



LOCAL STRUCTURE PLAN

LOTS 15 AND 17 BRAND HIGHWAY
RUDDS GULLLY (GRE/2015/000)



ROWEGROUP

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This report has been authorised by;



George Hajigabriel
General Manager



Aaron Lohman
Manager Planning



Jamie Baxter
Quality Control

CONTACT PERTH OFFICE

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

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This report includes content prepared by Urban Plan Design and Development.





RECORD OF ENDORSEMENT PAGE

This structure plan is prepared under the provision of the City of Great Geraldton Local Planning Scheme No.1.

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

___/___/2017

Signed for and on behalf of the Western Australian Planning Commission

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2015 for that purpose, in the presence of:

_____ Witness

_____ Date

_____ Date of Expiry



TABLE OF AMENDMENTS

Amendment No.	Summary of Amendment	Amendment Type	Date Approved by WAPC

TABLE OF DENSITY PLANS

Density Plan No.	Area of Density Plan Application	Date Endorsed by WAPC

EXECUTIVE SUMMARY

This report has been prepared in support of a Local Structure Plan (LSP) for Lots 15 and 17 Brand Highway, Rudds Gully. 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 the local community, landowners, government agencies and other key stakeholders.

The subject site is currently zoned "Urban Development" under the City of Greater Geraldton (City) Local Planning Scheme No. 1 (Scheme). A structure plan is required to be prepared and approved prior to the development of land in the "Urban Development" zone.

The LSP presents a significant expansion of the southern corridor of the Geraldton urban area, with an estimated yield of 625 lots. A maximum lot yield of 928 could be achieved if the land designated with a R20 density code is subdivided to the average R20 lot size. However, given the regional location of the land 700m² average lot size is proposed for R20 land.

The LSP area predominantly consists of residential development, providing a variety of low and medium density housing opportunities. The design also includes the provision of public open space in accordance with Western Australian Planning Commission (WAPC) guidelines. The site is currently well serviced with frontage to Brand Highway and future interconnecting local road network within the subject lots.

Much of the subject area and surrounding region has been extensively cleared for farming only remnant patches of native vegetation remain. Generally, vegetation within the LSP area ranges from 'Good' to 'Completely Degraded' condition.

The Department of Education (DoE) has advised that although the expected number of Primary School students is low, it would still require a Primary School in the Rudds Gully area to service the needs of the students that would result from the proposed and surrounding development. The LSP has therefore included the provision of a Primary School site straddling the southern boundary of Lot 17.

Local Structure Plan Summary Table

Item	Data	Section number reference in report
Total area covered by the Structure Plan	67.09 hectares	1.2.2
Area of each land use proposed:	Hectares Lot Yield	3.2 and 3.3.2
Residential	40.96 928 (max)	
Primary School	1.85 1	
Estimated lot yield	928 (max)	3.3.2
Estimated number of dwellings	928 (max)	3.3.2
Estimated residential site density	23 dwellings per site/hectare (max)	3.3.2
Estimated population	1,625	3.3.2
Number of high schools	0 high schools	3.6
Number of Primary Schools	1 Primary School	3.6
Estimated commercial floor space	Nil	N/A



Estimated area and % of public open space:		3.2
• Regional open space	Nil	
• District open space	Nil	
• Neighbourhood parks	2.27 hectares	
• Local parks	4.64 hectares	
• Conservation	0.4223 hectares	
Estimated percentage of natural area	Nil	N/A



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FIGURES

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2. Local Location.
3. Context Plan.
4. Site Plan.
5. Town Planning Scheme Zoning.
6. Public Open Space Plan.

TECHNICAL APPENDICES

Appendix Number	Document Title	Nature of Document	Referral Agency Approval	Approval status and modifications
1.	Certificate of Title Lot 15 and 17 Brand Highway, Rudds Gully	Certificate of Title	N / A	
2.	Transcore Traffic Assessment Report	Traffic	City of Greater Geraldton and Main Roads Western Australia	
3.	DVC Assessment of Intersection Requirement for Proposed Structure Plan.	Traffic and Intersection Assessment	City of Greater Geraldton and Main Roads Western Australia	
4.	CID Local Water Management Strategy	Local Water Management Strategy	City of Greater Geraldton and Department of Water	
5.	CID Engineering Servicing Report	Infrastructure Servicing	Western Power, Water Corporation and City of Greater Geraldton	





Part One

IMPLEMENTATION



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1. Structure Plan Area

This LSP shall apply to Lot 15 and Lot 17 Brand Highway, Rudds Gully, being the land contained within the inner edge of the line denoting the LSP boundary on the LSP map (Plan 1).

2. Operation

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

3. Staging

It is expected that the staging will follow the Catchment Plan Areas specified within the Local Water Management Strategy (LWMS).

4. Subdivision and Development Requirements

4.1 Land Use Zones and Reserves

The LSP Map (Plan 1) outlines land use, zones and reserves applicable within the LSP area. The LSP designates zones and reserves to the proposed development, as shown on the LSP Map (Plan 1). The intention of zones and reserves and land use permissibility within the LSP area shall be in accordance with the corresponding zone or reserve under the Scheme.

4.2 Hazard and Separation Areas

4.2.1 Bushfire Prone Areas

Any land falling within 100 metres of a bushfire hazard identified in the Bushfire Hazard Level Assessment is designated as a Bushfire Prone Area for the purpose of the Building Code of Australia.

4.3 Interface with Land Adjoining the Structure Plan Area

4.3.1 Narngulu Industrial Area

Subdivision proposals for habitable purposes inside the modelled 38 dB contour should be required to be referred to the Department of Environmental Regulation to consider the acceptability of these uses and noise impacts.

4.4 Public Open Space

The provision of a minimum of 10 per cent public open space (POS) in accordance with the WAPC's Liveable Neighbourhoods is required. POS is to be provided generally in accordance with Plan 1 with an updated POS schedule is to be provided at the time of subdivision for determination by the WAPC, upon the advice of the City of Greater Geraldton.

4.5 Residential Density Targets

4.5.1 Dwelling Target

4.5.1.1 Objective

To provide for a minimum of 626 dwellings within the Structure Plan Area.

5. Local Development Plans

Local Development Plans may be prepared in accordance with *Planning and Development (Local Planning Schemes) Regulations (2015)* for any lots within a subdivision area, prior to the creation of said lots. A Local Development Plan is required for any lot that:

- a) Where land immediately adjoins public open space;
- b) Where land has a Residential Density Code of R30;
- c) Where lots abut Brand Highway.

6. Additional Information

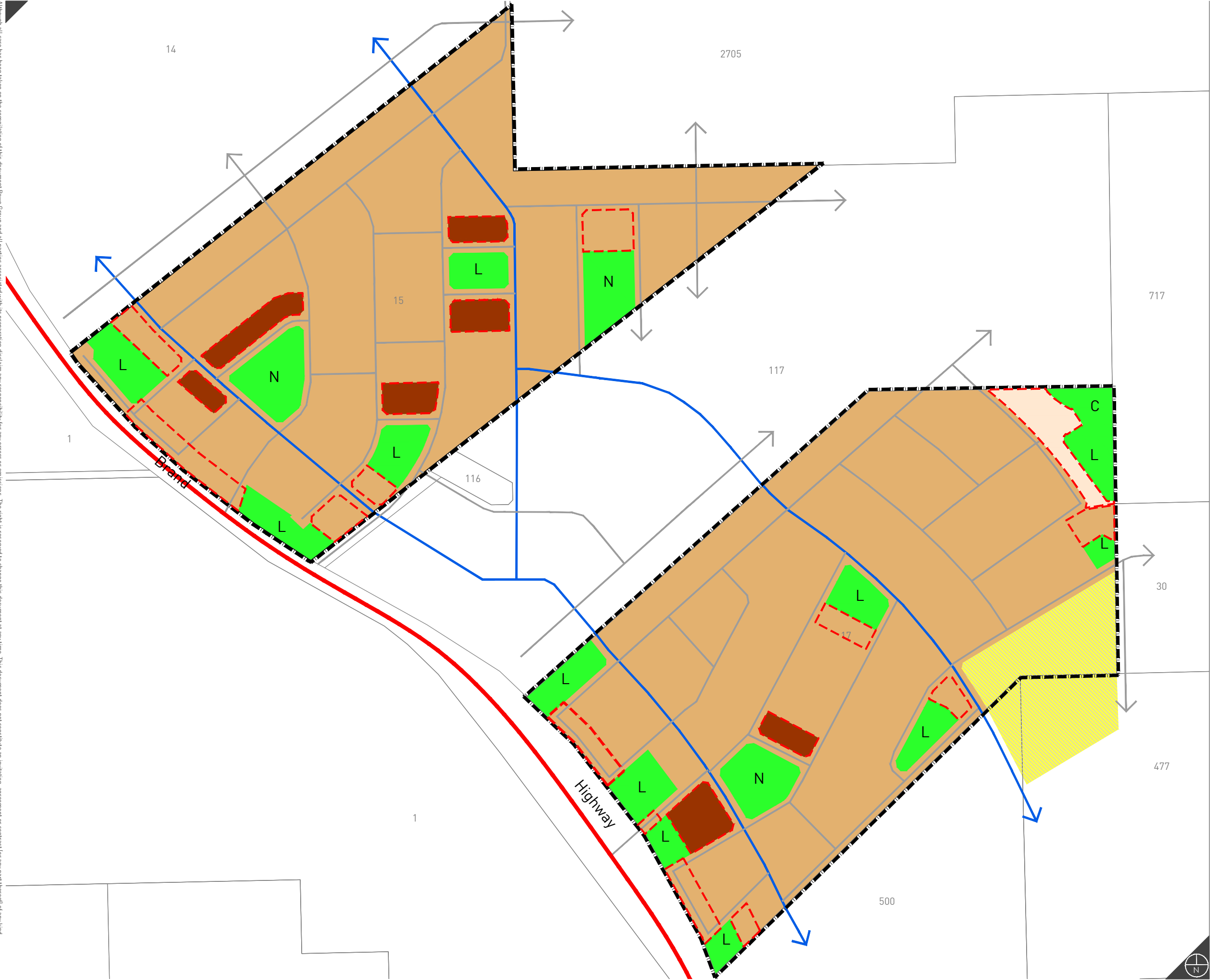
The following additional information is required at the subdivision and stage.

Additional Information	Approval Stage	Consultation Required
Transport Noise Assessment	Subdivision	City of Greater Geraldton
BAL Assessment.	Subdivision	City of Greater Geraldton and Department of Fire and Emergency Services.
Traffic Report	Prior to any subdivision application being lodged in excess of 4 years from the operation date of the structure plan an updated Traffic Report shall be prepared. Thereafter, any further subdivision application shall be accompanied by a Traffic Report not greater than 4 years old.	City of Greater Geraldton
Urban Water Management Plan	An Urban Water Management Plan, inclusive of the following shall be required as a condition of subdivision approval: ▲ Detailed permeability testing undertaken below the design invert depth of the basin(s) to demonstrate infiltration potential; and ▲ Full drainage calculations for swales, kerb/pipe/pit and basin network detailing: ▲ Sizing and methodology and basins (s) detail ▲ Hydrology, including catchments, runoff coefficients, intensities and times of concentration.	City of Greater Geraldton and Department of Water



	Hydraulic calculations, including Hydraulic Grade Line (HGL) design long-sections to demonstrate design immunities	
Public Open Space Landscape and Management Plan	Subdivision	City of Greater Geraldton

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Planning Design Delivery



- RESIDENTIAL**
- Residential - Low Density (R10)
 - Residential - Low Density (R20)
 - Residential - Medium Density (R30)
- PUBLIC PURPOSE**
- PS Educational/Institutional
 - PS Primary School
- PARKS, RECREATION & CONSERVATION**
- Public Open Space
 - N Neighbourhood
 - L Local
- TRANSPORT**
- Primary Distributor Road
 - Neighbourhood Connector
 - Access Street
- OTHER**
- Structure Plan Boundary
 - Local Development Plan Areas

0 125 250 Metres

REVISIONS

Rev	Date	Drawn
J	2015.11.30	M. Sullivan
K	2016.11.24	M. Sullivan
L	2017.01.25	M. Sullivan
M	2017.03.23	M. Sullivan



w: www.rowegroup.com.au
e: info@rowegroup.com.au
p: 08 9221 1991

Date Drawn: 2014-02-06
Job Ref: 8033
Scale: 1:5000 @ A3
Client: Aquila Resources
Designer: R. Cumming
Drawn: M. Winfield
Projection: MGA50
Plan ID: 8033-LSP-01-M
Cadastral provided by Landgate

Rudds Gully Local Structure Plan

N:\TOWN PLANNING\8000-8999\8033\DRAWING\A-CAD\8033_LSP01M_20170323_RUDDSGULLY LSP.DWG
Matt Sullivan 23 March 2017

Plan 1



Part Two

EXPLANATORY SECTION



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Planning Background

1.1 Introduction and Purpose

This LSP has been prepared on behalf of Australian Mineral Investors Pty Ltd.

The purpose of this LSP is to facilitate development of Lots 15 and 17 for residential purposes while achieving a seamless integration with the adjacent development. The LSP has been prepared in accordance with the Scheme and the Western Australian Planning WAPC's Liveable Neighbourhoods. As part of the process, consultation has been conducted with the City and the relevant government authorities/agencies.

The objectives of the LSP are to:

- ▲ Provide a statutory framework to guide the use, subdivision and development of the land to create a high quality liveable urban precinct.
- ▲ Retain the general landform and natural features of the site, as far as practicable, through the designation of appropriate land uses, the design of the road network and consideration of the future built form.
- ▲ Provide a range of lot products and sizes to facilitate the creation of a mix of housing typologies and range of affordability to cater for a varied demographic.
- ▲ Encourage the use of pedestrian and cyclist networks.

1.2 Land Description

1.2.1 Location

The subject land is located approximately 8 kilometres south of the Geraldton CBD on the east side of the Brand Highway. The subject land has frontage to the Brand Highway and is approximately 2 kilometres from the coast. Lot 15 also has frontage along the southern boundary to Morwong Road, being a gravel road intersecting with the Brand Highway.

Refer Figure 1 - Regional Location and Figure 2 - Local Location.

1.2.2 Area and Land Use

The subject land comprises of two separate lots which are currently cleared, fenced and pastured with no substantial improvements erected on either site. Lot 15 has a total area of approximately 31.526ha and Lot 17 has a total area of approximately 35.570ha.

A context plan illustrating the LSP relationship with adjoining landholdings is provided in Figure 3.

1.2.3 Legal Description and Ownership

The LSP are comprises two land parcels, being:

- ▲ Lot 15 on Plan 10118 as described on Certificate of Title Volume 1664 Folio 886. The land is owned in share as tenants in common by Australian Mineral Investors Pty Ltd (4379/5000 share), Omega Management Services Pty Ltd (44/5000 share) and Milvia Adriana Poli (577/5000 share).

- ▲ Lot 17 on Plan 10118 as described on Certificate of Title Volume 1840 Folio 527. The land is owned in share as tenants in common by Australian Mineral Investors Pty. Ltd (99/100 share) and Milvia Adriana Poli (1/100 share).

Refer Figure 4 – Site Plan and Appendix ‘1’ for Certificate of Titles.

1.3 Planning Framework

1.3.1 Zoning and Reservations

1.3.1.1 City of Greater Geraldton Local Planning Scheme No. 1

Local Planning Scheme No.1 (LPS1) came into effect in December 2015. The subject land is zoned “Urban Development” under LPS1.

The objectives of the “Urban Development” zone under LPS1 are as follows:

- (a) *Identify areas that require comprehensive planning in order to provide for the coordination of subdivision, land use and development.*
- (b) *Provide a basis for more detailed structure planning in accordance with the provisions of this Scheme.*

In accordance with Clause 3.13.2 of LPS1 the City is not to consider recommending subdivision or approve development of land unless a structure plan has been prepared and endorse pursuant to Part 4 of the deemed provisions of the Planning and Development (Local Planning Schemes) Regulations 2015.

The LSP is prepared to satisfy Clause 3.13.2 of LPS1.

Refer Figure 5 – Scheme Zoning.

1.3.2 Regional and Sub-Regional Structure Plan

1.3.2.1 Geraldton Region Plan

The Geraldton Region Plan 1999 encompasses portions of the City, the Shire of Irwin, Shire of Chapman Valley, Shire of Northampton and Shire of Mullewa, and was adopted by the WAPC in June 1999 to provide a framework for the future management, protection and co-ordination of regional planning.

The Geraldton Region Plan identifies planning objectives and actions required to facilitate the achievement of these objectives. It aims to promote planning for a range of housing and encourages the protection and enhancement of the unique character of the region’s towns. At the time of issue, the Geraldton Region Plan noted that there is an adequate supply of land available to meet the anticipated demand for housing, community purposes and other land uses.

The Geraldton Region Plan incorporates the Greater Geraldton Structure Plan and identifies the general Rudds Gully locality as Future Urban. The adoption of this SP will fulfil these objectives.

1.3.2.2 Greater Geraldton Structure Plan

The Greater Geraldton Structure Plan 2011 (GGSP) is the focus of the commercial and administrative activity for the Mid West region and provides a framework for coordinated management and growth of the Geraldton regional centre. The objectives of this Plan are to identify:

- ▲ The extent and location of urban land;

- ▲ The extent and location of regional open space;
- ▲ Future transport networks and infrastructure;
- ▲ Future infrastructure and service corridors; and
- ▲ Location of regional activity centres including employment areas, industrial areas, and regional community facilities.

The GGSP proposed to consolidate a number of land use categories, predominantly urban and special residential, from the previous 1999 Structure Plan. The urban category includes some recreational land uses, community purpose and some commercial, to cater for the rising housing demand in Greater Geraldton in the immediate-term.

The GGSP has identified 1,700 hectares of future urban areas to guide the direction of long term urban expansion. The extremities of the northern and southern corridors and the eastern extension of Woorree and Moresby form the bulk of land identified as future urban.

The linear structure of Geraldton will be reinforced with a future rapid public transport corridor. This will provide direct access for the subject land to the Geraldton CBD and beyond.

The GGSP classifies the subject land as urban, which is consistent with the “Urban Development” zoning in the Scheme. The subject land is located immediately adjacent to the east of the Development Investigation Area 11 - Rudds Gully, currently zoned Rural, where future land use is yet to be identified. Future land uses require compatibility with future industrial, service commercial and urban areas.

Under the GGSP the Brand Highway will be retained as a District Distributor Road. It is anticipated that there will be a future by-pass road south of Rudds Gully Road and along the western portion of the Narngulu Industrial area. This realignment is shown as a Primary Distributor Road.

1.3.2.3 Rudds Gully Local Structure Plan

The Rudds Gully Local Structure Plan relates to the area bound by Brand Highway and Verita Road to the west, Rudds Gully Road to the south, the future highway realignment to the east and the Narngulu Industrial buffer to the north.

The subject land originally formed part of the Rudds Gully Local Structure Plan which identified residential and future residential areas, indicative commercial, mixed use and Public Open Space areas. The Rudds Gully Local Structure Plan was endorsed by the (former) Shire of Greenough however was never formally adopted by the WAPC.

The WAPC deferred consideration of the Rudds Gully Local Structure Plan. It is understood, that the WAPC was not satisfied with the level of detailed planning that had occurred and sought more detail on the location of community facilities, access to Brand Highway and broader road hierarchy and traffic management issues. To facilitate the assessment of these issues, the Rudds Gully Planning Workshop was undertaken in September 2006. Following this, the draft Greater Geraldton Structure Plan was released.

The Rudds Gully Planning Workshop participants included landowners and their representatives, land developers, planning consultants and government agencies. Issues explored during this process for Rudds Gully included:

- ▲ Extent of the developable area;
- ▲ Road layout;

- ▲ Number of road junctions onto Brand Highway;
- ▲ Contributions to Verita Road;
- ▲ Number and location of neighbourhood centres;
- ▲ Number and location of school sites;
- ▲ Public open space; and
- ▲ Staging.

Additionally, issues to resolve comprised the extent of urban development in respect of the industrial buffer, density, and connectivity to adjoining land, construction of Verita Road, open space and commercial and community facilities.

General planning issues to consider:

- ▲ The importance of the Narngulu Industrial Estate and the need to protect its continued operation;
- ▲ The need to reassess the potential impacts for potential urban land in Rudds Gully; and
- ▲ Minimise the amount of residential land that could adversely be affected by emissions of the industrial estate.

Issues covered on traffic and access were discussed and included the function of Verita Road, the by-pass, the future Brand Highway and its ability to change its function and use, the east-west links to Narngulu, the northern section of Brand Highway and trucks on the highway.

A Structure Plan covering Lots 13, 14 and 21 was formally adopted by WAPC in August 2010. This proposes 38.77 ha of Residential land with a mixture of R20 and R30 density, 3.22 ha of Mixed Use and 7.09 of Public Open Space. Lot 14 adjoins the subject land along the northern boundary of Lot 15 and therefore it is important to join the subject LSP to this endorsed Structure Plan. The subject LSP is therefore a continuation of the residential development from Lot 14 through the continuation of the road network proposed in the Rudds Gully Structure Plan into the subject land as shown in the subject LSP.

1.3.2.4 Narngulu Industrial Area Strategic Land Use Directions

Located to the east is the Narngulu Industrial Area. In 2010 the Department of Planning completed the Narngulu Industrial Area Strategic Directions Land Use Study (2010). The Study recommended a 38 Db noise emission contour to limit the proximity of future sensitive uses, including residential, to the industrial area. The noise emission contour was based upon the assumption that the Estate would ultimately be developed for heavy industry. Notwithstanding the position of the Study, there is some likelihood that the noise emission contour is now not as relevant as previously considered. Consultants Herring Storer were recently commissioned by the City to review the requirement for the 38Db contour. The assessment concluded:

"While the suggestion of the 38 Db(A) contour buffer line, was in our opinion, reasonable at the time of its development in 2002 when the Narngulu Industrial Estate was expected to accommodate heavy industry, it has no basis under the current legislation and is no longer relevant should the Narngulu Industrial Estate be developed as a transport hub. As such, it is strongly suggested that the 38 Db(A) contour buffer line no longer be used by the relevant

authorities in land use planning and that the Narngulu Industrial Buffer, which is better aligned with EPA policy, be used instead.”

On the basis of the assessment and the likely future status of the Narngulu Industrial Estate as a host for general as opposed to heavy industry, consideration is also given to the buffer delineated in the Geraldton Region Plan. The subject land is located outside the buffer area. The Narngulu Industrial Estate does not impact on the proposed development.

1.3.3 Planning strategies

1.3.3.1 State Planning Strategy

The State Planning Strategy, adopted by WAPC in June 2014, is a holistic framework for regional and local planning until 2050.

The State Planning Strategy is the highest order planning instrument in Western Australia. The State Planning Strategy provides a strategic context for the future strategies and decision making in relation to land use and development within Western Australia.

The subject site is contained within the Central Sector under the Strategy.

The development of Lot 15 and Lot 17 Brand Highway, Rudds Gully for residential use will comply with the intent of the State Planning Strategy.

1.3.3.2 City of Greater Geraldton-Greenough Local Planning Strategy

The City's Local Planning Strategy (2015) (the Strategy) applies to the subject site. Under the Geraldton Urban Strategy Area Plan, contained within the Strategy, the subject site is identified for “Urban” purposes. A proposed rapid public transport route (indicative) abuts the western boundary of the subject site.

The eastern portion of the subject site is contained within an “obstacle limitation surface” limitation area associated with the Geraldton Airport.

The LSP is consistent with the Strategy as it facilitates the development of the subject site for urban purposes.

1.3.3.3 City of Greater Geraldton Residential Development Strategy

The City of Greater Geraldton Residential Development Strategy (‘Residential Strategy’) was endorsed by WAPC in August 2013 and was prepared in conjunction with the (see below) Commercial Activity Centre Strategy.

The Residential Strategy identifies preferred areas for residential growth that are capable of being serviced for three population growth scenarios. The Residential Strategy provides population growth scenarios and areas of development when the population reaches a certain level. Rudds Gully is identified within Priority 3 indicating the timing of the development in this area will be when the population is 50,000-70,000 residents. However, the Residential Strategy does note that the indicative staging is merely an indicator of preference and should not be used as sole justification. This LSP is considered to ensure orderly and proper planning of the subject land for development in the future.

The Residential Strategy also advises that “no additional land should be zoned for future residential development other than the areas shown on the Strategy Map (for the Geraldton Urban Area).” The Rudds Gully area including the subject land is already identified in the Strategy Map as “Future

Residential Area” and located within proximity to a proposed District Centre at the corner of Verita Road and the Brand Highway.

The Residential Strategy identifies that interfaces between different land uses need to be addressed in order to ensure conflict is minimised. The Structure Plan does not propose any land use which may potentially conflict with the predominant residential use proposed.

1.3.3.4 City of Greater Geraldton Commercial Activities Centres Strategy

The City of Greater Geraldton Commercial Activity Strategy (‘Activity Centre Strategy’) was endorsed by WAPC in August 2013 and was prepared in conjunction with the Residential Development Strategy.

The Activity Centre Strategy identifies preferred areas for growth in commercial activity by providing performance-based criteria for commercial centres. A future District Centre identified at South Gates is proposed within proximity to the subject land at the intersection of Verita Road and the Brand Highway although this activity centre is not proposed to be required/developed until 2021. Areas of “Mixed Use” development in this area are also identified within the Rudds Gully Structure Plan for Lots 13, 14 and 21 Verita Road. The proposed Structure Plan is a continuation of the residential pattern already shown in the Rudds Gully Structure Plan (Lots 13, 14 & 21 Verita Road).

1.3.4 Policies

1.3.4.1 Statement of Planning Policy 3 - Urban Growth and Settlement

Statement of Planning Policy 3 - Urban Growth and Settlement (SPP3) sets out the principles and considerations which apply to planning for urban growth and settlement.

In regard to regional development SPP3 refers to the requirement for urban areas to be identified in Region and Local Planning Strategies and should be facilitated by Structure Plans. The subject land is identified as future urban and the proposed LSP will ensure orderly and proper planning for the Rudds Gully area linking the subject land to the existing Rudd Gully Structure Plan already approved over adjoining lots.

SPP3 reinforces that the WAPC’s Liveable Neighbourhoods policy intentions that new urban areas will be comprehensively planned as sustainable communities which provide local facilities, services, public transport and job opportunities. SPP3 also reinforces the principles of Liveable Neighbourhoods which apply to the preparation and review of regional and district Structure Plans for new growth areas, local structure plans for new subdivisions and in planning for the revitalisation or redevelopment of existing areas.

Liveable Neighbourhood principles have been applied in the preparation of this LSP as shown in the description of the LSP in Part 1 section 5 of this report as well as Part 2 section 3 below.

1.3.4.2 State Planning Policy 3.1 - Residential Design Codes

State Planning Policy 3.1- Residential Design Codes 2015 (R-Codes) provides lot size and dimension requirements for the various densities proposed. The R-Codes will also guide development on an individual lot basis in terms of site coverage, dwelling location, frontage and other development requirements.

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

The aim of State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning (SPP5.4) is to protect people from unreasonable levels of transport noise, to protect



major transport corridors and freight operations from incompatible urban development and to facilitate the operation of an efficient freight network

A noise assessment of Brand Highway has not been undertaken to date. As such a Transport Noise Assessment shall be prepared in accordance with SPP5.4 to determine the potential affect of noise associated with Brand Highway.

1.3.4.4 State Planning Policy 4.1 State Industrial Buffer

State Planning Policy 4.1 State Industrial Buffer (SPP4.1) aims to provide a state wide approach to defining and securing buffer areas around industry, infrastructure and special use areas. In addition, SPP4.1 aims to protect industry, infrastructure and special use areas for the encroachment of incompatible land uses.

The matter of possible encroachment of residential development proposed by this LSP to the Narngula Industrial Area is addressed at Section 1.3.2.4.

1.3.4.4.1 State Planning Policy 3.7 – Planning in Bushfire Prone Area

The WAPC’s State Planning Policy 3.7 - Planning in Bushfire Prone Areas (SPP 3.7), provides a framework for considering bush fire hazard and mitigation requirements through the planning approvals process.

Areas of the LSP abutting Brand Highway are subject to being bushfire prone under Department of Fire and Emergency Services (DFES) Bushfire Prone Mapping. This is addressed in Section 2.4 below.

1.3.4.4.2 Liveable Neighbourhoods

Liveable Neighbourhoods (LN) represents the WAPC’s primary policy to guide the design and assessment of structure plans and subdivision for new urban development of residential communities in Western Australia. The underlying objective is to create quality neighbourhoods with a site responsive identity supportive of the local community that reduce dependency on private vehicles, and are more energy and land efficient. As such, LN supports an urban framework based on walkable mixed-use neighbourhoods with interconnected street patterns. LN achieves this through the consolidation of key policy aspects into a single ‘integrated planning and assessment policy’ to provide for a performance based approach to planning assessment.

LN does so according to a range of considerations including:

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

LN identifies a series of Objectives and Requirements for LSPs that, when met, demonstrate compliance with the overall outcomes sought by LN. These objectives and requirements relate to items such as road layout, relationship of housing to open space and schools, school location/distribution, POS layout and location and housing densities. The LSP satisfies the various objectives and requirements of LN and also ensures that more detailed proposals at subdivision stage are also capable of satisfying the relevant criteria.

Site Conditions and Constraints

2.1 Biodiversity and Natural Area Assets

The subject land has been extensively cleared but contains small pockets of acacia regrowth on some boundary margins. Refer to aerial photography of the subject land shown in Figure 4 Site Plan.

Due to the lack of natural vegetation and use of the subject land for agricultural purposes the land has not been identified in the Geraldton Natural Areas Bushland Condition Assessment undertaken by Ecoscape in 2011, and therefore has not been identified as containing any significant vegetation.

The City formally adopted the Geraldton Local Biodiversity Strategy in November 2013. As previously stated, the subject land is extensively cleared and therefore is not identified within the Geraldton Local Biodiversity Strategy as comprising significant vegetation. It is noted, however, that areas within the surrounding vicinity of the subject land have been identified as 'Area of Conservation Value', being possible areas for the retention and protection of biodiversity. Although these areas are not located within the proposed LSP area, the continuation of development outside of the proposed LSP area may have the potential to impact on these conservation values.

2.2 Landform and Soils

The subject land has a gradient that is moderate, with the majority between 2% and 4%. A prominent historic dune ridge transverses the subject land on a generally north west to south east trend. The site grades at its lowest point from 35 metres AHD adjacent the Brand Highway, to a height of 55 metres to the east.

This topography affords open views to the south west and coastal shoreline. To the south east, views are obtained of the rural and rural residential areas.

The subject site is located on Tamala Limestone and calcareous sands. Lot 15 is dominated by grey brown sands with well drained plain sands in the north eastern sector and a rock outcrop in the south. Approximately half of Lot 17 consists of grey brown sands and well drained plain sands in the north eastern sector. A limestone rock outcrop occurs in the south western sector of this lot.

As part of the Local Water Management Strategy (LWMS) associated with the LSP, the proponent has undertaken investigations detailing hydrological, geology and soil conditions.

General site evaluation and survey assessment reveals that the majority of Lot 15 grades in a south westerly direction towards Brand Highway with approximately 25% of the area grading to a depressed area in the east of the lot. The majority of Lot 17 grades towards Brand Highway in a westerly direction, with the rear of the lot grading in a south, south east direction.

The subject land is categorised to have extremely low probability of containing Acid Sulphate Soils. Given the low classification of the land no further action is required in this regard.

2.3 Groundwater and Surface Water

Preliminary Department of Water (DoW) groundwater bore data suggests separation to groundwater being more than 10m between the Average Annual Max Groundwater Level (AAMGL). This provides an opportunity for infiltration of stormwater in soakwells for minor events and infiltration basins within Public Open Space (POS) areas for major events.



The proposed development for Lots 15 and 17 will significantly increase the demand for water as there will be an increase in the number of residents. Water conservation management is therefore needed to make sure that use of water is minimised. The objectives for water conservation management are to minimise the net use of water by encouraging at-source surface recharge where possible using soakwells, vegetated retention basins, swales, retention of native trees within POS where possible to reduce demand for water during POS area establishment, use of non-potable groundwater for irrigation of POS areas, managing irrigation within POS areas to minimise losses to evaporation. The development will be connected to Water Corporation sewer and water reticulation.

To manage the stormwater runoff at the post development stage, a drainage system designed to manage minor and major events up to the 1 in 100 years ARI event, has been developed, and is based on maintaining existing hydrology by infiltrating surface water as close to the source as possible. The principle drainage system of the development will be based on the Better Urban Water Management (BUWM) guideline and subdivision development guidelines as directed by the City and the DoW. The principle design will also take into account the decision made by Main Roads WA, that stormwater collected within the lots cannot discharge onto Brand Highway.

The stormwater management system includes the following design concepts:

- ▲ Retain the post development stormwater runoff up to the 1 in 100 years ARI event, within the subdivision boundary; stormwater is conveyed to the POS drainage basins for infiltration/disposal.
- ▲ Runoff from each residential lot will be retained in soakwells for 1 in 1 year ARI event, one hour duration.
- ▲ A gravity piped system within the road reserve, which is sized to accommodate flow up to the 1 in 5 years ARI event and convey to POS retention basins.
- ▲ The proposed road reserve in conjunction with the 1 in 5 years ARI system is designed to convey up to the 1 in 100 years ARI events via overland flow towards infiltration basins located within POS Areas.
- ▲ Detention basins are sized to cater for the 1 in 100 years ARI event, have batter grades of 1 in 6, maximum water depth of 1,200mm, and shall empty within 48 hours.
- ▲ Minimum lot levels to be 300mm above the 1 in 100 years flood level.
- ▲ The detention basin areas are to be vegetated with local native species selected for their ability to take up nutrients prior to infiltration. A detailed list of species will be provided in the UWMP.

Pre-development monitoring of surface flows will not be required. A post development monitoring program will be required with activities pertaining to monitoring of nutrient, heavy metals and pesticides. Surface water flows shall be monitored at drainage controls (Basin inlets) on a quarterly basis and on the first flush. Groundwater monitoring of infiltration and irrigation bores should also be undertaken if applicable. Minimum trigger values have been set in the LWMS in accordance with the Healthy Rivers Action Plan (SRT, 2008).

Where subdivision is to be staged drainage infrastructure will be provided to meet the requirements of the relevant stage. Staging will be dependent on market demand and therefore subject to change. However, staging is expected to follow the Catchment Plan Areas specified within the LWMS.

Consultation with the City will occur at the subdivision stage to ensure that drainage requirements are



satisfied.

A UWMP containing a more detailed water management plans will be required to be submitted as a condition of subdivision. Areas such as detailed methodology for implementation of water conservation strategies, maintenance strategy, landscaping, licence to take water for irrigation, construction management, and implementation roles, responsibilities, funding, and maintenance arrangements will need to be investigated as part of the preparation of an UWMP.

2.4 Bushfire Hazard

A desktop search using the Department of Fire and Emergency Services bushfire prone mapping, small portions of the LSP land (adjacent to Brand Highway) is identified as being bushfire prone.

Under the provisions of Section 5 of Guidelines for Planning in Bushfire Prone Areas (December 2015) it is stated that a LSP is to be accompanied by a Bushfire Management Plan, which includes a Bushfire Hazard Level assessment or Bushfire Attack Level Contour Map. At this juncture a Bushfire Management Plan and Bushfire Hazard Level Assessment are being prepared to accompany the LSP.

2.5 Heritage

A desktop search using the Aboriginal Heritage Inquiry System on the Department of Aboriginal Affairs website revealed that there are no Aboriginal heritage sites located on the subject land. Similarly, a desktop search using the Places Database maintained by the Office of Heritage revealed that there are no sites of European heritage significance on the subject land.

A desktop search has also revealed that the LSP subject land is not included on the City's Municipal Inventory List, or on the list of State Heritage Places.

2.6 Other Land Use Constraints

A portion of the site is located within the 38dB contour identified by the Narngulu Industrial Area Strategic Land Use Directions 2010. With regard to development of potentially sensitive land uses within the 38dB contour the plan states:

"A conservative approach should be applied to the consideration of proposals in the 38 dB noise contour. Zoning and subdivision proposals for habitable purposes inside the modelled 38 dB contour should be required to be referred to the Environmental Protection Authority to consider the acceptability of these uses and noise impacts."

Land Use and Subdivision Requirements

3.1 Land Use

The LSP proposes only residential land use with associated POS and school sites. This is in accordance with the land use objectives of the subject sites under the Greenough Local Planning Strategy and Greater Geraldton Structure Plan.

3.2 Public Open space

The combined 67.09 ha site provides a total of 6.54 hectares of public open space for:

- ▲ Active and passive recreation pursuits;
- ▲ Amenity for medium density housing; and
- ▲ An oversupply of swale drainage and detention.

The POS Schedule is provided at Table 1 and Public Open Space Plan provided at Figure 6.

Table 1

Rudds Gully Local Structure Plan – Public Open Space Schedule		
Site Area (Local Structure Plan Boundary)		67.09 ha
Deductions		
Primary School	1.85 ha	
Dedicated Drainage	0.7910 ha	
Total	2.64 ha	
Gross Subdivisible Area		64.4 ha
POS @ 10%		6.4 ha
Public Open Space Contribution		
May comprise:		
- minimum 80% unrestricted public open space	5.12 ha	
- minimum 20% restricted public open space	1.28 ha	
Total Required POS		6.4 ha
Public Open Space Provision	Unrestricted POS	Restricted POS
Local Parks	3.663	
Neighbourhood Parks	1.9835	
Conservation		0.4233
Drainage Swales in Local Parks		0.3672
Drainage Swales in Neighbourhood Parks		0.1125
Total	5.6465 ha (8.8%)	0.902 ha (1.4%)
	6.5495 ha (10.2%)	



The nature of the sloping site and consequent velocity of stormwater drainage and the requirement to detain 1:100 year ARI within the site bounds, means a considerable area has been provided for drainage in the form of swales.

The scaled LSP shows the public open space areas are within 400m walking distance of a large proportion of the residential lots.

3.3 Residential

In accordance with LPS1, the LSP subject site is proposed to be developed for residential, public open space purposes, and a Primary School site. The majority of the land is proposed for standard residential development at densities of R20 to R30.

The location and distribution of public open space proposed was driven primarily in response to topography, drainage and equitable spatial distribution of open space with a bias towards creating aspect and amenity for smaller lots.

The rationale for the distribution of densities essentially reinforces the need to create a critical mass within proximity to public open space areas and neighbourhood connector roads.

3.3.1 Subdivisional Layout

The road network comprises a modified grid pattern where roads are primarily oriented north to south and some minor roads at east to west. At this stage the design philosophy creates a road pattern that facilitates the majority of single residential lots to maximise solar orientation with side boundaries running down slope.

Potential 300m² lots overlook areas of open space, the majority of which allow a high degree of solar access afforded by the front elevation facing north.

3.3.2 Residential Density Targets and Yield Forecast

Density targets for the development of the site have been pre-determined by market analysis, the proposed future rapid transit, open space placement and response to topography and views.

Most recently, Directions 2031 recommend that greenfields development achieve a minimum of 15 dwellings per urban zone hectare across the Perth and Peel regions. While this strategy applies directly to Perth and Peel Regions, it has some application but warrants adjustment for the local market conditions in Geraldton.

Liveable Neighbourhoods suggests that in new urban areas, densities should achieve 15 dwellings per urban-hectare and an average of 22 dwellings per site hectare, in accordance with:

- ▲ 12 to 20 dwellings per site hectare for standard lot layouts; and
- ▲ 20 to 30 dwellings per hectare for areas in 400m of a neighbourhood centre and in 250m of a main bus route.

The LSP provides for an average lot size of 700m² within the areas designed with a residential density code of R20. This provides for a predicted lot yield of 541 dwellings, however if the R20 coded area was developed in accordance with the R20 density code (450m² average lot size) approximately 844 lots could be created. That is, a maximum lot yield of 928 could be achieved if the land designated with a R20 density code is subdivided to the average R20 lot size. However, given the regional location of the land 700m² average lot size is proposed for R20 land.

Based on the R20 coded area being developed with a 700m² average lot size 13.2 dwellings per residential site hectare would be achieved.

Given the regional context of Geraldton, this is consistent with the approach of seeking 13.2 dwellings per urban-hectare and fulfils the intent of the Scheme to provide a range of choice of housing.

The LSP densities and estimated lot and dwelling yields are outlined in the Table 2. A small portion of larger lots are provided to the east of Lot 17 because of the steep ridge and 12 percent of lots are intended to be R30 lots.

Table 2.

Local Structure Plan Lots Size and Variety	
Low Density Lots	
Density code	R10
Minimum average lot size	1,000 m ²
Estimated lot yield	6
Standard Density Lots	
Density code	R20
Minimum average lot size	700 m ²
Estimated lot yield	541
Medium Density Lots	
Density code	R30
Minimum average lot size	300 m ²
Estimated lot yield	78
Total Estimated Lot Yield	625

Based upon the above-mentioned lot yields a residential population of approximately 1,625 persons is expected based on a lot yield of 625 lots.

3.3.3 Local Development Plans

Local Developments Plans (LDPs) will be required in the following circumstances:

- a) Where land immediately adjoins public open space;
- b) Where land has a Residential Density Code of R30;
- c) Where lots abut Brand Highway.

LDPs are required where land immediately adjoining POS to address the interface between the POS and proposed development. This is to ensure that a suitable interface is provided and that passive surveillance of the POS area is achieved.

Furthermore, LDPs are required for areas with a residential density code of R30 to address the City's concerns regarding more intensive residential development and built form outcomes.

Finally, LDPs will be required where lots abut the Brand Highway. These LDPs are to address potential noise impacts from the Highway.

3.4 Movement Networks

The movement network has been designed to provide a low-key connected street network that clearly distinguishes between connecting routes and local access roads and places, establishes good internal and external access for residents, maximises safety, encourages walking and cycling and supports the use of future public transport on Brand Highway.

The movement network has been designed to facilitate the creation of regular shaped lots, capable of accommodating standard residential dwellings, with direct access to a public street, with frontage to a local access place.

The movement network, lot layout and orientation maximises opportunities for passive surveillance of the public realm, particularly areas of public open space.

The LSP proposes a road network that results in the creation of standard street blocks that are robust and adaptable to accommodate a variety of lot sizes.

Presently the Brand Highway is a state highway, with Verita Road (north) a district distributor road. A new highway bypass is proposed to the east of the site.

Transcore have prepared a Traffic Assessment Report to support the LSP and Donald Veal Consultants have undertaken an Assessment of Intersection Requirement for the LSP. These reports are contained within Appendices '2' and '3' respectively.

3.4.1 Traffic Assessment

Transcore's Traffic Assessment Report investigated the impact of the traffic generated from the proposed residential developments on Lots 15 and 17 in support of the LSP. The assessment includes investigation of the suitability and operation of the proposed external access system, including any traffic management measures that may be required to the adjacent road network as a result of the proposed development. For the purpose of robustness of the assessment traffic impact from the adjoining Lot 117 (formally Lot 16) was also included in the assessment.

Relevant information with respect to the planning and the future status of the Brand Highway Bypass (Geraldton North South Highway) is contained within Appendix 2.

Accordingly, based on the 2010 draft Structure Plan prepared for Lots 15 and 17 it was established that the area would ultimately generate approximately 4,800 daily vehicular trips.

In respect to intersection locations with Brand Highway, initial advice from Main Roads WA was provided based on the Transcore Traffic Assessment Report. Main Roads WA raised concerns regarding sight line distances for the proposed vehicle access to Brand Highway as part of the LSP.

As a result of the above, Donald Veal Consultants were appointed to assess the intersection requirements at Brand Highway for the LSP. The outcomes of the assessment are contained within Appendix '3' along with further advice from Main Roads WA in respect to the preferred and accepted intersection locations.

3.4.2 Street Network Hierarchy

The projected traffic volumes on the internal LSP road network were used to determine the road



hierarchy and the required road reservations within the LSP area. The hierarchy was based on the forecast traffic volumes for the ultimate scenario. Consideration was also given to the proposed road hierarchy in order to maintain road consistency throughout the development areas.

The analysis shows that, in accordance with the WAPC Liveable Neighbourhoods document, all internal subdivision roads can be classified either as Neighbourhood Connector B or Access Streets C with typical road reservations of 19.4m and 16m, respectively.

The typical road reserve for Neighbourhood Connector B entails an 11.2m wide road pavement, 2.1m on-street parking lanes and 5m wide verges on both sides. These streets are designed to carry up to 3,000vpd. Final cross section details are to be determined during the subdivision design stage. The cross section of the two Neighbourhood Connector roads on the approach to respective Lot 15 and Lot 17 Brand Highway access intersections will be dictated by the requirements of these intersections.

The typical road reserve for Access Street C entails a 6m wide road pavement with the 5m wide verges on both sides. The maximum desirable traffic volume for this type of streets is 1,000vpd.

The low speed environment of Access Streets C enables on-street cycling. Staggered parking on both sides of these streets can be used as part of the speed control measure.

3.4.3 Traffic Management

Preliminary assessment of the internal Lot 15 and Lot 17 LSP road network was undertaken with consideration of the projected traffic volumes, the length of the roads and the intersection treatments.

The internal LSP road network provides for satisfactory permeability and efficient distribution of traffic within the LSP area and provides good interface for ultimate integration of Lots 116 and 117. The following improvements to the internal LSP road network are proposed at subdivision design stage to further improve traffic operations and safety:

- ▲ At detailed design it is proposed to apply suitable intersection treatment to all the proposed four-way intersections to delineate priority and improve safety. Such treatments include intersection thresholds and roundabouts.
- ▲ Delineation through the 90-degree bends should be provided to avoid undesirable and hazardous corner-cutting movements. Ideally, the delineation through the bends should be reinforced with the adequately designed median islands.
- ▲ Provision of speed-controlled features should be considered within the long, straight sections of internal roads of the LSP area and in particular in the vicinity of the proposed school site.
- ▲ Ensure safe movement of the service and emergency vehicles throughout the LSP area is tested by application of appropriate design vehicle movement assessment.

3.4.4 Pedestrian and Cyclist Network

It is proposed that a continuous shared path is provided along the two Neighbourhood Connector roads extending north south through the LSP area with east west connection within Lot 17. A shared path around the school perimeter is also proposed.

Urbanization of Rudds Gully locality would ultimately warrant construction of a principal shared path along one side of Brand Highway and the provision of shared path connections to the Brand Highway



access intersections are also proposed to allow for future interface of internal path system with the external Principal Shared Path.

Given the above, a 2.5m width shared path will be required for the frontage of the lots to Brand Highway to meet the future needs of the community as required by the City.

3.5 Water Management

A Local Water Management Strategy (LWMS) is required to support the LSP.

CID Consulting engineering consultants have prepared the LWMS (refer to Appendix '4'). The LWMS is based on Better Urban Water Management (DPI, 2008) City's, and DoW requirements. Key elements addressed in the LWMS include: stormwater management, groundwater management, water quality management, vegetation and POS management, subdivision management, monitoring and implementation.

3.5.1 Objectives

The main objectives of the LWMS and subsequent UWMP include the following:

- ▲ Maintain the surface water and groundwater quality and quantity within the development areas to predevelopment conditions.
- ▲ Maintain or improve surface and groundwater quality at or above pre-development levels.
- ▲ Manage and infiltrate catchment runoff up to 1 in 100 years ARI events within the development area.
- ▲ Prevent adverse impacts to the natural environment that may be sensitive to changes in the natural hydrological cycle (Liveable Neighbourhoods).
- ▲ Minimize the public risk of injury or loss of life by protecting the built environment from flooding.
- ▲ Ensure that the best practice in stormwater management is delivered through planning and the development of high quality areas that are consistent with sustainability and ensuring that the long term viability of the stormwater management system is maintained.

3.5.2 Water management

The proposed development for Lots 15 and 17 will significantly increase the demand for water as there will be an increase in the number of residents. Water conservation management is therefore needed to make sure that use of water is minimized. The objectives for water conservation management are to minimise the net use of water by encouraging at-source surface recharge where possible using soakwells, vegetated retention basins, swales, retention of native trees within POS where possible to reduce demand for water during POS area establishment, use of non-potable groundwater for irrigation of POS areas, managing irrigation within POS areas to minimise losses to evaporation. The development will be connected to Water Corporation sewer and water reticulation.

To manage the stormwater runoff at the post development stage, a drainage system designed to manage minor and major events up to the 1 in 100 years ARI event, has been developed, and is based on maintaining existing hydrology by infiltrating surface water as close to the source as possible. The principle drainage system of the development will be based on the Better Urban Water Management (BUWM) guideline and subdivision development guidelines as directed by the City and the DoW. The

principle design will also take into account the decision made by Main Roads WA, that stormwater collected within the lots cannot discharge onto Brand Highway.

The stormwater management system includes the following design concepts:

- ▲ Retain the post development stormwater runoff up to the 1 in 100 years ARI event, within the subdivision boundary; stormwater is conveyed to the POS drainage basins for infiltration/disposal.
- ▲ Runoff from each residential lot will be retained in soakwells for 1 in 1 year ARI event, one hour duration.
- ▲ A gravity piped system within the road reserve, which is sized to accommodate flow up to the 1 in 5 years ARI event and convey to POS retention basins.
- ▲ The proposed road reserve in conjunction with the 1 in 5 years ARI system is designed to convey up to the 1 in 100 years ARI events via overland flow towards infiltration basins located within POS Areas.
- ▲ Detention basins are sized to cater for the 1 in 100 years ARI event, have batter grades of 1 in 6, maximum water depth of 1,200mm and shall empty within 48 hours.
- ▲ Minimum lot levels to be 300mm above the 1 in 100 years flood level.
- ▲ The detention basin areas are to be vegetated with local native species selected for their ability to take up nutrients prior to infiltration. A detailed list of species will be provided in the UWMP.

Pre-development monitoring of surface flows will not be required. A post development monitoring program will be required with activities pertaining to monitoring of nutrient, heavy metals and pesticides. Surface water flows shall be monitored at drainage controls (Basin inlets) on a quarterly basis and on the first flush. Groundwater monitoring of infiltration and irrigation bores should also be undertaken if applicable. Minimum trigger values have been set in the LWMS in accordance with the Healthy Rivers Action Plan (SRT, 2008).

A UWMP containing a more detailed water management plans will be required to be submitted as a condition of subdivision. Areas such as detailed methodology for implementation of water conservation strategies, maintenance strategy, landscaping, licence to take water for irrigation, construction management, and implementation roles, responsibilities, funding, and maintenance arrangements will need to be investigated.

3.5.3 Acid Sulphate Soils

General site evaluation and survey assessment reveals that the majority of Lot 15 grades in a south westerly direction towards Brand Highway with approximately 25% of the area grading to a depressed area in the east of the lot. The majority of Lot 17 grades towards Brand Highway in a westerly direction, with the rear of the lot grading in a south, south east direction. Desktop Geological conditions indicate soils should mainly be calcareous deep sands and sand that overlays Tamala limestone.

Lots 15 and 17 are categorised to have extremely low probability of containing Acid Sulphate Soils. Preliminary DoW groundwater bore data suggests separation to groundwater being more than 10m between the Average Annual Max Groundwater Level (AAMGL). This provides an opportunity for infiltration of stormwater in soakwells for minor events and infiltration basins within Public Open

Space (POS) areas for major events.

3.5.4 Conclusion

The LWMS proposes to maintain or improve the surface water and groundwater quality and quantity within the development area to predevelopment conditions, manage and infiltrate runoff up to 1 in 100 year event on site, prevent adverse impacts to the natural environment that may be sensitive to changes in the natural hydrological cycle, minimise the public risk of injury or loss of life by protecting the built environment from flooding and ensure that the best practice in stormwater management is delivered

3.6 Education Facilities

The LSP sets land aside for the provision of a government Primary School.

The WAPC Development Control Policy 2.4 School Sites (DC2.4) requires one Primary School site for between 1,500 and 1,800 housing units for government schools and one secondary school site for every four or five Primary Schools for government schools.

Liveable Neighbourhoods outlines that government Primary School sites are to be provided on a ratio of one school site per 1,500 housing units. On the basis that the development of the subject land equates to 30% of a whole catchment it is reasonable that the development contributes a proportional 1.7 hectare school site. The placement of the 3.5 hectare Primary School site is in accordance with former structure planning and rests on the flattest part of the landform in that locality.

In liaison with the DoE, it is evident that the timing for the Primary School in the locality will be somewhat distant and dependent upon occupancy of Primary Schools north of Rudds Gully at Tarcoola and Wandina.

In terms of school siting, the DoE's preferred placement is on level ground.

Accordingly, the Primary School site has been positioned on a site of least gradient, which coincidentally is distributed across the adjoining boundaries of three freehold properties.

3.7 Infrastructure Coordination, Servicing and Staging

CID Consultants assessed the engineering servicing requirements for the development of Lot 15 & 17 Brand Highway, Rudds Gully to support the LSP (Refer to Appendix '5').

The report identifies and assesses the engineering servicing and infrastructure requirements for the proposed development with the following key areas discussed:

- ▲ Site evaluation and bulk earthworks.
- ▲ Roadworks.
- ▲ Water and wastewater.
- ▲ Power, telecommunication and gas.
- ▲ Stormwater and groundwater management.
- ▲ Environmental issues such as Acid Sulphate Soils.



The utilities reporting has been compiled consultation with the Water Corporation, the City of Greater Geraldton, DoW, Western Power and other service authorities in relation to the servicing requirements for the site.

3.7.1 Power

Western Power has advised the existence of high voltage overhead power across properties. No underground infrastructure is located adjacent Lots 15 and 17. Early estimates indicate power supply could come from these existing HV lines, but would be subject to confirmation from network designers during the design planning stage.

3.7.2 Reticulated Water

Water supplies for Lot 15 will be provided by connecting a proposed water reticulation system to the 250 mm diameter AC water main running through the lot, and the water connection for Lot 17 will be provided by connecting a proposed water reticulation system to the 200P -12 pipe running along Brand Highway adjacent to Lot 17.

Interim water distribution can be derived from the Bootenal head tank atop the ridge of Lot 14.

3.7.3 Reticulated Sewer

The Water Corporation has made provision for a reticulated sewerage scheme as part of future planning for the area, indicating all sewerage shall discharge into the Greenough-on-sea wastewater treatment plant west of Brand Highway. The sewer reticulation system for Lot 15 and 17 will be constructed as a gravity system, with availability subject to timing and stage of Water Corporation Capital Works program.

West of the ridge a 150 mm main connects to the treatment plant. West of the Brand Highway this increases to a 225 mm main. East of the ridge a 150 mm main connects to Narngulu. It is understood connection to this service warrants pumping.

A headworks charge will apply to support an upgrade of the sewer treatment plant.

3.7.4 Telecommunication

Telecommunications are expected to be available for connection, but gas reticulation is not readily available.

04 Developer Contribution Arrangements

There are no developer contribution arrangements that apply to the structure plan.

05 Conclusion

The subject land is readily serviceable for residential development. Key aspects to be addressed during the detailed planning design phase will include the extent of retaining walls, Water Corporation timing for sewer reticulation upgrades, geotechnical conditions confirming suitability for on-site stormwater disposal and Western Power costs.