



STRUCTURE PLAN

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



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DOCUMENT CONTROL

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RECORD OF ENDORSEMENT

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

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

.....2 October 2018..... Date

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

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

..... Witness

2 October 2018

..... Date

2 Oct 2028

..... Date of Expiry



TABLE OF AMENDMENTS

AMENDMENT NO.	SUMMARY OF THE 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 anticipated indicative yield of 630 lots, based on an average proposed lot size of approximately 700m².

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 the Brand Highway and the future interconnecting local road network within the subject lots.

Much of the subject area and surrounding region has been extensively cleared for farming, with only remnant patches of native vegetation remaining. Generally, vegetation within the LSP area appears to be 'Completely Degraded'.

The Department of Education (DoE) has advised that although the expected number of Primary School students is low, it would 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.

STRUCTURE PLAN SUMMARY

ITEM	DATA		SECTION NUMBER REFERENCED IN PART 2 OF REPORT
Total area covered by the Structure Plan	67.1 hectares		1.2.2
Area of each land use proposed: Residential Primary School	<u>Area</u> 40.96 hectares 2 hectares	<u>Yield</u> 630 lots 1 lot	3.2 and 3.3.2
Total estimated lot yield	630		3.3.2
Estimated number of dwellings	630		3.3.2
Estimated residential site density	15 dwellings per site hectare		3.3.2
Estimated population	1,575 people (approx. 2.5 people per household)		3.3.2
Number of high schools	nil		3.6
Number of primary schools	1 primary school		3.6
Estimated commercial floor space	nil		N/A
Estimated area and percentage of public open space given over to: - Regional open space - District open space - Neighbourhood parks - Local parks - Conservation	 - Nil - Nil - 2.28 hectares, 3 parks - 5.15 hectares, 13 parks - 0.42 hectares, 1 park		3.2
Estimate percentage of natural area	nil		N/A

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

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1. CERTIFICATES OF TITLE
2. TRANSPORT IMPACT ASSESSMENT
3. TRANSPORT INTERSECTION ASSESSMENT
4. BUSHFIRE MANAGEMENT PLAN
5. ACOUSTIC ASSESSMENT
6. LOCAL WATER MANAGEMENT STRATEGY
7. ENGINEERING SERVICES REPORT

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1. LOT DETAILS
2. PUBLIC OPEN SPACE SCHEDULE
3. LOT SIZE AND VARIETY
4. ROAD HIERARCHY

TECHNICAL APPENDICES

ATTACHMENT NUMBER	DOCUMENT TITLE	NATURE OF DOCUMENT	REFERRAL/APPROVAL AGENCY	APPROVAL STATUS AND MODIFICATIONS
1	Certificate of Title Lot 15 and 17 Brand Highway, Rudds Gully	Certificate of Title	N / A	
2	Transcore Transport Impact Assessment Report	Traffic	City of Greater Geraldton and Main Roads Western Australia	
3	DVC Assessment of Intersection Requirements for Proposed Structure Plan	Traffic	City of Greater Geraldton and Main Roads Western Australia	
4	Strategen Bushfire Management Plan	Bushfire Management Plan	Department of Fire and Emergency Services, Department of Planning, Lands and Heritage, and City of Greater Geraldton	
5	Herring Storer Acoustic Assessment	Acoustic Assessment	City of Greater Geraldton and Main Roads Western Australia	
6	CID Local Water Management Strategy	Local Water Management Strategy	City of Greater Geraldton and Department of Water	
7	CID Engineering Servicing Report	Infrastructure and Servicing	Western Power, Water Corporation and City of Greater Geraldton	



PART ONE

IMPLEMENTATION



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1. STRUCTURE PLAN AREA

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

2. OPERATION

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

3. STAGING

Staging is to be determined with more detailed planning as part of the future subdivision of Lots 15 and 17.

4. SUBDIVISION & DEVELOPMENT REQUIREMENTS

4.1 LAND USE, ZONES AND RESERVES

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

4.2 HAZARDS 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.

A Notification on Title is required for those lots subject to a Bushfire Attack Level Rating of 12.5 or higher. The WAPC is recommended to impose a condition on the grant of subdivision approval to this affect.

Subdivision and development is required be undertaken in accordance with an approved Bushfire Management Plan.

4.2.2 NOISE MANAGEMENT

A Notification on Title is required for those lots subject to transport noise levels exceeding the noise target as per *State Planning Policy 5.4: Road and Rail Transport Noise and Freight Considerations in Land Use Planning*. The WAPC is recommended to impose a condition on the grant of subdivision approval to this affect.

Development is required be undertaken in accordance with an approved Noise Management Plan.



4.3 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.

4.4 RESIDENTIAL DENSITY TARGETS

4.4.1 DWELLING TARGET

Objective: To provide for a minimum of 600 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:

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

6. ADDITIONAL INFORMATION

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

ADDITIONAL INFORMATION	APPROVAL STAGE	CONSULTATION REQUIRED
Noise Management Plan	Subdivision	City of Greater Geraldton
Bushfire Assessment and revised Bushfire Management Plan	Subdivision	City of Greater Geraldton and Department of Fire and Emergency Services.
Transport Impact Assessment	Prior to any subdivision application being lodged in excess of 4 years from the operation date of the structure plan, an updated Transport Impact Assessment shall be prepared. Thereafter, any further subdivision application shall be accompanied by a Transport Impact Assessment not greater than 4 years old.	City of Greater Geraldton, Main Roads WA and WAPC
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	City of Greater Geraldton and Department of Water and Environmental Regulation

	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. - 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





LEGEND

SUBJECT SITE

- RESIDENTIAL - LOW DENSITY (R10)
- RESIDENTIAL - LOW DENSITY (R20)
- RESIDENTIAL - MEDIUM DENSITY (R30)

PUBLIC PURPOSE

- EDUCATIONAL/INSTITUTIONAL PS PRIMARY SCHOOL
- PARKS RECREATION AND CONSERVATION
- PUBLIC OPEN SPACE
- NEIGHBOURHOOD LOCAL CONSERVATION

TRANSPORT

- PRIMARY DISTRIBUTOR ROAD
- NEIGHBOURHOOD CONNECTOR A
- NEIGHBOURHOOD CONNECTOR B
- ACCESS STREET C
- OTHER

STRUCTURE PLAN BOUNDARY

LOCAL DEVELOPMENT PLAN AREAS

- N
- L
- C
- PS

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8033.LSP018.20180918.Rudds Gully(LSP) - DRAWN: WILLIAM CLEMENTS - DATE CREATED: 2018.09.18 - PROJECTION: MGA50 GD44 - CADASTRE: LANDgate - N/TOWN PLANNING/0000.89566020/K04717N04.CAD - WILLIAM CLEMENTS - 2018.09.18



PART TWO

EXPLANATORY SECTION



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1. PLANNING BACKGROUND

1.1 INTRODUCTION AND PURPOSE

This Local Structure Plan (LSP) has been prepared on behalf of Australian Mineral Investors Pty Ltd.

The purpose of this LSP is to facilitate the 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 City of Greater Geraldton Local Planning Scheme No. 1 (LPS 1) 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 eastern 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.

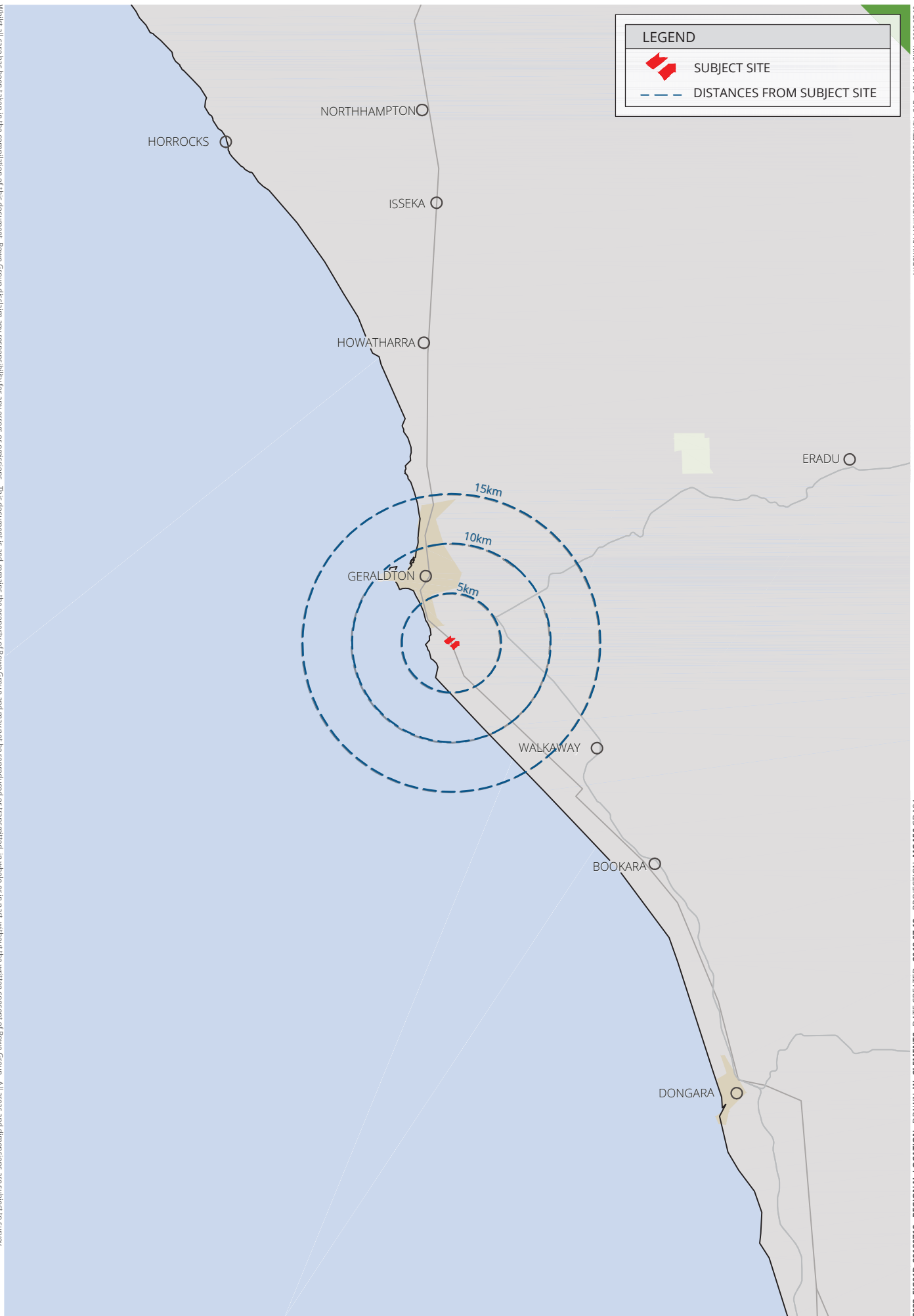
1.2.2 AREA AND LAND USE

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 31.5 hectares and Lot 17 has a total area of approximately 35.6 hectares.

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



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NTOWN PLANNING/8000-8999/8033/DRAFTING&CAD - ADAM GLASWIN - 2018.07.18

8033_FIG01D_20180718 - REGIONAL LOCATION - DRAWN: W. CLEMENTS - DATE CREATED: 2018.07.18 - PROJECTION: MGA50 GDA94



0 12,500 m
SCALE @ A4: 1:500,000



FIGURE 1
REGIONAL LOCATION PLAN



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N:\TOWN PLANNING\8000-8999\8033\DRAWING\GA-CAD - ADAM GLASKIN - 2018.07.18

8033_FIG02C_20180718_Rudds Gully (Local Location) · DRAWN: A. GLASKIN · DATE CREATED: 2018.07.18 · PROJECTION: MGA50 GDA94 ·



0 625 m
SCALE @ A4: 1:25,000

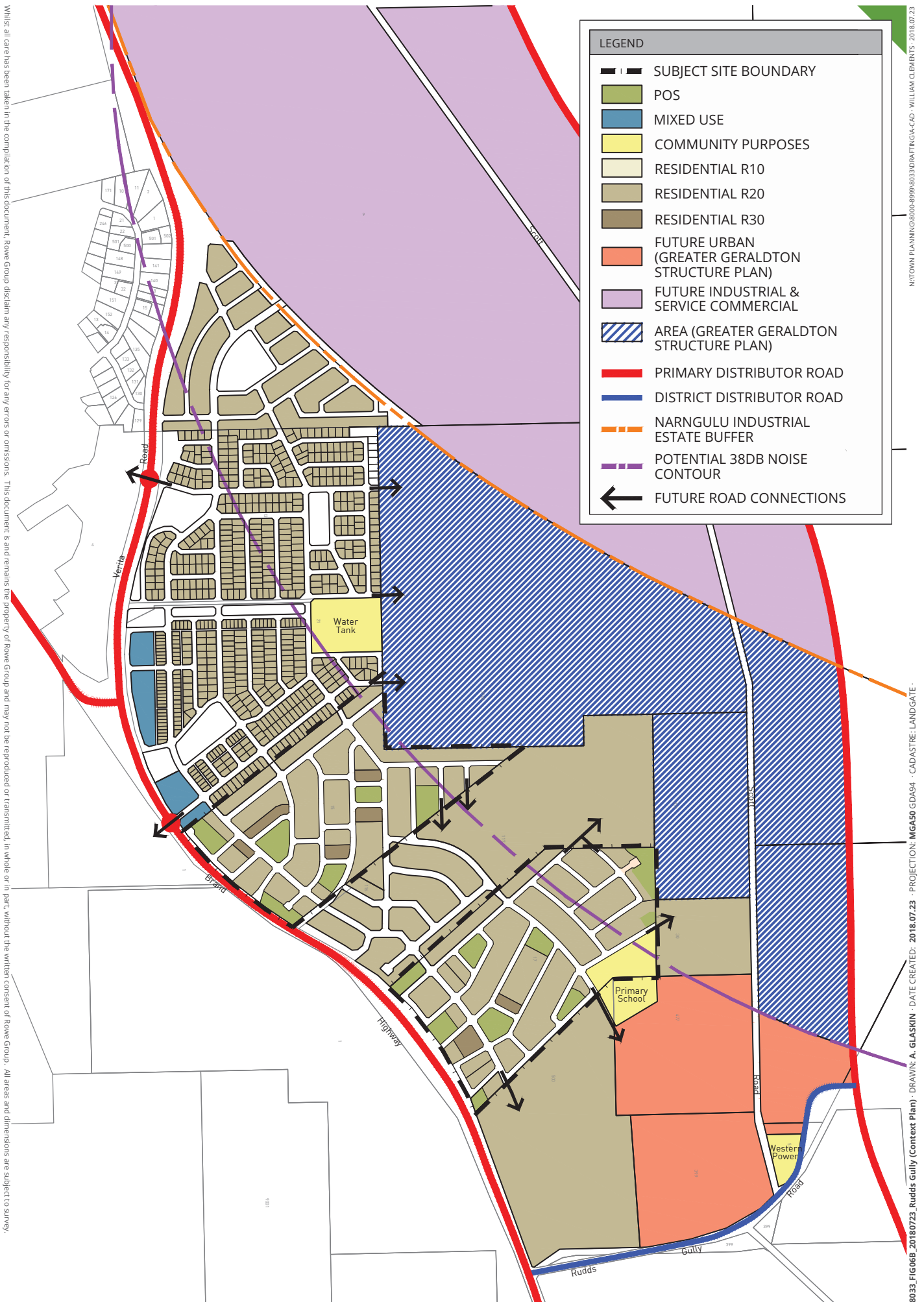


FIGURE 2
LOCAL LOCATION

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0 375 m
SCALE @ A4: 1:15,000



8033_FIG008_20180723_Rudds Gully (Context Plan) · DRAWN: A. GLASKIN · DATE CREATED: 2018.07.23 · PROJECTION: MGA50 GDA94 · CADASTRE: LANDGATE · NANTOWN PLANNING/8000-8998/8033/DRAFTING/CAO · WILLIAM CLEMENTS · 2018.07.23

FIGURE 3
RUDDS GULLY CONTEXT PLAN

1.2.3 LEGAL DESCRIPTION AND OWNERSHIP

The LSP area comprises two land parcels, being:

Table 1

LOT NUMBER	DEPOSITED PLAN	VOLUME / FOLIO	PROPRIETOR/S
15	10118	1664 / 886	Australian Mineral Investors Pty Ltd, Omega Management Services Pty Ltd and Milvia Adriana Poli
17	10118	1840 / 527	Australian Mineral Investors Pty Ltd and Milvia Adriana Poli

Refer Figure 4 - Site Plan.

Refer Attachment 1 – Certificates of Title.

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.

This LSP has therefore been prepared to satisfy Clause 3.13.2 of LPS1.

Refer Figure 5 – Local Planning Scheme No. 1 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 of Greater Geraldton, 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 the 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 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 LSP 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 the 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 proposes 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 from 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 under LPS 1. 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 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, 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 include:

- ▲ 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 proposed 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 facilitate a seamless connection from the proposed LSP for Lots 15 and 17 and the adjoining endorsed Structure Plan. The proposed 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 (Lots 15 and 17) as shown in the proposed LSP.

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 LOCAL PLANNING STRATEGY

The *City of Greater Geraldton 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 (refer section 1.3.3.4) 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 reaches 50,000-70,000 residents. However, the Residential Strategy notes 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 requires the interfaces between different land uses to be addressed in order to ensure conflict is minimised. The LSP 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 ACTIVITY 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 LSP is a continuation of the residential pattern already shown in the Rudds Gully Structure Plan (Lots 13, 14 & 21 Verita Road).

1.3.4 PLANNING POLICIES

1.3.4.1 STATE PLANNING POLICY NO. 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 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 Neighbourhoods 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 NO. 3.1 – RESIDENTIAL DESIGN CODES

State Planning Policy 3.1: Residential Design Codes (2015) (R-Codes) provides lot size and development 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 NO. 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

Therefore, an acoustic assessment has been prepared in support of the LSP, in accordance with SPP 5.4. A copy of the acoustic assessment is included at Attachment 5.

1.3.4.4 STATE PLANNING POLICY NO. 3.7 – PLANNING IN BUSHFIRE PRONE AREAS

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 of this report.

1.3.4.5 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 reduces 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.

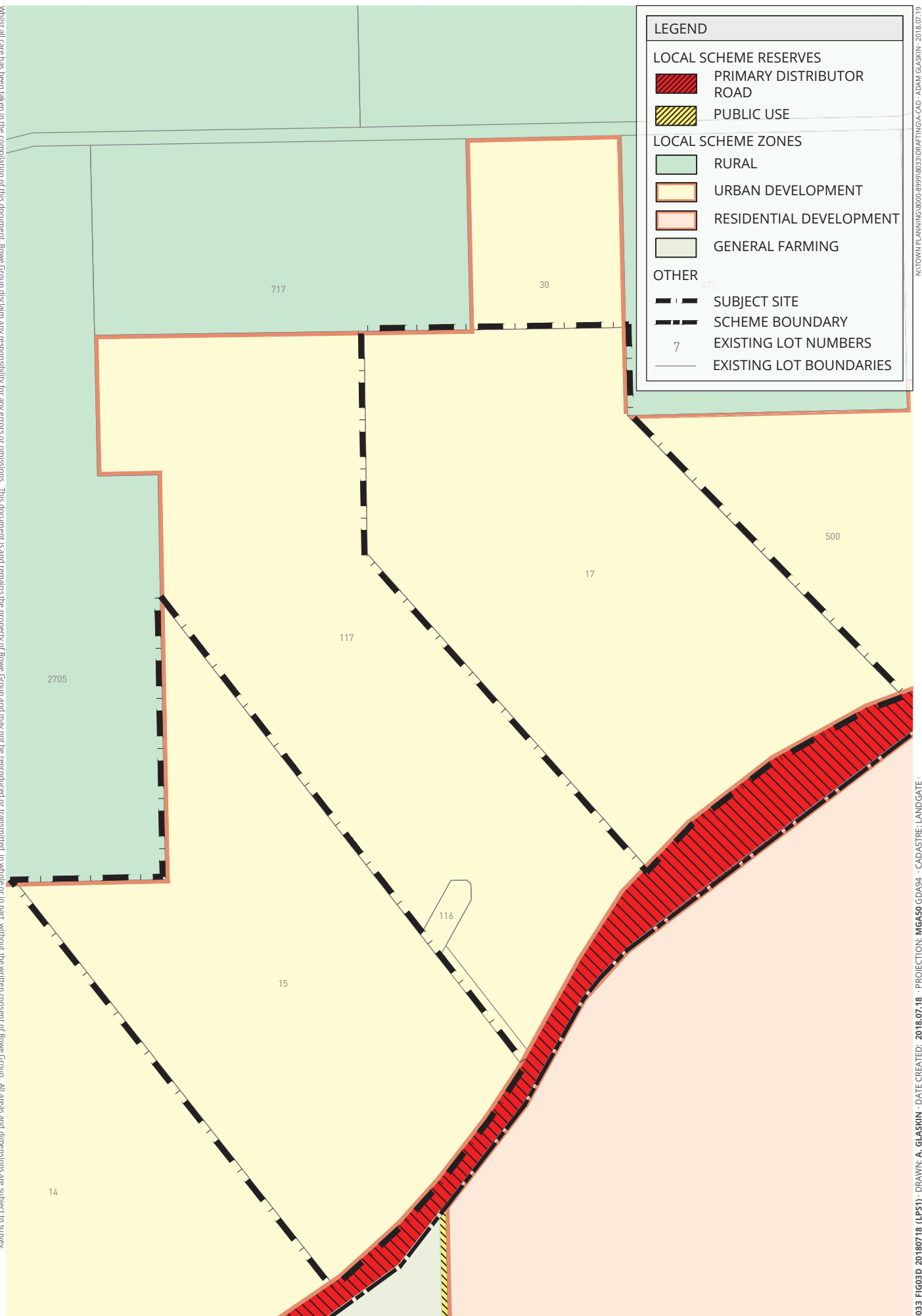
LN identifies a series of Objectives and Requirements for LSPs that, when met, demonstrate compliance with the overall outcomes sought by LN. These objectives and requirements relate to items such as road layout, relationship of housing to open space and schools, school location/distribution, POS layout 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.





FIGURE 4
SITE PLAN

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FIGURE 5
LOCAL PLANNING SCHEME NO. 1 ZONING

2. SITE CONDITIONS AND CONSTRAINTS

2.1 BIODIVERSITY AND NATURAL AREA ASSETS

According to the Department of Biodiversity, Conservation and Attractions data, the subject land does not contain any Declared Rare Flora, Specifically Protected Fauna or Threatened Ecological Communities. Part of Lot 17 is within a Priority Threatened Ecological Community buffer.

The land has been extensively cleared for agricultural uses (grazing and cropping) but contains a small pocket of remnant vegetation regrowth. The Geraldton Regional Flora and Vegetation Survey (WAPC, DoP 2010) identifies this as *Acacia rostellifera* shrubland. No detailed flora survey has been carried out over the subject land, however the vegetation appears to be in a degraded condition. Refer to Figure 4: Site Plan for an aerial photograph of the subject land.

The City formally adopted the *Geraldton Local Biodiversity Strategy* in October 2013. The Strategy did not identify any significant vegetation on the land. There are areas in close proximity to the LSP area that are identified as 'Areas for Conservation Value (for retention and protection)'. This includes the Local Ecological Link abutting Lot 17 on the eastern boundary.

2.2 LANDFORM AND SOILS

The subject land has a moderate gradient, with the majority of grades between 2% and 4%. A prominent historic dunal 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 AHD 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 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 10 metres 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 the 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 the 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) 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 MANAGEMENT

Part of the LSP is designated as bushfire prone under the Western Australian *Map of Bush Fire Prone Areas* (DFES 2018). On this basis, a Bushfire Management Plan (BMP) has been prepared for the LSP in accordance with State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and Australian Standard 3959 (AS 3959). The BMP is provided within Attachment 4 of this report.

The BMP identifies the site as comprising a predominantly 'moderate' fire risk, with small areas of 'extreme' risk associated with Class D scrub vegetation. Given the proposed urban development will result in the clearing of on-site and adjacent vegetation, the post-development vegetation extent will result in a significantly lower hazard risk than that currently mapped.

On the basis of the hazard assessment undertaken, the BMP considers the hazards within and adjacent to the LSP and the associated fire risk is readily manageable through standard management responses and compliance with acceptable solutions outlined in SPP 3.7 and AS 3959. These management measures will need to be factored in to subdivision design and detailed planning for the site.

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 NOISE MANAGEMENT

The Brand Highway adjoins the LSP on its south-western boundary. On this basis, in accordance with *State Planning Policy 5.4: Road and Rail Transport Noise and Freight Considerations in Land Use Planning* (SPP 5.4), an Acoustic Assessment has been prepared to inform the LSP, included as Attachment 5 of this report.

The acoustic modelling indicates that transport noise from the Brand Highway is likely to cause noise impacts above the prescribed criteria under SPP 5.4. This will be managed through Notifications on Certificates of Title, requiring dwellings to be constructed to minimum construction standards consistent with the 'deemed to comply' noise limit packages and/or quiet house design. These requirements are outlined within the Acoustic Assessment contained within Attachment 5 of this LSP.



3. LAND USE AND SUBDIVISION REQUIREMENTS

3.1 LAND USE

The LSP proposes only residential land use with associated public open space and a primary school site. This is in accordance with the land use objectives for the subject site under the City of Greater Geraldton Local Planning Strategy and Greater Geraldton Structure Plan.

3.2 PUBLIC OPEN SPACE

The combined 67.1 hectare site provides a total of 7.4 hectares of public open space for:

- ▲ Active and passive recreation pursuits;
- ▲ Amenity for residents; and
- ▲ Drainage and stormwater detention.

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

Table 2

RUDDS GULLY LOCAL STRUCTURE PLAN – PUBLIC OPEN SPACE SCHEDULE		
Site Area (Local Structure Plan Boundary)		67.1 ha
DEDUCTIONS		
Primary School	2.0 ha	
Dedicated Drainage (1 yr ARI)	0.8 ha	
Conservation	0.4 ha	
Total		3.2 ha
GROSS SUBDIVISIBLE AREA		63.9 ha
POS @ 10%		6.4 ha
PUBLIC OPEN SPACE CONTRIBUTION		
May comprise:		
- Minimum 80% unrestricted open space	5.1 ha	
- Maximum 20% restricted open space	1.3 ha	
Total Required Public Open Space		6.4 ha
PUBLIC OPEN SPACE PROVISION	UNRESTRICTED POS	RESTRICTED POS
Local Parks	4.18 ha	0.36ha
Neighbourhood Parks	2.05 ha	0.04 ha
Total	6.23 ha (9.8%)	0.4 ha (0.6%)

Table Note: Total areas for Restricted and Unrestricted POS exclude the dedicated drainage area (1yr ARI), which is included as a deduction to the site area. Only the 'creditable' areas under LN are included and so may not reflect the 'actual' land area provided at construction.

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FIGURE 6
PUBLIC OPEN SPACE

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 relatively 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 LPS 1, the LSP 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 SUBDIVISION 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.

The design facilitates lots with direct frontage to areas of public open space, providing for increased passive visual surveillance, as well as increased amenity for residents.

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 distribution and response to topography and views.

Most recently, Directions 2031 recommend that greenfields development achieve a minimum of 15 dwellings per urban zoned 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 new urban areas should achieve densities of 15 dwellings per urban-hectare and an average of 22 dwellings per residential 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 indicative average lot size of 700m² within the areas designated with a residential density code of R20. This provides for a predicted lot yield of approximately 630 dwellings, with an approximate density of 15 dwellings per residential site hectare.



Given the regional context of the site, this is considered consistent with the approach and objective of seeking 15 dwellings per urban-hectare and fulfils the intent of the Scheme to provide a range of housing choices.

The LSP densities and estimated lot and dwelling yields are outlined in Table 3 below. 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. These estimates are based on indicative concept planning only and are therefore subject to change.

Table 3

LOT SIZE AND VARIETY	
LOW DENSITY	
Density Code	R10
Minimum Average Lot Size	1,000m ²
Estimated Lot Yield	6
STANDARD DENSITY	
Density Code	R20
Minimum Average Lot Size	700m ²
Estimated Lot Yield	546
MEDIUM DENSITY	
Density Code	R30
Minimum Average Lot Size	300m ²
Estimated Lot Yield	78
TOTAL ESTIMATED LOT YIELD	630

Based on the above lot yields, a residential population of approximately 1,575 people is anticipated, based on approximately 2.5 people per household.

3.3.3 LOCAL DEVELOPMENT PLANS

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

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

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

Furthermore, LDPs are required for areas with a residential density code of R30 to address the complexities of 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, in accordance with the acoustic assessment undertaken for the site.

3.4 MOVEMENT NETWORKS

The following provides a summary of the proposed movement network. For further information, refer to the Transport Impact Assessment included at Attachment 2.

3.4.1 EXISTING ROAD NETWORK

The Brand Highway adjoins the LSP area on its south-western boundary. The Brand Highway is classified as a Primary Distributor Road under the Main Roads WA Functional Road Hierarchy. It provides a connection between Perth and Geraldton, with a total length of approximately 350 kilometres.

The Brand Highway is currently constructed as a two-lane undivided standard road, with an approximately 8 metre sealed single carriageway. There are passing lanes in both directions at regular intervals.

Existing traffic volumes for the Brand Highway (November 2016) indicates approximately 4,790 vehicles per day in the vicinity of the subject site. Approximately 13.2% of these are considered to be heavy vehicles.

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

3.4.2 PROPOSED ROAD NETWORK

The movement network has been designed to provide a legible and permeable 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 where possible, capable of accommodating standard residential dwellings, with direct access to a public street.

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.

The proposed road hierarchy and required road reservations have been determined based on projected traffic volumes for the LSP area. The hierarchy was based on the 'ultimate scenario', including the completion of development within the LSP area, as well as future residential development of adjoining Lots 116 and 117, and planned future residential development to the immediate north west of the LSP area.

Based on projected traffic volumes, the classification of roads within the LSP area comprise predominantly 'Access Street C' roads, with 'Neighbourhood Connector A and B' roads providing the primary connections through the site. The proposed road classifications are in accordance with Liveable Neighbourhoods requirements and cross-sections.

Table 4

ROAD CLASSIFICATION	INDICATIVE UPPER TRAFFIC VOLUME (VEHICLES PER DAY)	INDICATIVE ROAD RESERVE WIDTH
Neighbourhood Connector A	7,000 VPD	24.4 metres
Neighbourhood Connector B	3,000 VPD	19.4 metres
Access Street C	1,000 VPD	15.4 metres (14.2 metres where abutting POS)

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 a good interface for ultimate integration of adjoining 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 treatments 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-control 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 primary school site.
- ▲ Ensure safe movement of service and emergency vehicles throughout the LSP area is tested by application of appropriate design vehicle movement assessment.

3.4.4 PUBLIC TRANSPORT

The LSP area is not currently serviced by public transport. The nearest existing services are TransGeraldton bus routes 854 and 855, servicing the Wandina residential area, approximately 1.5 kilometres to the north of the LSP area. These routes connect Wandina to the Geraldton Town Centre.

Bus services within the LSP area are not considered feasible in the foreseeable future. However, should services be required in the future, the Neighbourhood Connector Roads will be sufficient to accommodate these.

3.4.5 PEDESTRIAN AND CYCLE NETWORK

In accordance with Liveable Neighbourhoods requirements, footpaths will be provided on at least one side of every street.

It is proposed that a continuous shared path is provided along the Neighbourhood Connector roads extending north south through the LSP area and an east west connection within Lot 17, and also providing connections to the Brand Highway. A shared path around the primary school perimeter is also proposed.

Apart from Neighbourhood Connectors, the projected daily traffic volumes for the access streets within the LSP area are expected to be well below 1,000 vehicles per day, and it is therefore considered appropriate for cyclists and vehicles to share the road environment, without the need for a shared use path or designated cycle path.

Urbanisation 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 Attachment 6). The LWMS is based on Better Urban Water Management (DPI, 2008), as well as the City and DWER's 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).
- ▲ Minimise the public risk of injury or loss of life by protecting the built environment from flooding.
- ▲ Ensure 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 the 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) subdivision and development guidelines as directed by the City and the DWER. The principle design will also take into account the decision made by Main Roads WA that stormwater collected within the lots cannot discharge onto the 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 are 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 indicate 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 DWER 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 aside land 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 2 hectare school site. The placement of the 3.8 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. Therefore, 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 and 17 Brand Highway, Rudds Gully to support the LSP (Refer to Attachment 7).

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, and
- ▲ Environmental issues such as Acid Sulphate Soils.

The utilities reporting has been compiled in consultation with the Water Corporation, the City of Greater Geraldton, DWER, 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 will 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 staging 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 TELECOMMUNICATIONS

Telecommunications are expected to be available for connection.

4. DEVELOPER CONTRIBUTION ARRANGEMENTS

There are no developer contribution arrangements that apply to the LSP area.