larsen Road and 30 metres from Larsen Road to Abernethy Road. Subject to design is likely to have a road reserve of 22.5m for this class of roads including a boulevard treatment with a central median.

San Simeon Boulevard has been identified and detail items included in the Development Contribution Plan. Subdivision of the site will include creation of the relevant road reservation. It is anticipated that the road pavement would also be constructed as part of the subdivision, the costs of which being offset against the shared infrastructure contributions.

All proposed roads are to be constructed in accordance with Liveable Neighbourhoods, with this being demonstrated at the time of detailed engineering drawings being lodged with the Shire for approval.

Shared paths (along MUC corridors and San Simeon Boulevard) and footpaths are to be designed in accordance with LN and constructed in accordance with Council requirements.

3.8.2 Sewer

As previously indicated, the Water Corporation has developed conceptual planning for its eventual sewer extension of the corridor between Byford and Mundijong. This involves a series of pumping stations intended to convey the wastewater southwards to a significant facility proposed to be constructed on the edge of the Mundijong Urban Village. From this location the wastewater is intended to be conveyed westwards across to Baldivis and then onto the East Rockingham Wastewater Treatment Plant.

The Water Corporation has a sewer pumping station located in the south-west corner of the existing Redgum Brook Estate development. A main gravity sewer extends along from Byford Central along Thomas Road and through Redgum Brook Estate to discharge into the sewer pump station. All of the subject land can gravitate into this main sewer. All lots will be connected to reticulated sewer.

3.8.3 Water Supply

Water supply services are available in Briggs Road and Malarkey Road and will be extended to service the Local Structure Plan area.

The Water Corporation has reticulated water supply extended to service Redgum Brook Estate via a 150mm main from Larsen Road/Briggs Road to Malarkey Road. An extension to a distribution-sized main (300dia) part of the adjacent Byford Central project has now connected early stages. This mains extension will ensure water supply can be readily provided in relation to the subdivision of the land.

3.8.4 Gas

Gas services will be extended from the existing mains in the adjoining subdivision. Existing gas distribution infrastructure terminates at Nettleton Road and pressure gas mains are present in Malarkey, Briggs and Eurthymic Roads. The gas supplier (Atco Gas) has typically required developers to fund any extensions required to bring its supply mains to the boundary of new developments.

3.8.5 Electricity

Power supply will be extended throughout the subdivision. Western Power has high voltage (HV) lines in Larsen Road and as the extent of development increases, Western Power will need to carry out various system reinforcement measures to maintain adequate supply.

3.8.6 Telecommunication

Telstra has existing optic fibre cable on the north side of the existing Thomas Road reservation, extending between Wungong South Road and South Western Highway. Distribution cables are located on the south side of Larsen Road.

Telecommunications for the development area would be provided by connection to Telstra's Byford Exchange.

The size of the proposed development and its subsequent long development period will probably result in many changes in the way that telecommunication is delivered.

Infrastructure installation will be designed and constructed in a way to ensure for maximum flexibility for future technology advances.

3.9 Development Contributions

The DSP outlines an implementation strategy, the principal component of which is the introduction of cost sharing arrangements for Common Infrastructure in accordance with clause 5.19 of the Shire's Town Planning Scheme No.2 (TPS2), referred to as the Development Contribution Plan (DCP).

The Shire of Serpentine-Jarrahdale previously initiated Amendment 167 which gives the general TPS capacity to undertake DCPs. Amendment 168 is the DCP for Byford aiming to share the cost of infrastructure, land and other items required to support the development of the area.

The DCP Report has recently been approved by the Shire of Serpentine-Jarrahdale and the Department of Planning which set out in detail the infrastructure, land and other items for which development contributions are to be collected, how land values are calculated, the valuation methodology applied, and the cost estimates of infrastructure, land costs for Public Open Space, upgrading/construction and land acquisition costs for Thomas Road, drainage and so on.

Development Contribution arrangements will include 'traditional infrastructure', through statutory processes and in accordance with SPP 3.6 Developer Contributions for Infrastructure.

The owner of the subject site will liaise with the Shire in respect to contributions required under this plan during the subdivision approval process.

3.10 Landscaping

A Landscape Master Plan has been prepared for the estate showing indicative designs and concepts for hard and soft landscaping within the public open space areas. These concepts will be complemented by a street tree layout for the LSP area in accordance with the Shire's standard street tree planting list to be prepared at subdivision stage.

Refer to Figure 11 for the Landscape Master Concept Plan.

3.11 Operation of Local Structure Plan

The Structure Plan is to operate in accordance with the provisions of 5.18 of the Shire of Serpentine-Jarrahdale Town Planning Scheme No. 2.

The LSP identifies reserves and zones, including residential densities. Use and development within the LSP is to be in accordance with the provisions of the Town Planning Scheme No. 2.

Local Development Plans will be required prior to the clearance of subdivision, in accordance with the provisions of the LSP.

Otherwise, residential and neighbourhood centre developments are to be in accordance with the approved Local Development Plans, the Residential Design Codes, Town Planning Scheme No. 2, and any relevant Planning Policy.

Upon completion of development within the Structure Plan, the Shire will initiate an amendment to the Town Planning Scheme No. 2 to reflect the final zonings.

4 Conclusion

The LSP for Byford Meadows has been prepared for facilitate and guide the ongoing subdivision and development of the land in accordance with the DSP and principles of Water Sensitive Design. The proposed land uses and road layout are consistent with the planning context provided under the MRS, TPS 2 and the DSP. The LSP design has been guided by the principles of Liveable Neighbourhoods.

The LSP has been prepared largely guided by analysis of the opportunities and constraints within the subject site.

The information provided in the report reflects that the subject site is capable of being suitably developed for urban purposes. Suitable provisions of POS have been made. The site is connected to the surrounding areas through an integrated road layout. Servicing requirements including roads, utilities and drainage have been adequately addressed.

Figures

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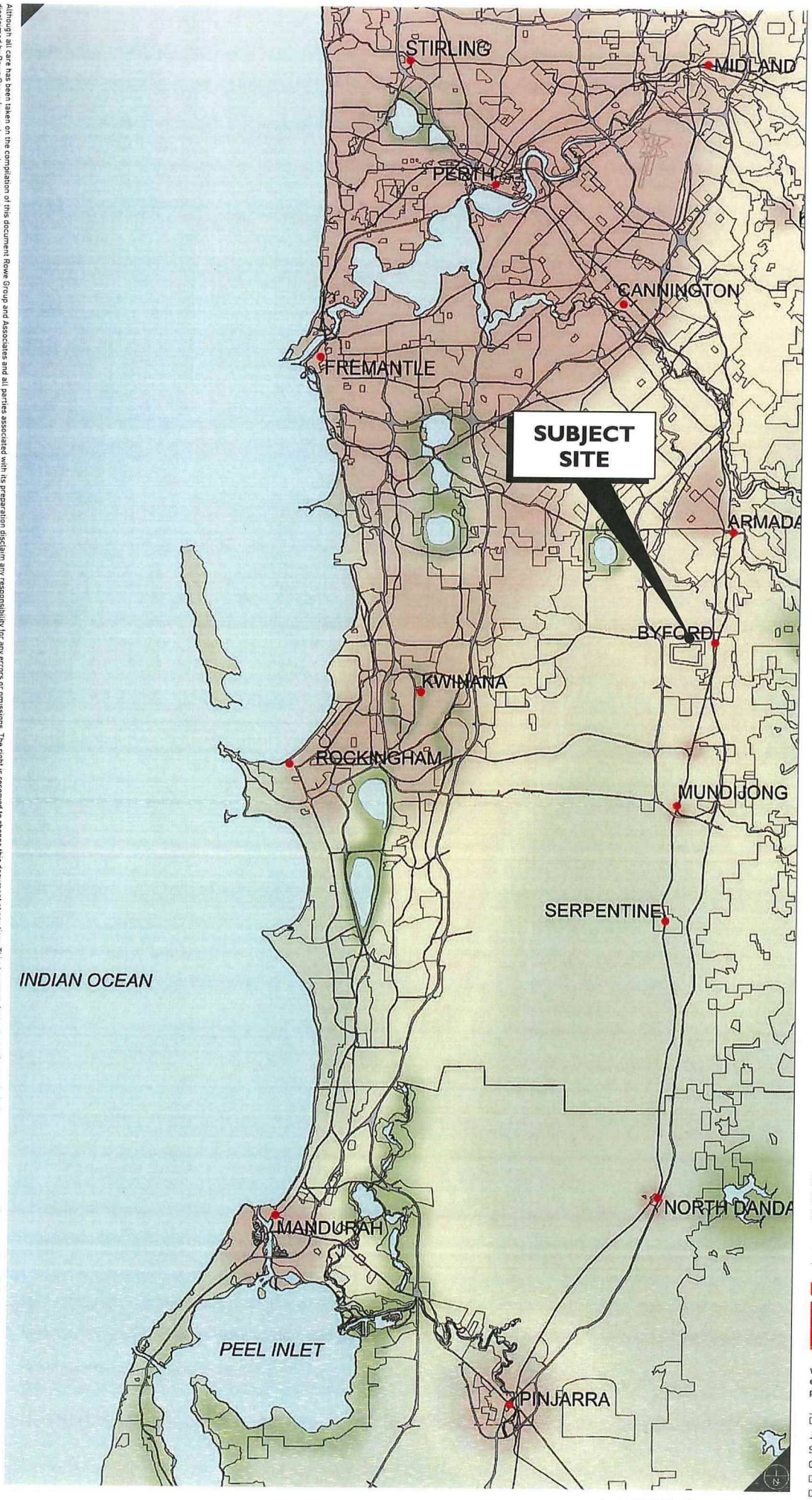


Figure 1 - Regional Location

Lot 9500 Thomas Road
Byford

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B	2013.05.28	M Callaghan

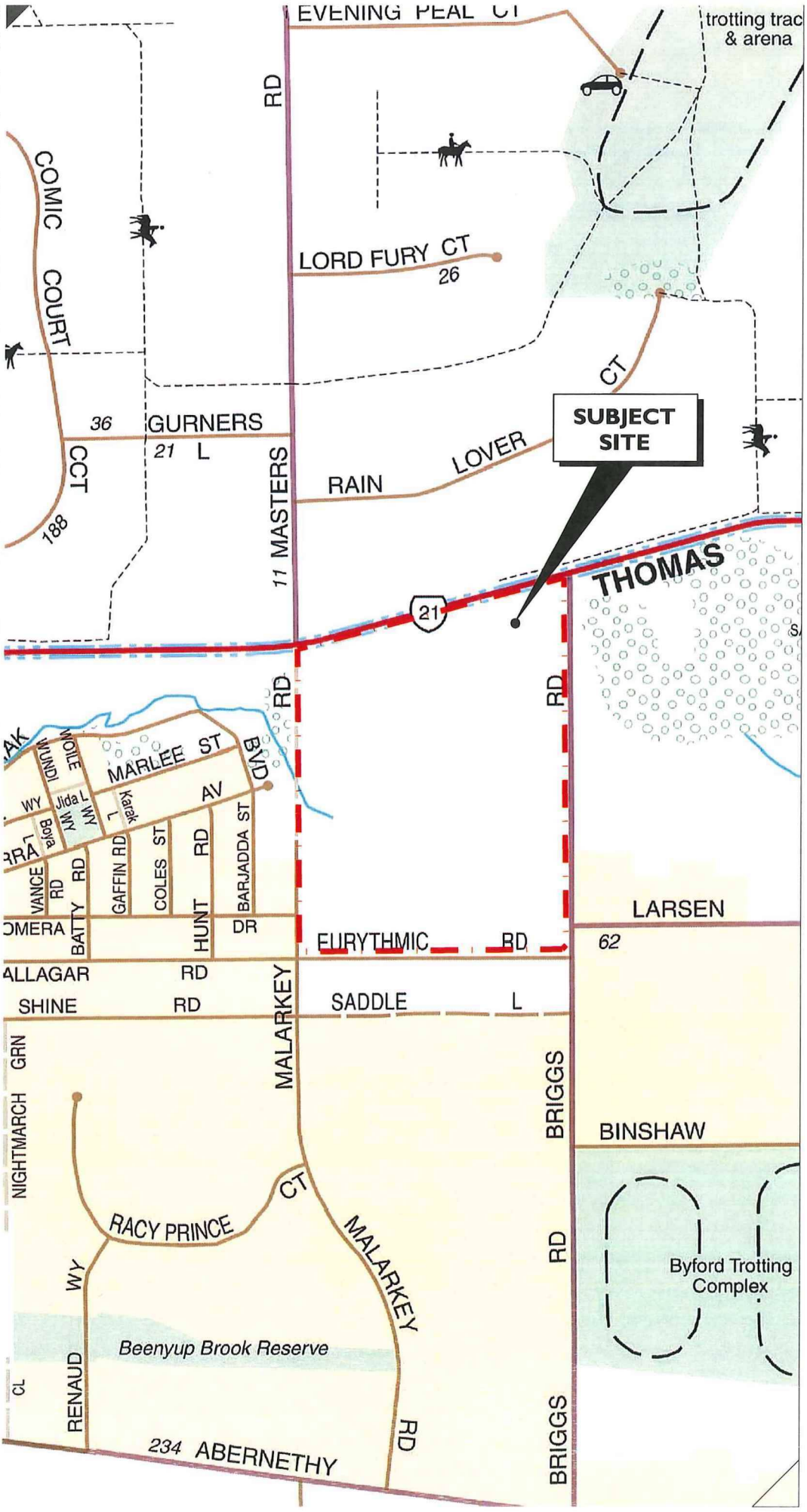
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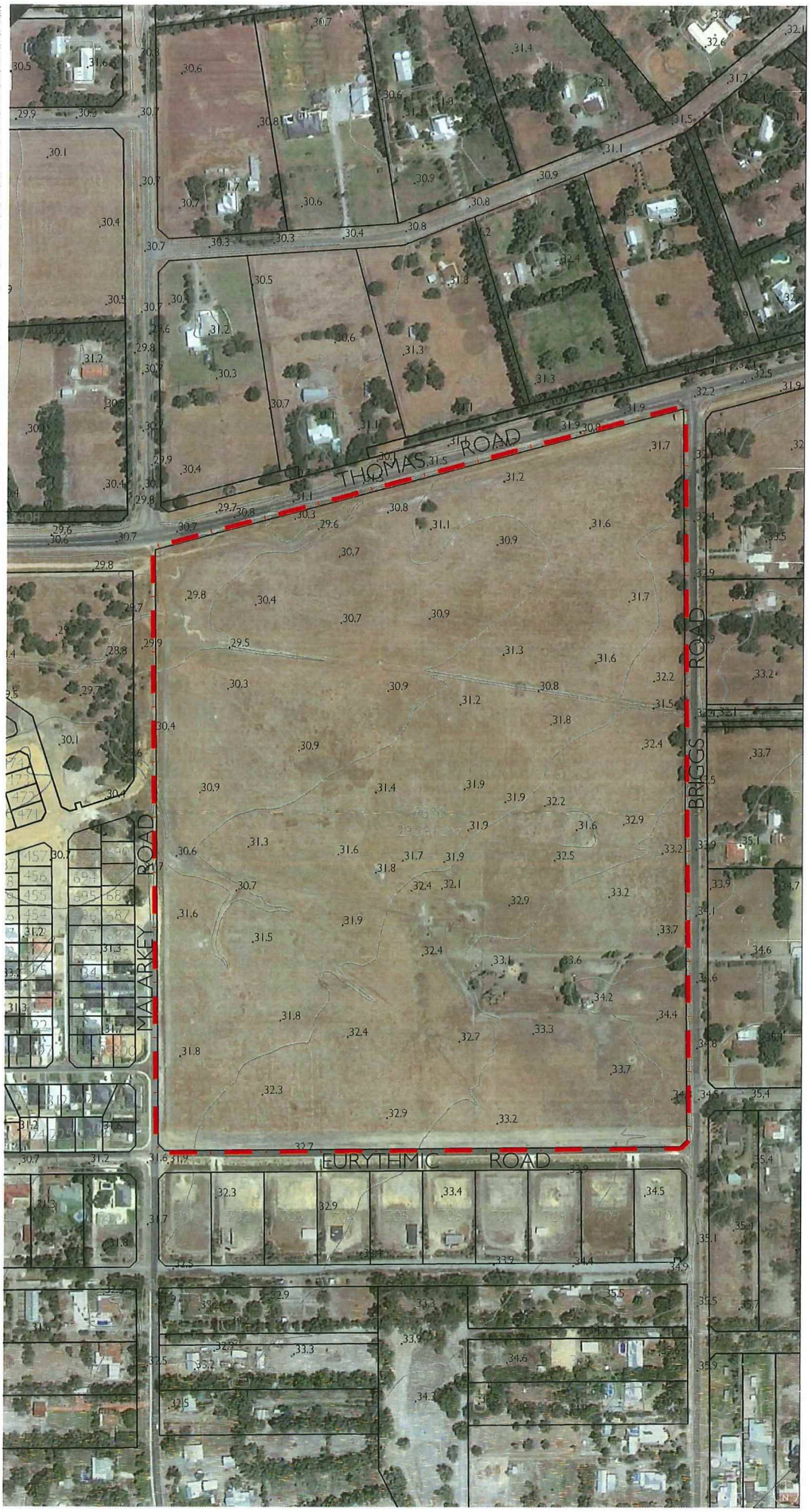
Figure 2 - Local Location

Lot 9500 Thomas Road
Byford

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LEGEND

SUBJECT SITE

CONTOURS

0 125 Metres

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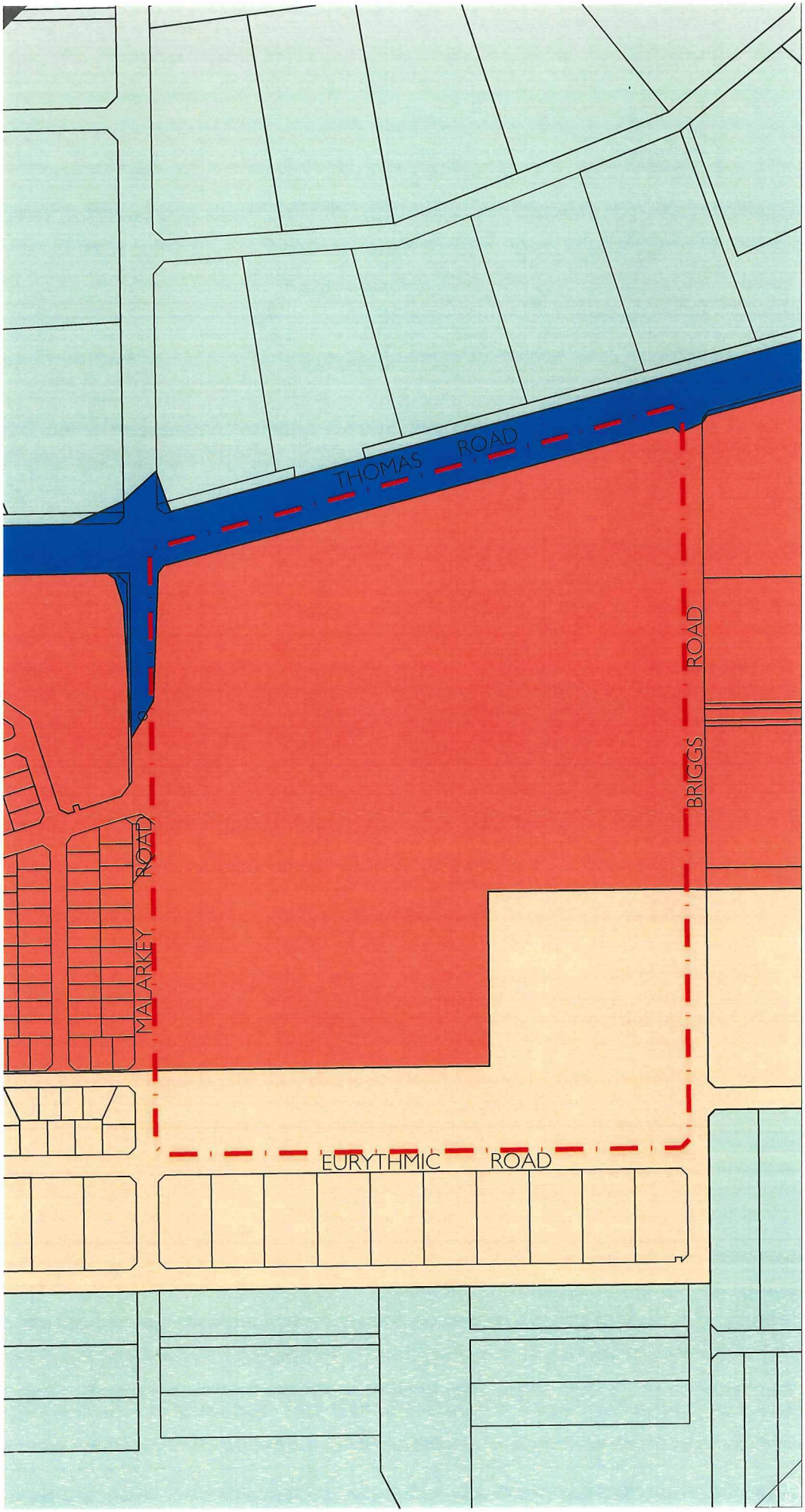
Figure 3 - Aerial

Lot 9500 Thomas Road
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Planning Design Delivery



LEGEND

RESERVED LANDS

OTHER REGIONAL ROADS

ZONES

URBAN

URBAN DEFERRED

RURAL

OTHER

SUBJECT SITE

0 125 Metres

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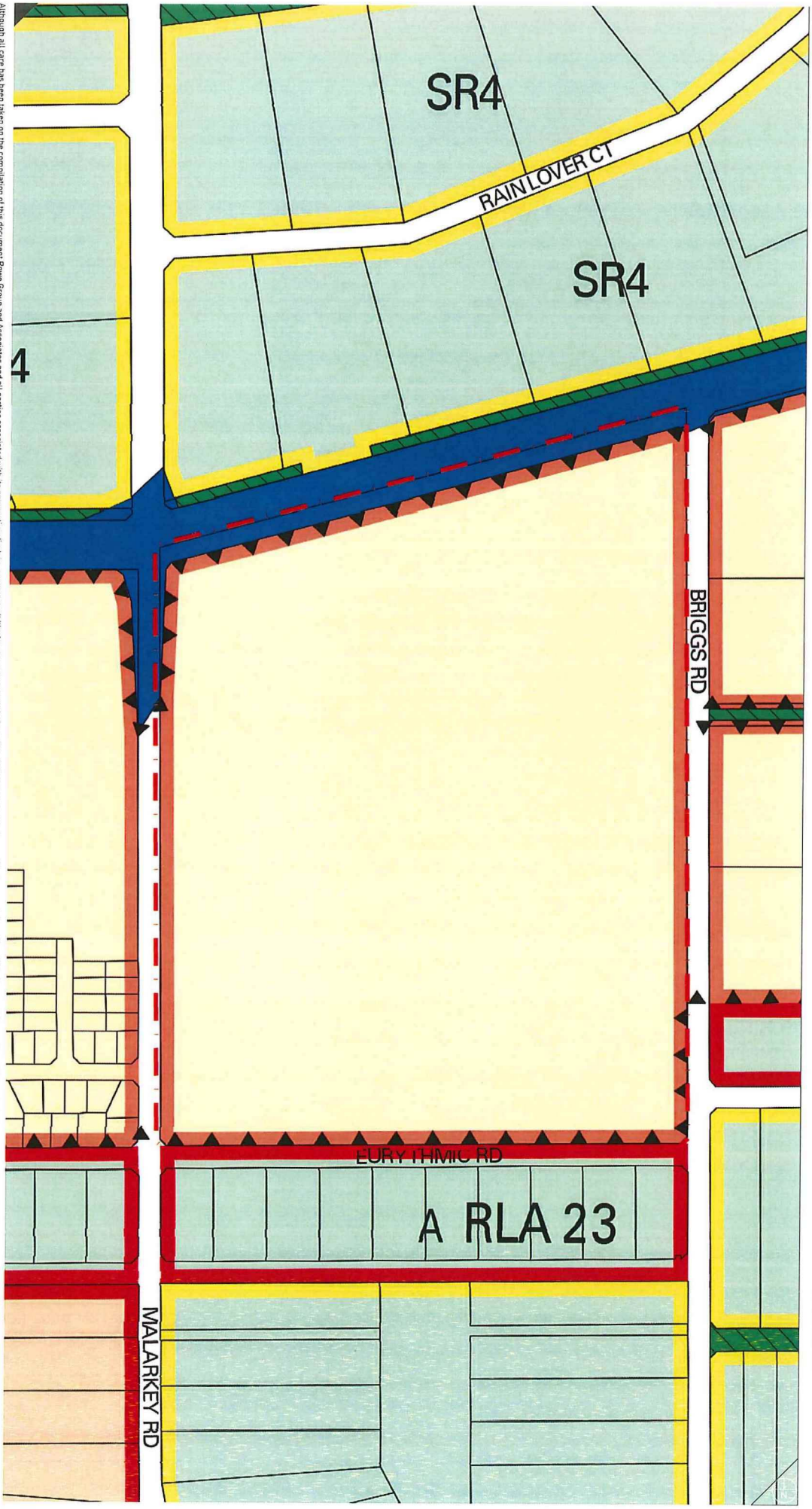
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Figure 4 - MRS

Lot 9500 Thomas Road
Byford

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Planning Design Delivery



LEGEND

- SUBJECT SITE

METROPOLITAN REGION SCHEME RESERVES

- OTHER REGIONAL ROADS

LOCAL SCHEME RESERVES

- LOCAL ROAD
- PUBLIC OPEN SPACE

ZONES

- DEVELOPMENT
- SPECIAL USE
- SPECIAL RURAL

OTHER

- DEVELOPMENT AREA
- SR3 SPECIAL RURAL AREA
- SU2 SPECIAL USE AREA

0 125 Metres

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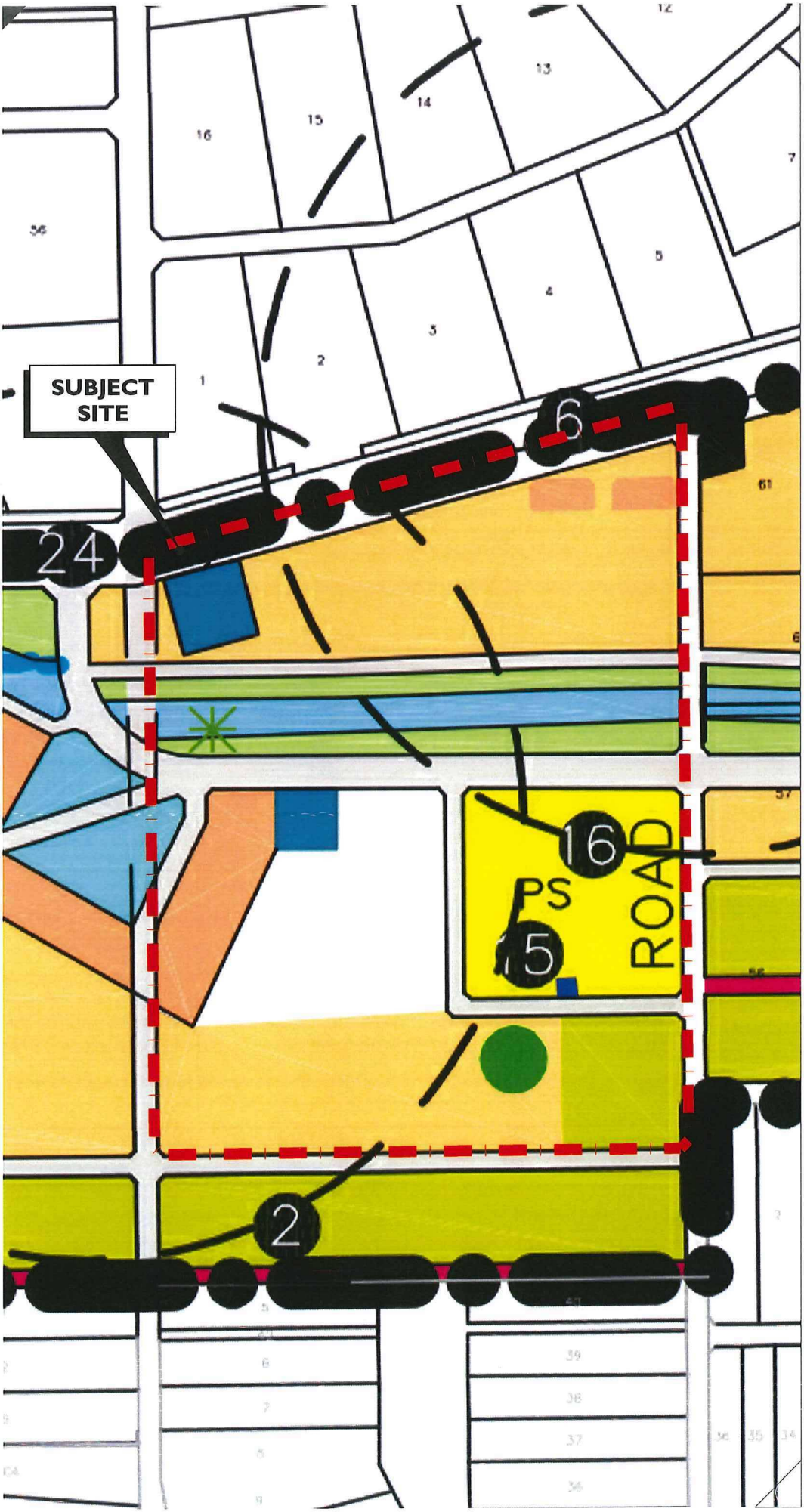
Figure 5 - TPS No.2

Lot 9500 Thomas Road
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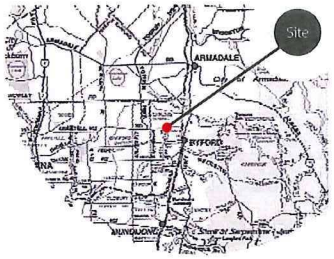
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Planning Design Delivery



LEGEND

- STRUCTURE PLAN AREA
- DOLEY/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.3000m)
- PROPOSED LOCAL PARK WITHIN MUC
- PROPOSED NEIGHBOURHOOD PARK (Approx. 4000m)
- 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

0 125 Metres

REVISIONS

Rev	Date	Drawn
B	2013.05.28	M Callaghan

Figure 6 - Byford Structure Plan

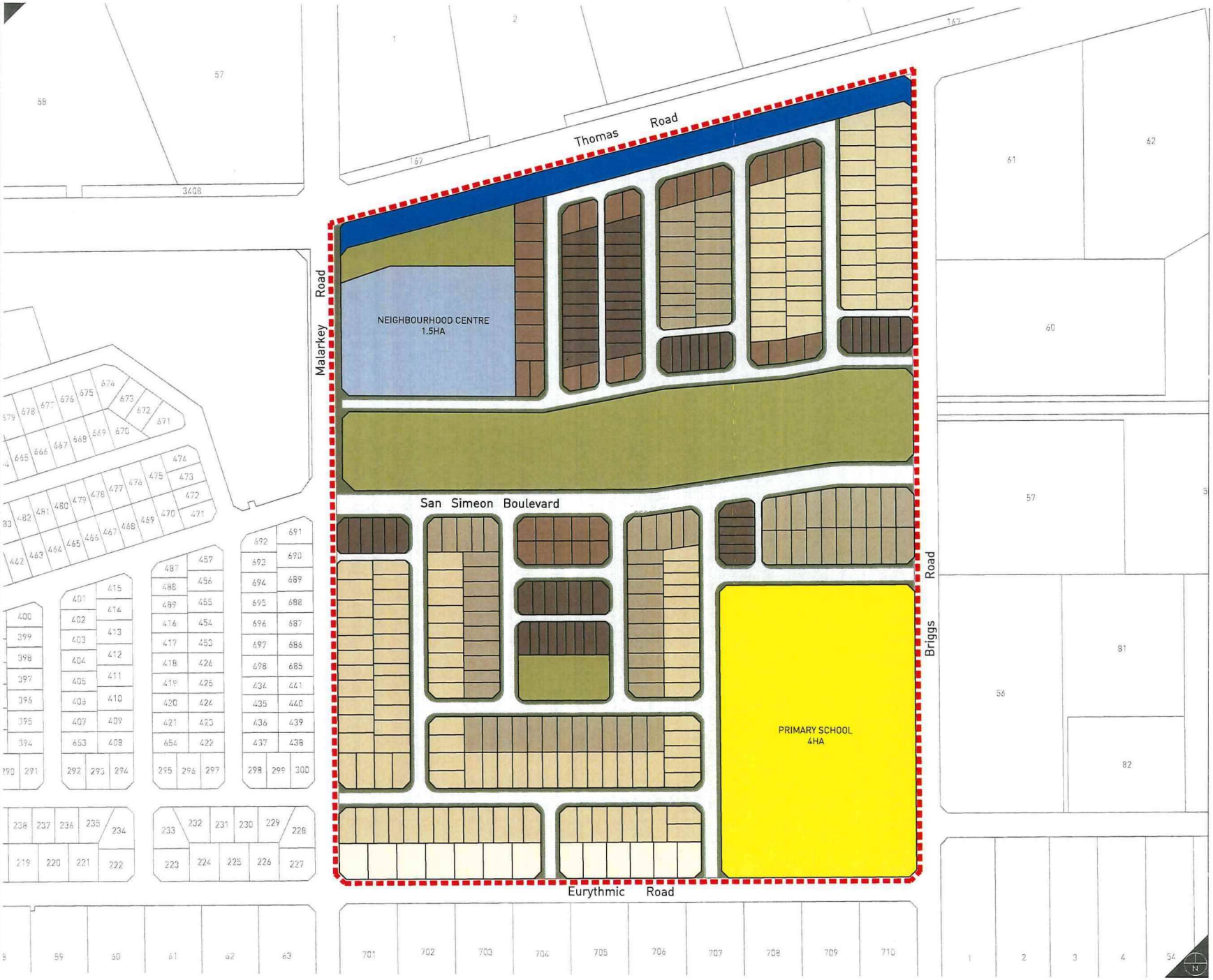
Lot 9500 Thomas Road
Byford

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Designer:	K Kyle
Drawn:	M Callaghan
Projection:	na
Plan ID:	7769-FIG-06-B

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Planning Design Delivery



LEGEND

- Subject Site
- R12.5
- R25
- R30
- R40
- R60
- Neighbourhood Centre
- Educational/Institutional
- Public Open Space
- Other Regional Roads

0 75 150 Metres

REVISIONS

Rev	Date	Drawn
B	2013.08.20	S Blanchard
C	2014.06.30	M Winfield
D	2014.10.21	K. Trenberth
E	2014.11.10	M. Sullivan

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Projection:	MGA50
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Data supplied by Landgate

Figure 7 - Indicative Lot Layout

Lot 9500 Thomas Road
Byford

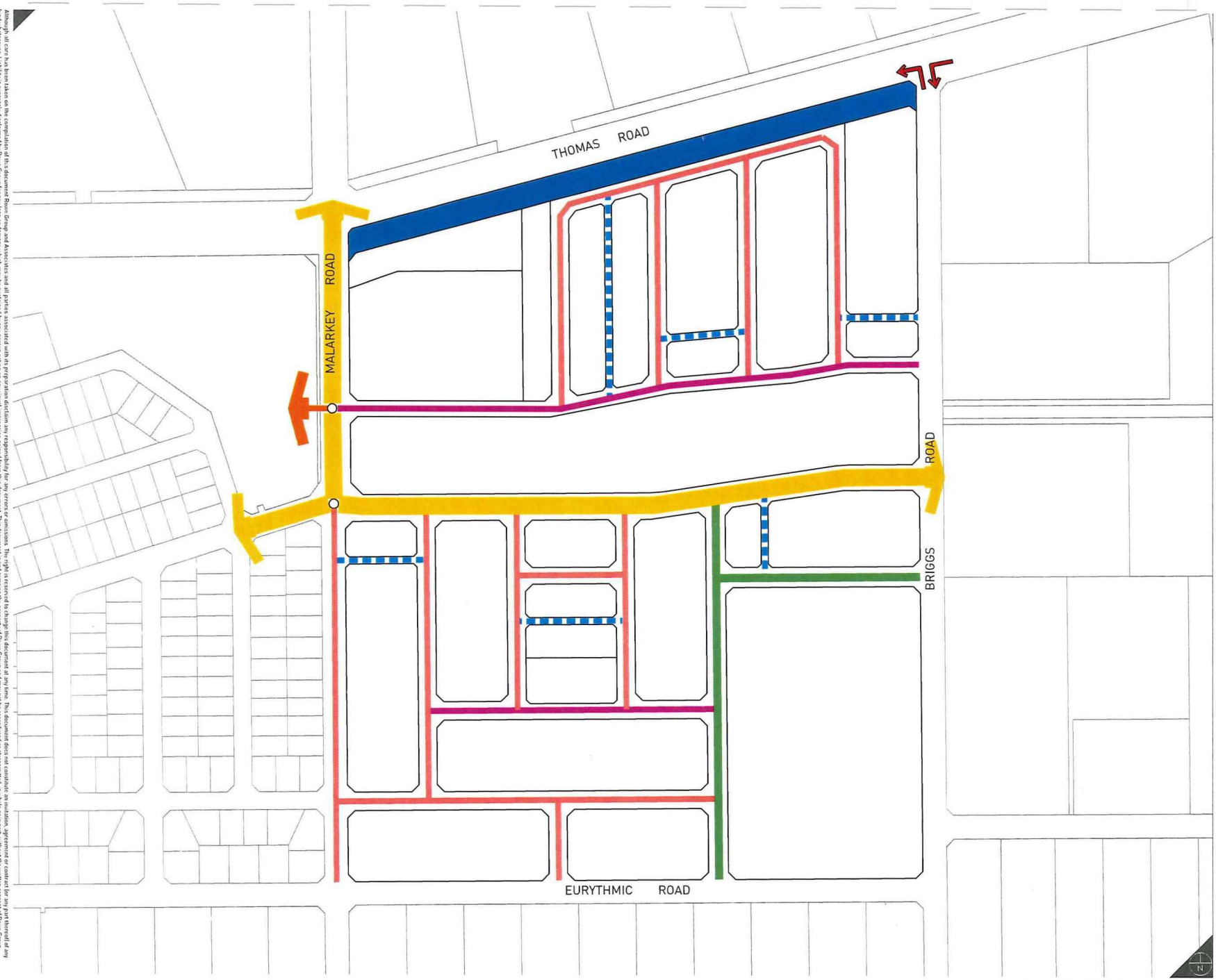
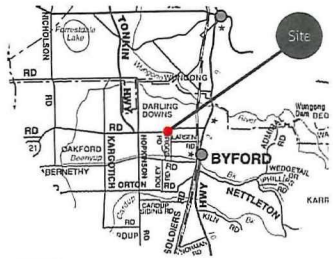


Figure 8 - Movement Network

Lot 9500 Thomas Road
Byford

Planning Design Delivery



LEGEND

- Thomas Road Widening
- Neighbourhood Connector
- Access Street B
- Access Street C
- Access Street D
- Laneways
- Future Intersection
- Restricted Access - Left In / Left Out

0 75 150 Metres

REVISIONS

Rev	Date	Drawn
A	2013.05.28	M Callaghan
B	2014.10.21	K. Trenberth
C	2014.11.10	M. Sullivan

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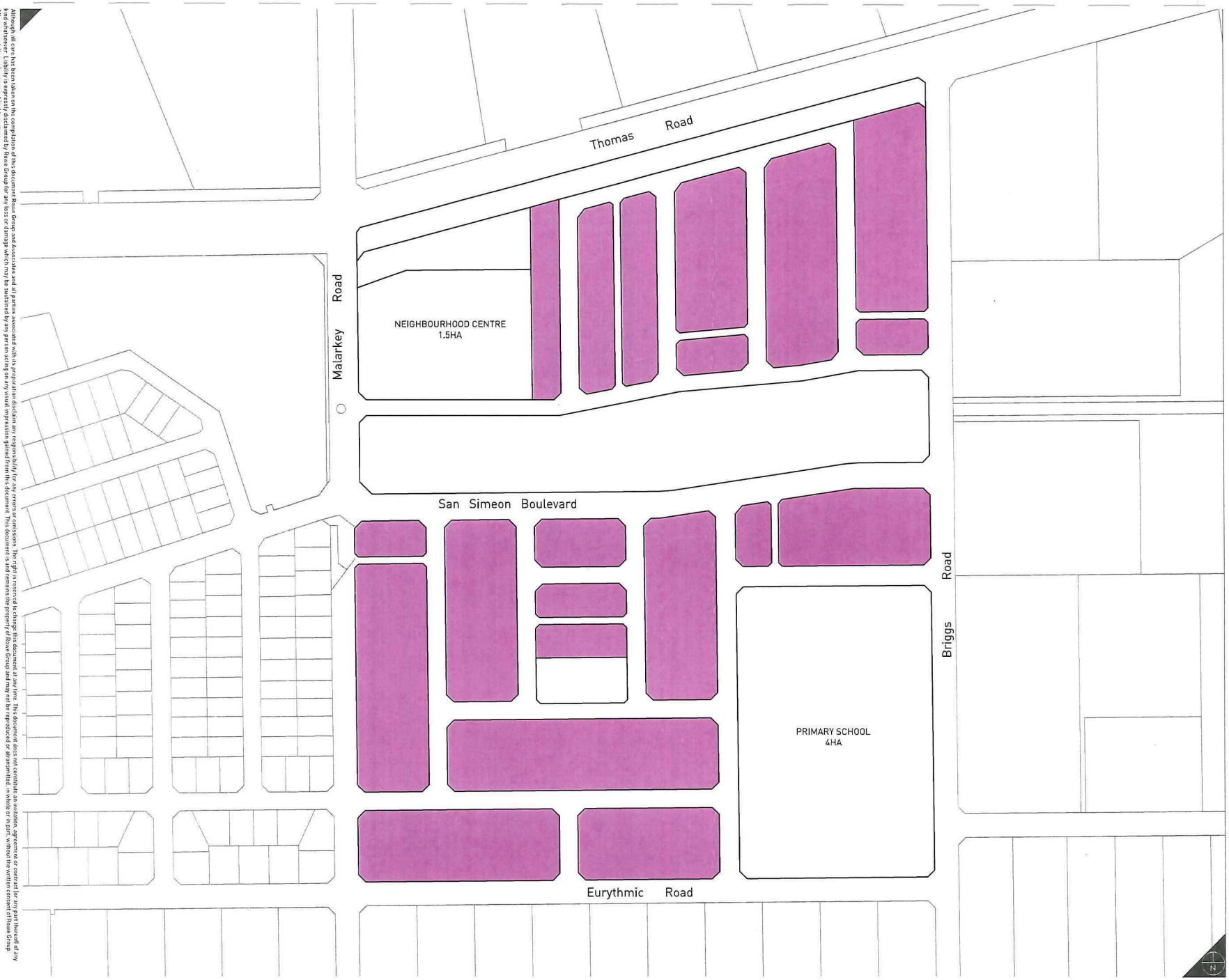
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Projection:	MGA50
Plan ID:	7769-FIG-07-C

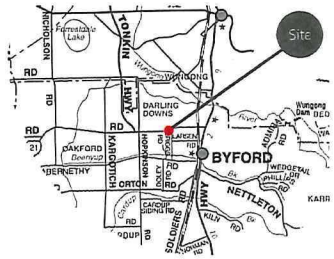
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Planning Design Delivery



LEGEND

0° - 10° N/S E/W

0 75 150 Metres

REVISIONS

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B	2014.11.10	M. Sullivan

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Projection:	MGA50
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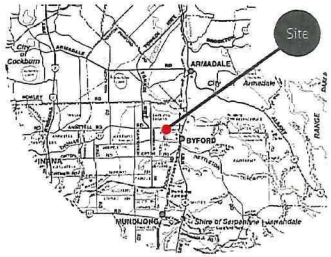
Figure 9 - Solar Orientation

Lot 9500 Thomas Road
Byford



Figure 10 - Public Open Space

Planning Design Delivery



LEGEND

- Unrestricted POS
- Restricted POS
- (1) POS Numbers referenced in text
- 1:100 Year Floodway
- Oaklands Drain - Dedicated Drainage

0 75 150 Metres

REVISIONS

Rev	Date	Drawn
A	2013.05.28	M Callaghan
B	2013.08.20	S Blanchard
C	2014.10.21	K. Trenberth
D	2014.11.10	M. Sullivan

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CONCEPT

- Provide for both active and passive recreation opportunities with co-located district and local drainage.
- Provide an attractive, organic edge to the drainage system.
- Reflect the nature character of locality in contemporary planting style through materials, colours and plant palette.
- Increase opportunities for pedestrian engagement within the natural elements of open space design.

FUNCTIONS/MATERIALS

- Integrated drainage system.
- Turf kick about areas for active recreation.
- Children's nature playground and community gathering spaces through shade structures, seating and BBQ facilities.
- Strong pedestrian linkages provided through the POS via pathways, linking the northern and southern residential cells to key land uses.

ENVIRONMENTAL RESPONSE

- Water wise plant strategy to limit irrigation requirements.
- Water Zoning.
- Controlled fertilization.
- Minimised turf areas.
- Permeable paving materials.
- Low maintence materials.

DRAINAGE

- District drain 1.5ha comprising of planted swale and 1:100yr floodway
- Local drainage 1:100 yr - 3,970m²
  1:5 yr - 2,940m²
- Native wetland species within drainage areas.
- The design of bio-retention, sedimentation and flood storage basins is to include the use of local native species.

PLANT STRATEGY

- 100% native vegetation with Pinjarra/ Guildford vegetation species (as available) preferred in accordance with the Shire of Serpentine Jarrahdale's Pinjarra/Guildford Vegetation Complex Flora List.
- Low flammable native species, to be used for planting within 30m building fire separation zone in accordance with the Shire of Serpentine Jarrahdale's Low Flammability Local Native Species List (May 2010).
- Naturalistic planting style with contemporary landscape edges.

IRRIGATION STRATEGY

- Reduced irrigation demand strategy during winter/ spring.
- Automated irrigation system.
- Irrigated planted areas to be established and maintained (2 years).

Planning Design Delivery



LEGEND

- TURF
- PLANTING
- COMMUNITY NODE
- CHILDRENS PLAY
- PATH
- BOARDWALK
- TREES
- ROCKS
- DRAINAGE SWALE/ RETENTION BASIN
- 1:100 YEAR FLOODWAY

* Indicative Layout - Subject to Detailed Design

REVISIONS

Rev	Date	Drawn
A	2013.05.27	C.Karsakis
B	2013.05.29	M.Callaghan
C	2013.08.20	S Blanchard
D	2014.11.11	K. Trenberth

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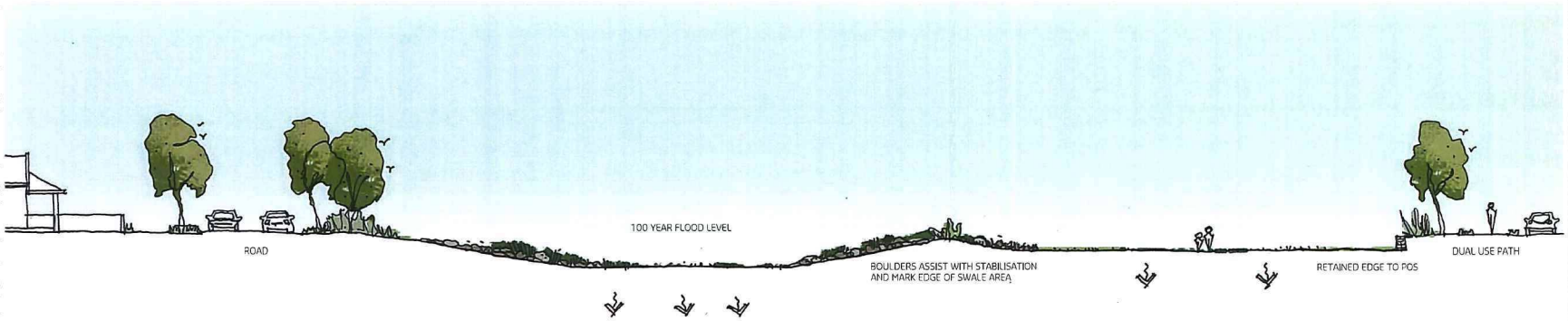
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Figure 11 - POS 2 Landscape Concept

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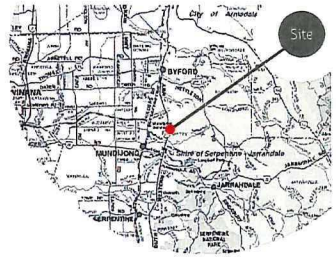




PUBLIC OPEN SPACE CROSS SECTION AA

Figure 11 - Indicative Cross Section AA

Planning Design Delivery



LEGEND

- TURF
- PLANTING
- COMMUNITY NODE
- CHILDRENS PLAY
- PATH
- BOARDWALK
- TREES
- ROCKS
- DRAINAGE SWALE/ RETENTION BASIN
- 1:100 YEAR FLOODWAY

* Indicative Layout - Subject to Detailed Design

REVISIONS

Rev	Date	Drawn
A	2013.05.27	C.Karsakis
B	2013.05.29	M.Callaghan
C	2014.11.11	K. Trenberth

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Projection:	MGA
Plan ID:	7769-CON-03-C

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