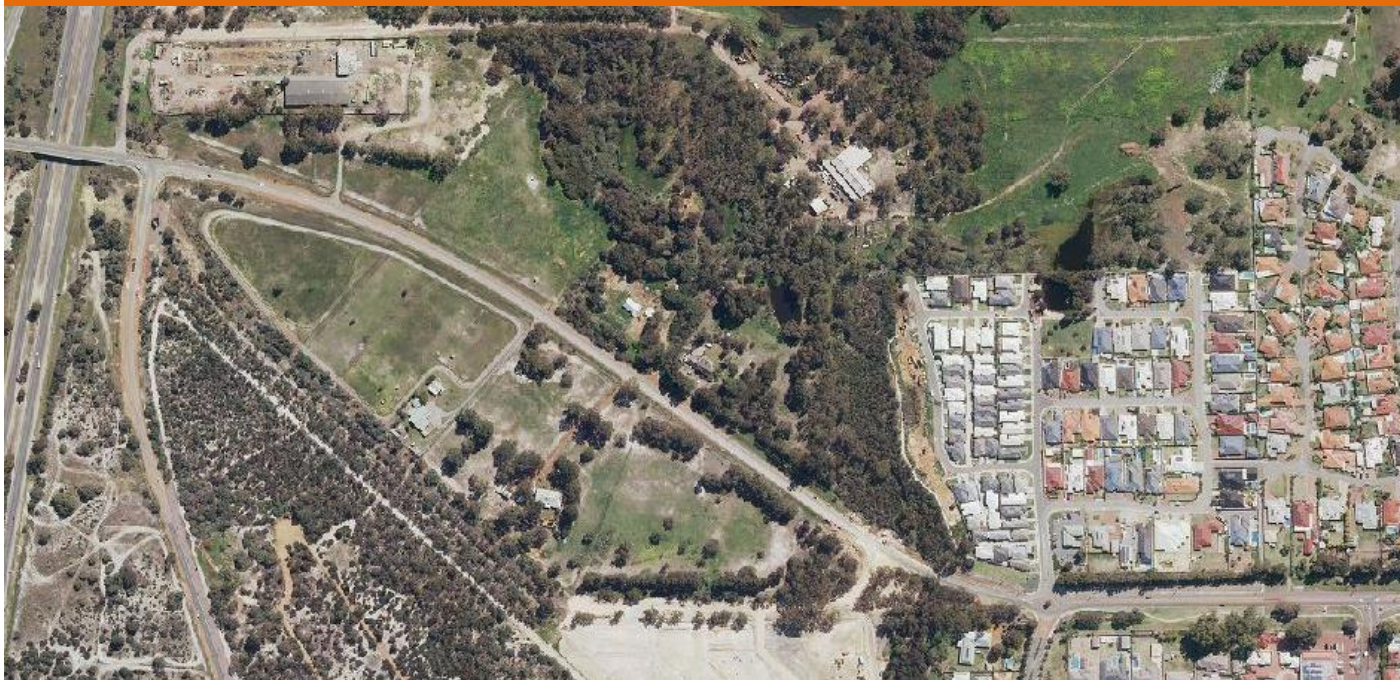


DYNAMIC PLANNING AND DEVELOPMENTS

Helena Valley – Local Structure Plan 76

Lot 252 (No. 480) Helena Valley Road, Helena Valley
Pt Lot 205 (No. 655) Helena Valley Road, Helena Valley



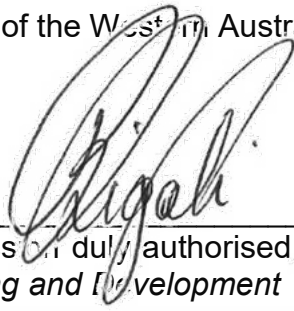
Prepared for
H and H Developments (WA) No. 2 Pty Ltd

Project No: 411
May 2021

This structure plan is prepared under the provisions of the Shire of Mundaring Local Planning Scheme No. 4 District Zoning Scheme.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: **02 JUNE 2021**

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

15 JUNE 2021

Date

02 JUNE 2031

Date of Expiry

TABLE OF AMENDMENTS

Amendment No.	Summary of the Amendment	Amendment Type	Date approved by WAPC

EXECUTIVE SUMMARY

The Helena Valley – Local Structure Plan 76 applies to 2 separate allotments comprising Pt Lot 205 (No. 655) – southern portion and Pt Lot 252 (No. 480) Helena Valley Road, Helena Valley. This LSP has been prepared for 6.03ha of land based on a detailed analysis of the relevant town planning, water management, acoustic, geotechnical, civil engineering as well as design development considerations.

The purpose of the LSP is to provide a framework for future development which is cognisant of site specific constraints (in particular acoustic implications arising from aircraft noise generated from Perth Airport), whilst responding to the site opportunities as well as the strategic vision for the locality as contained under the various State and Local level planning policies.

The proposed LSP presents an opportunity to capitalise on the existing statutory planning framework which is already zoned to allow detailed structure planning to occur. Simultaneously, the LSP caters for the retention as well as management of the various environmental attributes which characterise the subject locality. Such a focus has resulted in the LSP delivering 0.5465ha or 9.56% of unrestricted POS plus a further 0.0602ha comprised of restricted POS, bringing the total POS provision to 0.6067 ha or 10.61%.

An Indicative Development Plan prepared in association with various supplementary reports as part of the LSP further examines specific acoustic measures as well as servicing and built form considerations which are critical in delivering an appropriate development outcome which meets the principles of character, sense of place, dwelling typology, crime prevention through environmental design, vehicle and pedestrian movement.

Indicative design of the land indicates a yield of approximately 94 dwellings catering for approximately 253 new residents. The proposed residential density is a combination of R20 and R30 which is consistent with residential land east of the structure plan area. Land to the north and west is subject to separate future structure planning as well as Metropolitan Region Scheme amendment.

Environmental and Heritage considerations are applicable to the LSP, these comprising:

- Management of Black-Cockatoo habitats;
- Limited native vegetation communities which warrant retention;
- Resource Enhancement Category Wetland buffers associated with Kadina Brook;
- Bushfire management associated with retained vegetation plots throughout the LSP area. Ultimately, bushfire risk is manageable to BAL-29 or lower levels through standard acceptable solution responses; and,
- There are three (3) registered aboriginal heritages sites affecting the LSP area meaning further investigations are to be undertaken prior to any ground disturbance.

In the context of SPP 5.1 - Land Use Planning in the Vicinity of Perth Airport, the land warrants further detailed acoustic assessments being undertaken at an appropriate future juncture and the imposition of a condition of development approval where a development is situated

within a 20-25 ANEF contour range. The minor variance to the residential density proposed relative to the applicable ANEF contour rating is considered to be warranted.

Item	Data	Section No. In LSP
Total area covered by the structure plan	6.03ha	1.0
Residential (R20)	0.4266ha	1.0
Residential (R30)	3.19ha	
Total estimated lot yield	94	4.2
Estimated number of dwellings	94	4.2
Estimated residential site density	25.99dw/ha ¹ based on residential zoned land only, excluding roads and POS	4.3
Estimated population	253 persons ²	-
Number of high schools	n/a	-
Number of primary schools	n/a	-
Estimated area and percentage of public open space given over to:		4.4
• Regional Open Space (ROS)	n/a	
• Unrestricted Public Open Space	0.5465 ha	
• Restricted Public Open Space	0.0602 ha	
Estimated percentage of natural area		4.4
• Net (unrestricted and restricted)	0.6067 ha / 10.61%	
• POS (unrestricted)	0.5465 ha / 9.56%	
Note:		
¹ Residential density calculated based on Part 4 explanation of the Residential Design Codes of Western Australia Explanatory Guidelines		
² Based on Australian Bureau of Statistics (2016) data for Helena Valley relating to average people per household of 2.7		

Executive Summary Table

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Part One - Implementation

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PART ONE – IMPLEMENTATION

i Local Structure Plan Content

This LSP comprises:

- a) Part One – Statutory Section
This section contains the LSP map and statutory planning provisions and requirements.
- b) Part Two – Explanatory Section
This section is to be used as a reference guide to interpret and justify the implementation of Part One.
- c) Appendices – Technical reports, supporting plans and maps.

ii Interpretation and Relationship with the Scheme

Unless otherwise specified in this part, the words and expressions used in this LSP shall have the respective meanings given to them in the Shire of Mundaring Local Planning Scheme No. 4 (LPS No. 4) and/or Schedule 2 Part 1 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (P&D Regs 2015) including any amendments gazetted thereto.

The LSP map is required to be prepared prior to subdivision and/or development of the LSP area pursuant to clause 5.16 –Development requirements for the Development zone of LPS No. 4. The Plans, Tables and Figures contained in Part One of this LSP outline the framework for future subdivision and/or development applicable within the LSP map area.

Pursuant to Schedule 2 Part 4 of the P &D Regs 2015:

- a) A decision-maker for an application for development approval or subdivision approval in an area that is covered by a structure plan that has been approved by the Commission is to have due regard to, but is not bound by, the structure plan when deciding the application;
- b) Part Two of this LSP and all appendices are to be used as a reference only to clarify and guide interpretation and implementation of Part One.

1.0 Local Structure Plan Area

This LSP, also referred to as the Helena Valley – Local Structure Plan 76, shall apply to the LSP area being the land contained within the inner edge of the line denoting the LSP boundary as illustrated on the Local Structure Plan Map (**Plan 1**).

2.0 Operation

In accordance with clause 5.17.12 of LPS No. 4, this LSP shall come into operation on the day it is endorsed by the Western Australian Planning Commission (WAPC).

3.0 Staging

The LSP area is anticipated to be developed in several stages, primarily due to the fact that the LSP area comprises multiple land owners. The State and Local planning framework can accommodate such a requirement if and when necessary.

4.0 Subdivision and Development Requirements

The LSP map outlines land use and zones applicable within the LSP area. A decision-maker for an application for development approval or subdivision approval in an area that is covered by a structure plan that has been approved by the Commission is to have due regard to, but is not bound by, the structure plan when deciding the application.

4.1 Land Use Permissibility

Land use permissibility within the LSP area shall be in accordance with the corresponding zone or reserve under provisions of LPS No. 4.

4.2 Residential Dwelling Target

Objective: To provide for single house and/or grouped dwelling development at a density of R20 and R30 within the LSP area. A 94 dwelling target is envisaged for the LSP area.

Subdivision is to be generally in accordance with this LSP to facilitate the intended residential dwelling yield.

4.3 Public Open Space

The provision of a minimum of 10-percent public open space being provided in accordance with the WAPC's Liveable Neighbourhoods. Public open space is to be provided generally in accordance with the LSP map (Plan 1) and Table 1 below, with a public open space schedule being submitted at the time of subdivision approval by the WAPC, upon recommendation of the Shire of Mundaring.

The design of the proposed public open space is to be a minimum of 15 metres wide along Helena Valley Road to ensure that the desired screening function is achieved. Further, it is expected that the requirement for a Landscape Management Plan to be implemented will form a condition of subdivision approval.

All land within the LSP is to contribute equally to the provision of the LSP public open space. In order to achieve this outcome, it is expected that a condition of subdivision approval for any subdivision providing for less than 10.61 percent (of the subdivisible area) public open space shall require the balance to be paid via a cash-in-lieu contribution pursuant to Section 153(1)(b) of the Planning and Development Act 2005. Any such cash-in-lieu contribution is to be used to reimburse landowners providing POS in accordance with the structure plan where that contribution exceeds 10.61% of the subdivisible area.

PUBLIC OPEN SPACE SCHEDULE			
LSP Site Area			6.03 ha
Less			
- Environmental protection policy areas Wetlands to be ceded	n/a		
- Protected bushland site	n/a		
- Unrestricted public open space sites not included in public open space contribution	n/a		
- Foreshore reserves to be ceded	n/a		
Total		0.00 ha	
Net site area			6.03ha
DEDUCTIONS			
Primary School	n/a		
Town Centre and commercial	n/a		
1:1 Drainage Reserve	0.0615ha		
Transmission corridors	0.2520ha		
Other approved contingencies	n/a		
Gross Subdivisible area			5.7173 ha
Public open space @ 10 per cent			0.5717 ha
Public open space contribution			
May comprise:			
- Minimum 80 per cent unrestricted public open space		0.4574 ha	
- Minimum 20 per cent restricted use public open space		0.1143 ha	
Unrestricted public open space sites			
Lot 252			
- POS B		0.1457 ha	0.5465 ha
- POS C		0.0436 ha	(9.6%)
Lot 205			
- POS A		0.3572 ha	
Restricted use public open space sites			
Total restricted use public open space contribution:			
- Lot 205 Drainage Basis	0.0476 ha		0.602 ha
- Lot 252 Drainage Basin	0.0126 ha		
Total restricted use public open space			
Public Open Space provision			0.6067 ha (10.61%)
Note: Gross subdivisible area includes house lots, access roads, and any land incidental to the subdivision. The gross subdivisible area does not include areas for schools, shopping centres, infrastructure (eg land required for sewer pump stations), dedicated drainage sites not having a recreational function and land set aside for arterial roads and other non-residential uses.			

Table 1 – Public Open Space Schedule

5.0 Local Development Plans

Schedule 2, Part 6, clause 48(1) of the *Planning and Development (Local Planning Schemes) Regulations 2015* requires local development plans to be prepared in a manner and form approved by the WAPC. This clause also sets out the information required to be included in a local development plan, which applies to all planning schemes in Western Australia as deemed provisions.

A local development plan may be prepared in the following circumstances:

- lots with an area less than 260sqm and irregularly configured lots;
- lots where specific vehicle access and egress control is required;
- lots abutting public open space;
- local and neighbourhood centres;
- lots that have been identified to accommodate a future change of use;
- lots with particular site constraints (e.g. steeply sloping land); and
- to address noise buffer and amelioration requirements.

The preparation of a local development plan outside of these circumstances is not appropriate, and therefore is generally discouraged, as it adds another level to the planning system that is not required.

Local development plans should be consistent with the provisions contained under the *Planning and Development (Local Planning Schemes) Regulations 2015* Framework for Local Development Plans (as amended).

The need for a local development plan will be considered during a future subdivision stage. This may apply in the case of proposed corners lots as well as those lots which have an interface with land zoned rural under the provisions of LPS No. 4.

6.0 Other Requirements

6.1 Notifications

Notifications may be placed on future Titles advising prospective purchasers that lot(s) are affected by one or more of the following:

- Transport noise and vibration in accordance with the provisions of State Planning Policy 5.4 – Road and Rail Noise (Draft Sept 2017).
- Aircraft noise in accordance with the provisions of State Planning Policy 5.1 – Land use Planning in the Vicinity of Perth Airport.
- Bushfire risk in accordance with the provisions of State Planning Policy 3.7 – Planning in Bushfire Prone Areas.
- Electrical infrastructure clearance requirements in accordance with Western Power design standards and guidelines.

6.2 Infrastructure Requirements

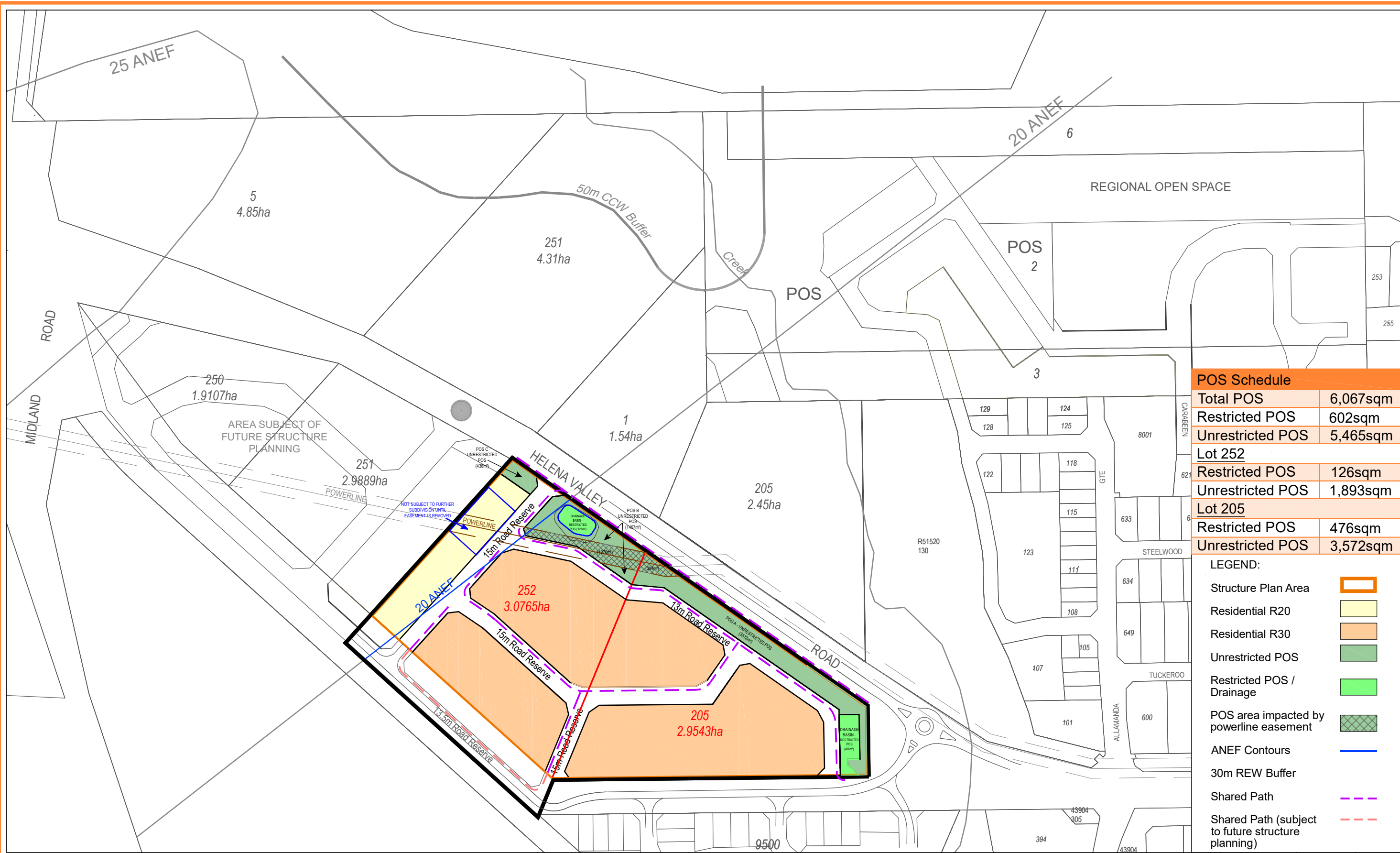
There are no specific infrastructure requirements applicable to the LSP however Main Roads WA are currently reviewing reservation requirements along Helena Valley Road. A roundabout is also anticipated to be required providing a north-south link. Details of its exact location will be the subject of a separate LSP process.

No significant upgrades to Helena Valley Road are required as a result of the proposed structure plan and a future subdivision as the additional traffic will not result in Helena Valley Road changing category under Liveable Neighbourhoods. In saying that, it is expected that Helena Valley Road will be upgraded to an 'Urban' standard consistent with the land to the east. The Shire of Mundaring have also indicated that Helena Valley Road may undergo a further upgrade at some point in the future as there is anticipated traffic growth in the area. It is expected that an equitable contribution will be made to the Shire based on the extent of frontage the structure plan has to Helena Valley Road.

Western Power overhead powerline infrastructure currently traverses the LSP area. Where the powerline traverses the area identified for R20 residential development, the infrastructure is to remain as a single lot in accordance with the LSP map (Plan 1). This lot will only be developable as a single residential lot containing no more than one single dwelling for so long as the electricity infrastructure remains in situ. When planning for the land to the west (i.e. Lots 250 and 253 Helena Valley Road) progresses, it is envisaged that the Western Power infrastructure will be relocated to follow the existing and proposed road networks so as to not constrain residential land. When this occurs, the constrained lot annotated on the LSP map will be capable of being further subdivided and developed for residential purposes.

6.3 Heritage

The presence of registered heritage sites within the LSP area will require further investigations to be undertaken in accordance with the provisions of the *Aboriginal Heritage Act 1972*. Consultation with relevant parties as well as an Aboriginal Heritage Survey can be conducted over the LSP area as a condition of future subdivision approval prior to any ground disturbances occurring within the LSP area.



POS Schedule	
Total POS	6,067sqm
Restricted POS	602sqm
Unrestricted POS	5,465sqm
Lot 252	
Restricted POS	126sqm
Unrestricted POS	1,893sqm
Lot 205	
Restricted POS	476sqm
Unrestricted POS	3,572sqm

LEGEND:

Structure Plan Area	
Residential R20	
Residential R30	
Unrestricted POS	
Restricted POS / Drainage	
POS area impacted by powerline easement	
ANEF Contours	
30m REW Buffer	
Shared Path	
Shared Path (subject to future structure planning)	

HELENA VALLEY - LOCAL STRUCTURE PLAN 76
 HELENA VALLEY ROAD
 HELENA VALLEY

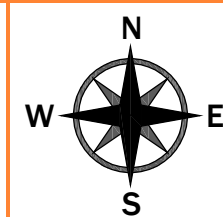
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PIA Planning Institute of Australia
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Part Two – Explanatory Section

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PART TWO – EXPLANATORY SECTION

1.0 Planning Background

1.1 Introduction and Purpose

This LSP provides a basis for zoning (including residential density) and subdivision of land. It has been prepared to address the requirements of cl. 5.17 of the Shire of Mundaring Local Planning Scheme No. 4.

The key objectives of the LSP are as follows:

- To provide a statutory framework to guide the use, subdivision and development of land to create a high quality urban environment.
- To achieve an optimum housing density and diversity with an emphasis on achieving consistency with the existing and future housing demand for the locality.
- Maximise the quality of living of future residents.
- Capitalise on the natural amenity of the area afforded through the existing natural attributes which are located within the LSP area.

1.2 Land Description

1.2.1 Location

The LSP area is located within the suburb of Helena Valley, within the municipality of the Shire of Mundaring.

The LSP area is located approximately 15.0 kilometres north-east of the Perth Central Business District and 5.0 kilometres north-east of Perth International Airport. The nearest strategic metropolitan activity centre being Midland town centre is located less than 3.0 kilometres due north, the centre providing a range of services including retail, administrative, service, community and entertainment uses.

The LSP area is situated at a unique location being at the junction of not only municipal boundaries (i.e. City of Swan and Shire of Mundaring) but also Roe Highway, being a 'Primary Regional Road (PRR)' category road network in the context of the Metropolitan Region Scheme (MRS) and Helena Valley Road.

The LSP area has direct frontage to Helena Valley Road with Lot 205 being dissected in two with a northern part and southern part. The dissection is a result of the reconfiguration of Helena Valley Road which historically ran along the southern boundary of Lots 205 and 252 Helena Valley Road. It is noted that only the southern portion of Lot 205 is included in the LSP area.

Figure 1 and 2 below illustrates the LSP area's location.

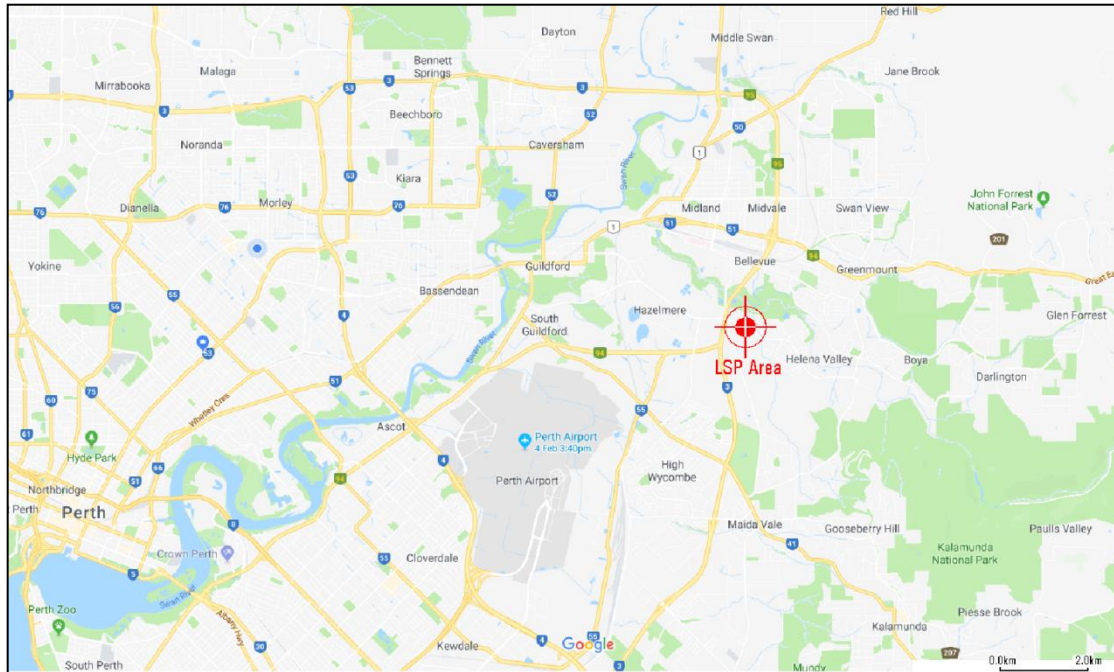


Figure 1 – Regional Context (Source: Google maps)

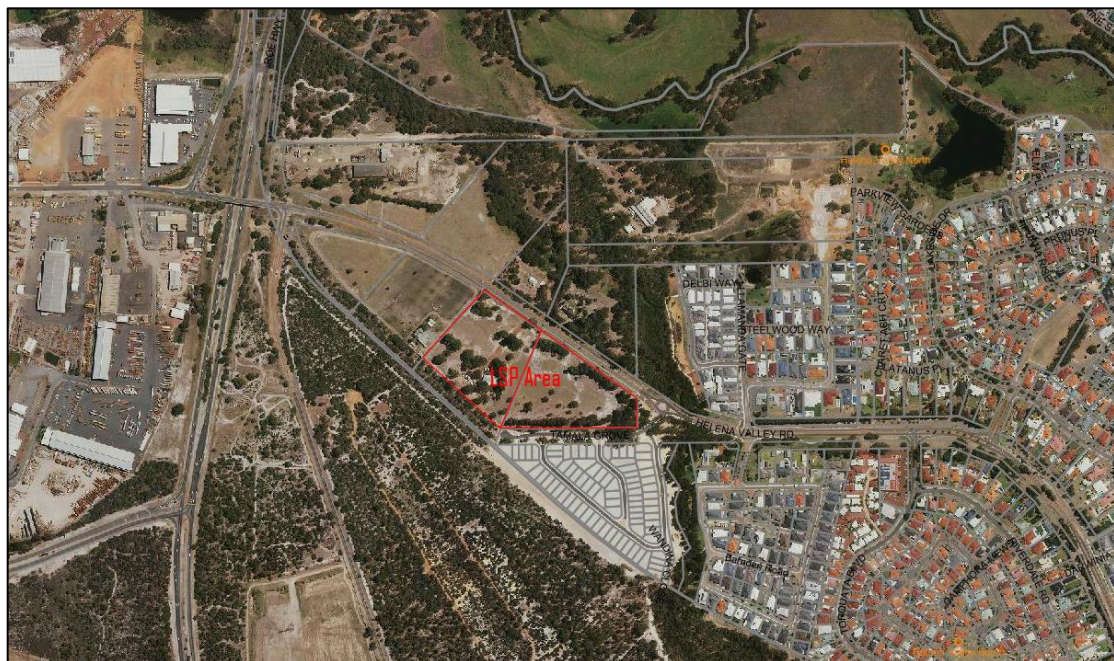


Figure 2 – Local Context (Source: Shire of Mundaring Intramaps)

1.2.2 Area and Land Use

The LSP area encompasses a total land area of 6.03ha and comprises 2 separate allotments. It is noted that the LSP area is inconsistent with the existing lot cadastral boundaries on the basis that the MRS and LPS No. 4 zoning boundaries do not align with lot boundaries. This has resulted due to the realignment of Helena Valley Road and the evolution of the Australian Noise Exposure Forecast (ANEF) contour applicable to Perth Airport.

The LSP area is largely unimproved with the majority of lots comprising only a single house and/or outbuildings associated with past rural-residential functions. At present, there are a number of small-to-medium size pockets of vegetation located on a number of the lots, particularly those which are closest to Kadina Brook which flows along the north-eastern portion of the LSP area. Inspection of historical aerial photography indicates that the majority of vegetation within the LSP area is regrowth following extensive clearing which occurred during the 1970's (refer Figures 3 to 5 below).



Figure 3 – Aerial Photograph 1953



Figure 4 – Aerial Photograph 1977



Figure 5 – Aerial Photograph 2000

The surrounding locality is characterised by encroaching urban /residential development to the south and east which comprises single and double-storey dwellings on lots ranging from

between R5 to R30 densities. The majority of land immediately west of the LSP area / Roe Highway has been designated for 'Industrial' (i.e. Hazelmere industrial estate) under the provisions of the City of Swan Local Planning Scheme No. 17.

1.2.3 Legal Description and Land Ownership

The LSP has a total area of 6.03ha. The lots forming the LSP area are detailed in Table 2 below. Figure 6 illustrates the lot areas relative to the area covered under the LSP and the actual cadastral areas.

Lot	No.	Vol / Folio	Lot Area
252	480	2863 / 830	3.0757 ha
205	655	- / -	*2.9543 ha (5.4043ha)
TOTAL			6.03ha

Note:
*Part-lot areas being the result of the zoning allowing only a portion of the lot to form part of the LSP.

Table 2 – Certificate of Title & Property details

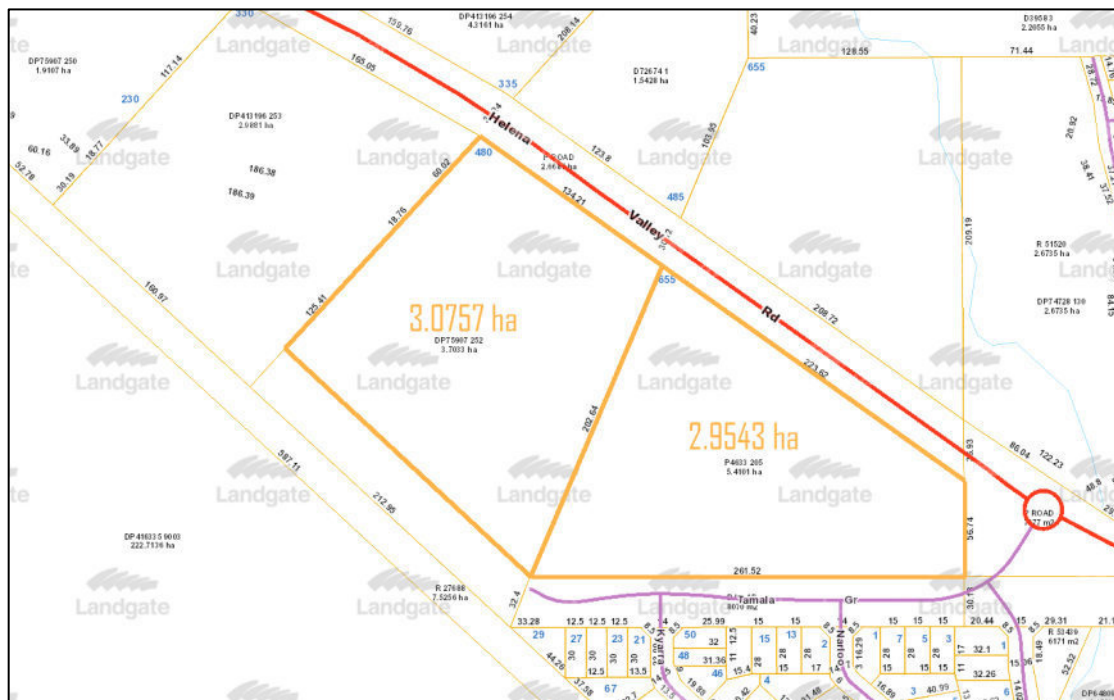


Figure 6 – Lot Areas relative to LSP area and actual cadastral areas

1.3 Planning Framework

1.3.1 Metropolitan Region Scheme

The LSP area is zoned 'Urban' under the Metropolitan Region Scheme (MRS). Figure 7 illustrates the LSP area's MRS zoning.

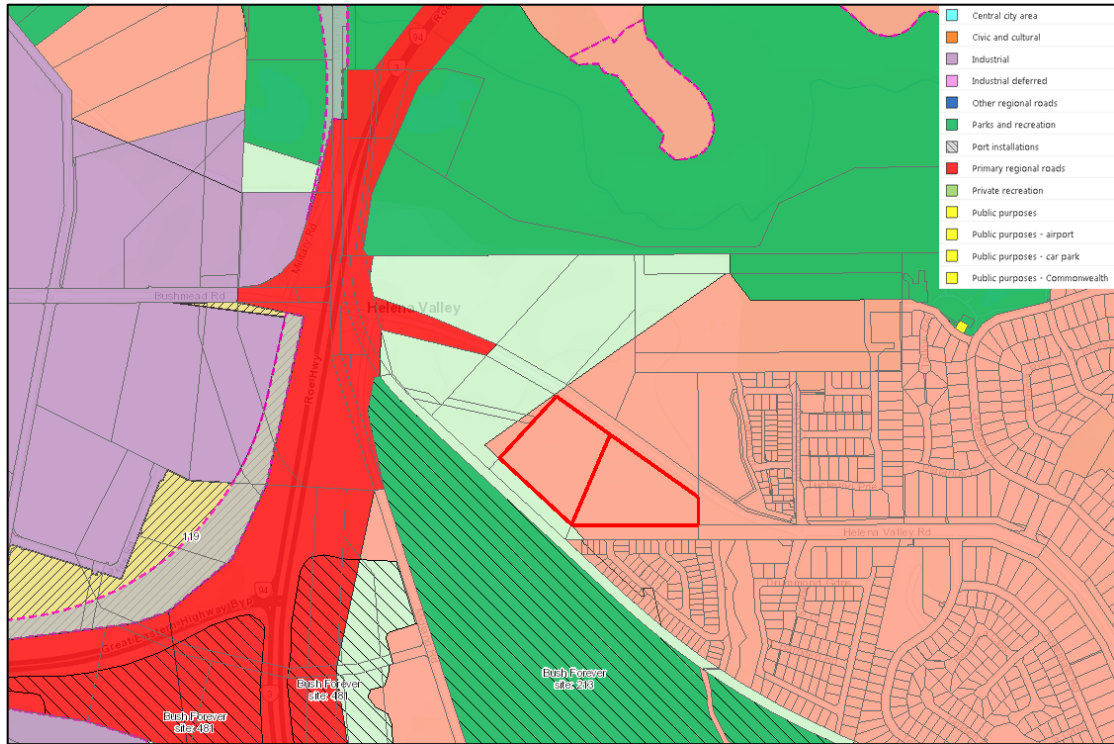


Figure 7 – Metropolitan Region Scheme Zoning and Reservation

1.3.2 Shire of Mundaring Local Planning Scheme No. 4

Under the provisions of the Shire of Mundaring Local Planning Scheme No. 4 (LPS No. 4) the LSP area is zoned ‘Development’. Figure 8 illustrates the LSP area’s zoning.

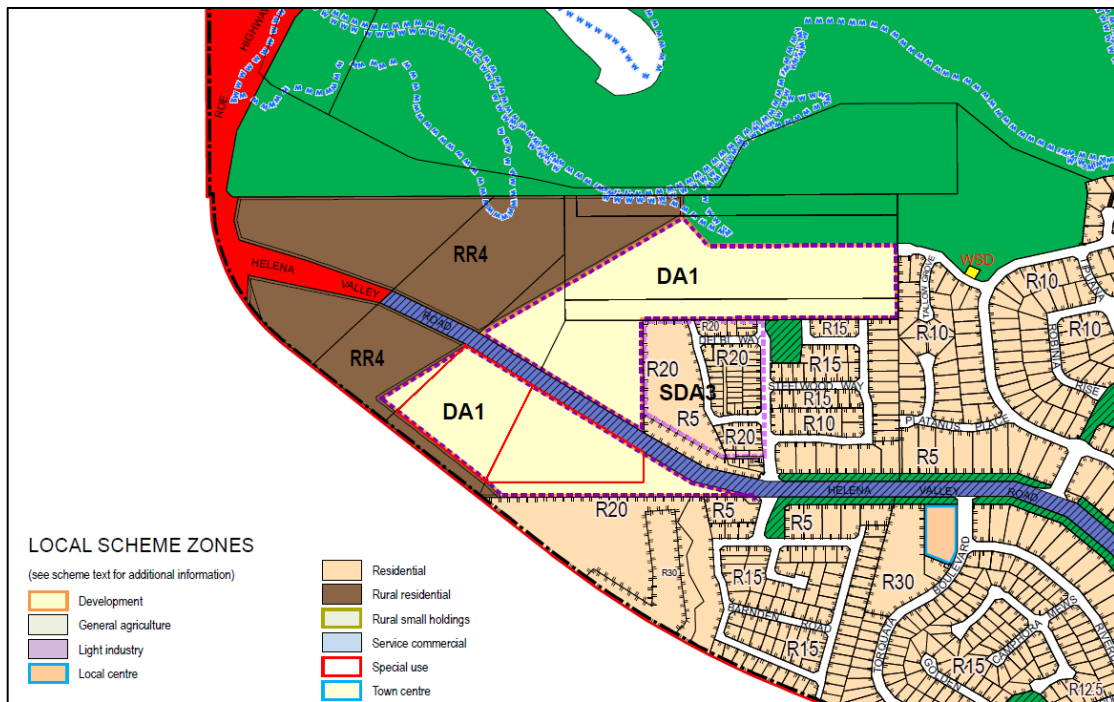


Figure 8 – Shire of Mundaring LPS No. 4 Zoning and reservations

The objective of the 'Development' zone is:

To provide for the orderly planning of large areas of land for residential and other purposes through comprehensive structure planning which will provide the basis for future subdivision and development.

The purpose of this LSP stems from the 'Development' zoning which necessitates the preparation of a Structure Plan in accordance with cl. 5.17 of LPS No. 4 to guide future subdivision and development.

The western portion of the LSP is affected by an Australian Noise Exposure Forecast (ANEF) contour of 20-25 ANEF with the remainder of the LSP area subject to a rating of 20 ANEF or less. Clause 6.4 of LPS No. 4 requires any development to take due regard of the provisions of SPP 5.1 – *Land Use Planning in the Vicinity of Perth Airport* with respect to its primary objectives which are:

- *Protect Perth Airport from unreasonable encroachment by incompatible (noise-sensitive) development, to provide for its ongoing development and operation; and*
- *Minimise the impact of airport operations on existing and future communities with reference to aircraft noise*

The LSP's compliance with the objectives of LPS No. 4 as well as implications of the ANEF rating are addressed in the succeeding sections.

1.3.3 Regional and Sub-Regional Structure Plan

1.3.3.1 State Planning Strategy 2050

The State Planning Strategy 2050 was prepared by the WAPC and provides a strategic planning response to the challenges that Western Australia is likely to face. It contemplates a future in which high standards of living, improved public health and an excellent quality of life are enjoyed by present and future generations of Western Australians.

The Strategy proposes that diversity, liveability, connectedness and collaboration must be central to the vision of sustained growth and prosperity. It envisages that by 2050, Western Australia will double its current population and will have a diverse range of well-connected and vibrant communities of the highest quality in the world.

The LSP will allow for the future development of under-utilised land for residential purposes which is consistent with the existing housing typology within the surrounding locality. The proposal will also contribute towards the goal to double the State's current population within an area that is highly accessible, well-connected and rich with history and culture dating back to early settlement of the Perth region.

1.3.3.2 *Directions 2031 and Beyond – A Spatial Framework for Perth and Peel*

Directions 2031 provides the overarching strategic framework for the Perth and Peel Regions. The LSP area is within the 'North-east sub-region', which is identified as requiring an additional 258,000 dwellings by 2031, representing a 37% increase on current population levels.

Directions 2031 indicates that there is a need to introduce greater diversity in the new housing market to accommodate families. It seeks a 50% increase in the current average residential density of 10 dwellings per gross urban zoned hectare to 15 dwellings per gross urban hectare of land.

The LSP proposes a density of R20 and R30 (i.e. 20 and 30 dwellings per hectare), which will contribute to meeting the forecast housing needs of the Shire of Mundaring and wider North-east sub-region.

1.3.3.3 *Perth and Peel @ 3.5 Million (March 2018)*

On the 23 March 2018, the Perth and Peel @ 3.5 Million land use planning and infrastructure frameworks were released by the State Government. The framework brings together the vision encapsulated in Directions 2031 and the State Planning Strategy 2050 into a series of planning frameworks, responding to those deepening and emerging challenges, with a unified, long-term growth strategy for land use and infrastructure for the Perth and Peel regions.

The frameworks provide guidance on where sustainable development should occur over the next 35 to 40 years to ensure the impact of urban growth on areas of environmental significance is minimised; to protect our heritage; and importantly, to maximise the benefits of available land and existing infrastructure. The frameworks identifies that the sprawling nature of Perth through greenfield development, predominantly along the coastline has brought with it a range of complex and interrelated challenges, these including:

- accommodating significant population growth;
- improving current density infill and managing further greenfield development;
- achieving a connected city growth pattern;
- increasing housing diversity and affordability;
- reducing car dependence;
- achieving efficient use of water sources in a drying climate;
- ensuring the regions' environmental assets are protected; and,
- maintaining liveability.

The LSP is situated within the 'North-east Sub-region' (refer Figure 9) which is one of three sub-regions identified which combine with the draft central sub-regional planning framework. The framework clearly identifies a focus on urban infill within areas with proximity to high-quality public transport routes or within activity centres and urban corridors. Specifically an infill development target of 47% by 2050 is identified relative to 2014 rates which reached only 28%.

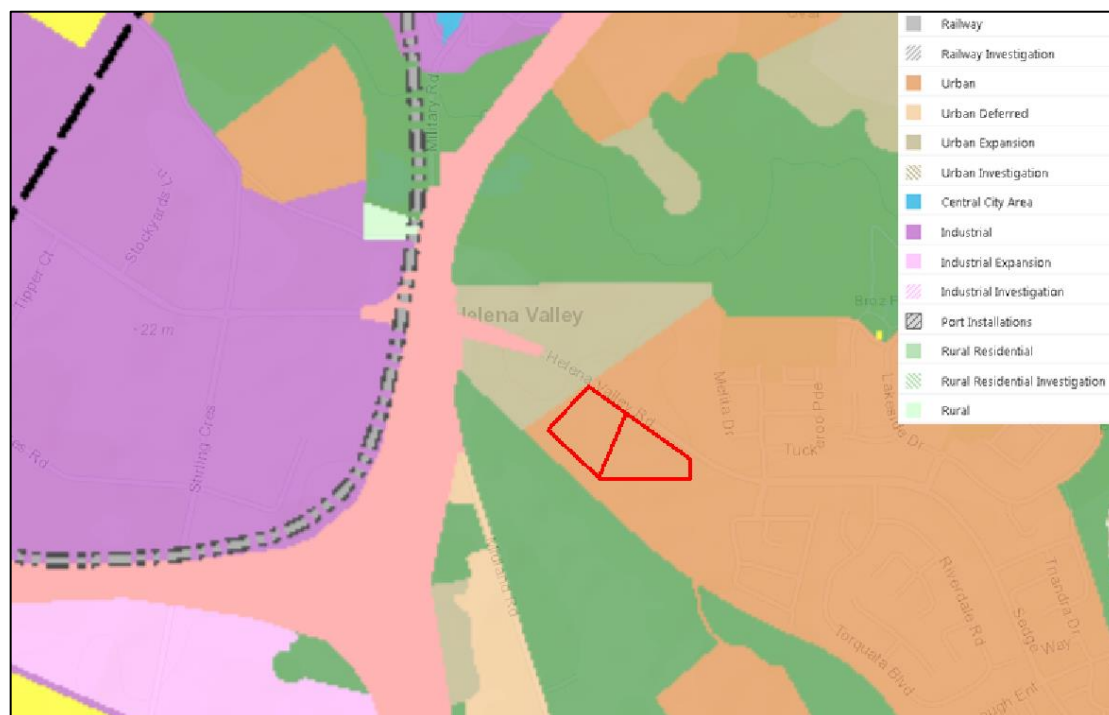


Figure 9 – Extract of Perth and Peel @ 3.5 Million (North-east Sub-regional framework plan) Source: PlanWA interactive mapping

Based on the urban areas identified in Figure 9, the capacity for additional dwellings and population amounts to approximately 37% in established urban areas as infill development, notably short of the 47% target. The LSP proposes a density of R20 and R30, which will contribute to meeting the forecast housing needs of the Shire of Mundaring and wider North-east sub-region.

1.3.3.4 Perth and Peel Green Growth Plan for 3.5 million (December 2015)

The draft Green Growth Plan (GGP) delivers a comprehensive environmental program for the protection of both Commonwealth matters of national environmental significance and State environmental values. This includes:

- 170,000 ha of new and expanded conservation reserves in Perth and Peel regions and immediate surrounds, including improved protection and management of Bush Forever sites and establishment of Peel Regional Park;
- Implementation of critical steps to cut nutrient run-off into the Swan Canning and Peel Harvey estuaries and ensure the health of these systems over the long-term; and,
- Implementation of a program of on-ground management to improve protection and management of threatened species, wetlands of international significance and threatened ecological communities.

The draft GGP has assigned the following development actions or ‘classes of action’ as it is referred to in the document:

- Urban and industrial development;
- Rural residential development;
- Infrastructure development;
- Basic Raw Materials extraction; and
- Harvesting of pine plantations.

The LSP is situated within an area designated as ‘Urban class of action’ (refer Figure 10) meaning:

The urban component of the Urban and Industrial Class of Action provides for the development of specified urban areas, including areas that are already zoned under the Metropolitan or Peel Region Schemes for this purpose but not yet developed, as well as areas that are yet to be zoned, but intended for urban purposes.

The Class of Action incorporates existing, new and proposed urban development areas to support a city of 3.5 million people. This includes (but is not limited to) homes and associated employment, education, shopping, commercial, health and civic facilities, light industry, as well as local recreation, open space, conservation and cultural areas. This activity and development will include the continued use of existing urban land and buildings, the redevelopment of existing urban areas and the development of new urban areas.

(Extract of Perth and Peel Green Growth Plan for 3.5 million Strategic Conservation Plan)

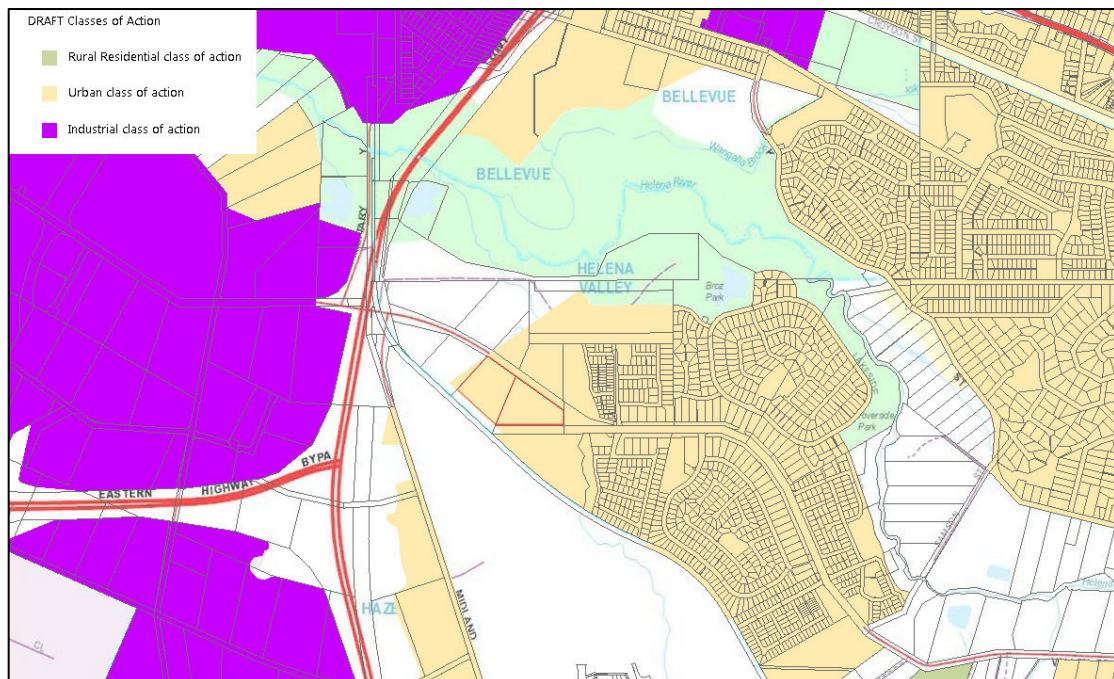


Figure 10 – Extract of Draft Green Growth Plan mapping

Based on the above, the proposed LSP is considered to be entirely consistent with the State level strategic objectives for the locality as planned for under the draft GGP as it is within an

area already designated for urban development (i.e. is not within any conservation reserves / areas or undesignated class of action areas).

It is also noted that following the release of the Perth and Peel @ 3.5 Million land use planning and infrastructure frameworks, work on the draft GGP has been suspended until a critical review of the ongoing costs, risks and benefits for Western Australia is completed and can be considered by government. Nevertheless, work undertaken to-date has informed the outcomes of the sub-regional planning framework.

1.3.3.5 Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy (WAPC 2010)

The draft Outer Metropolitan Perth and Peel Sub-regional Strategy forms an integral part of the Directions 2031 vision. It provides information about the levels of expected population growth by local government area and highlights development opportunities and increased densities in greenfield areas throughout the five outer sub-regions of north-west, north-east, south-east and south-west metropolitan Perth and Peel.

The Strategy outlines the north-east sub-region to be anchored by the strategic metropolitan centre that is Midland. The LSP area is situated less than 3.0km south-east of the Midland Town Centre – refer Figure 11.

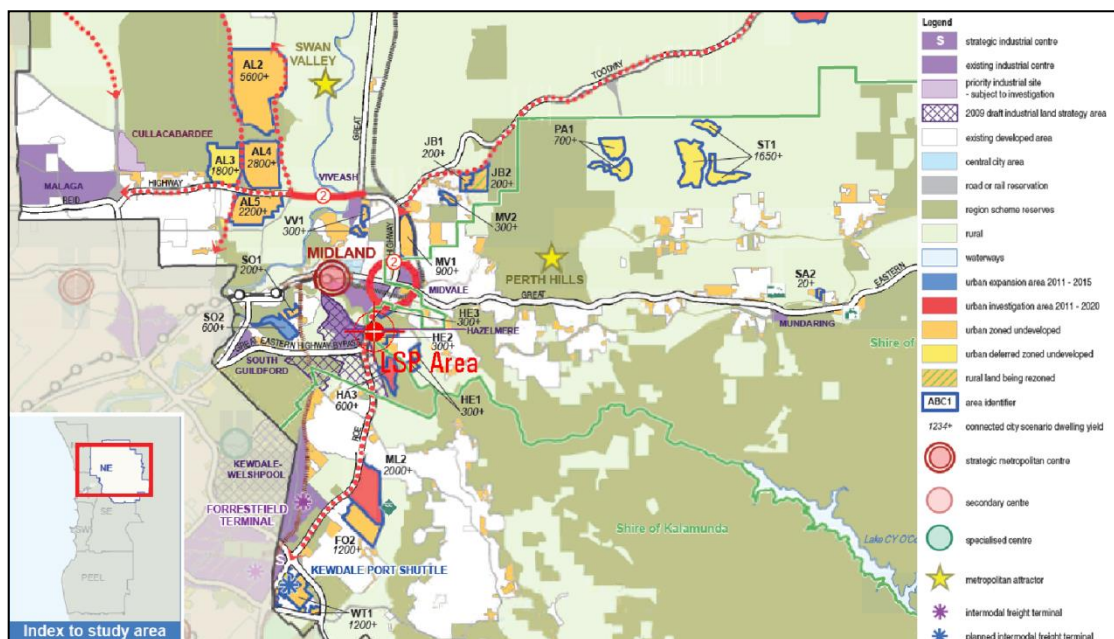


Figure 11 – Extract of Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy

Based on identified infill opportunities, existing urban and urban deferred zoned land and urban expansion and investigation areas, the estimated dwelling supply for the north-east region is expected to range from approximately 43,000 dwellings under the ‘business as usual scenario’ to approximately 55,000 dwellings under the ‘connected city scenario’.

The proposed LSP is intended to facilitate infill residential. Residential development is proposed at a density of R20 and R30 which may facilitate both single house and grouped dwelling forms of development. The total residential yield is anticipated to be approximately 94 dwellings which will assist in satisfying the dwelling targets prescribed by the Draft Outer Metropolitan Perth and Peel Sub-regional Strategy.

1.3.4 State Government Planning Strategies and Policies

1.3.4.1 Liveable Neighbourhoods (Draft 2015)

Liveable Neighbourhoods is the WAPC's primary policy for the design and assessment of structure plans (regional, district and local) and subdivision for new urban (predominantly residential) areas in Perth metropolitan and Peel regions and major regional centres, on greenfield and large infill sites.

The policy sets out a number of objectives and design principles to ensure the design and layout of new developments align with the *State Planning Strategy 2050* which aims to guide the sustainable development of Western Australia for the next four decades. The objectives and design principles are as follows:

Principal Objectives

- *To achieve a sustainable urban structure that balances the provision of urban development through site-responsive design.*
- *To develop a coherent urban system of compact walkable neighbourhoods which cluster around activity centres capable of facilitating a broad range of land uses, employment and social opportunities.*
- *Provide a network of interconnected streets based on function within attractive, safe and pedestrian friendly streetscapes, which facilitates accessibility for all users to, within and between neighbourhoods and activity centres.*
- *Promote mixed use development and activity centres that optimise commercial opportunities, access to public transport and efficient street network connections.*
- *Plan for public open space that meets the recreational, social and health needs of existing and future communities.*
- *Ensure that water is protected and managed to maximise efficiency by incorporation of urban water management techniques into the urban design.*
- *Facilitate housing diversity, responsive built form, local employment and amenity within a coherent and efficient urban structure of compact walkable neighbourhoods.*
- *Provide education sites and other community infrastructure to meet the needs of existing and future communities.*
- *Provide utility services in a land efficient, environmentally responsible and sustainable manner.*

Design Principles

- *Create a permeable street network that prioritises pedestrians, cyclists and public transport and is integrated with surrounding land use.*
- *Create a safe street environment for all users by applying appropriate street geometry design and traffic management.*

- *Ensure all streets provide space for utility services, stormwater drainage, street trees and lighting.*
- *Ensure urban form and lot design facilitate safe and convenient access to services, facilities and employment in mixed land use, 'main-street format' activity centres.*
- *Create a site responsive street and lot layout that provides local amenity, safe and efficient access and promotes a sense of place.*
- *Provide housing density and diversity to meet the changing community needs.*
- *Provide sustainable utility services to each new lot in a timely, cost-effective, coordinated and visually acceptable manner.*
- *Coordinate the design and delivery of an integrated network of public open space that provides communities with access to nature, sport and recreation.*
- *Optimise the siting and design of public open space to promote accessible and efficient use of land.*
- *Ensure that education sites are developable, serviceable and accessible; promoting safe, adaptable and efficient use of land and other community infrastructure including public open space.*
- *Ensure a servicing movement network that facilitates safe and efficient access to education sites by all users.*

The implementation of these elements is fundamental to ensuring structure planning and resultant subdivisions occur in a well-considered and sustainable manner. Application of the Liveable Neighbourhoods principles is therefore relevant to all levels of planning for the site from the proposed LSP through to detailed lot and building design.

The current dwelling targets in greenfield areas for the Perth and Peel region is 15 dwellings per gross urban hectare and 26 dwellings per site hectare, as outlined in Directions 2031 and Beyond (WAPC, 2010).

The proposed LSP meets the principle aims of Liveable Neighbourhoods with a particular focus on the following outcomes:

- Achieves dwelling density targets above and beyond the minimum expectations stated above.
- Maximise a key redevelopment opportunity for residential development which will contribute to meeting the forecast housing needs of the Shire of Mundaring and wider North-east sub-region.
- Maintaining and continuing the established built form within the surrounding locality in order to recognise and strengthen community, place and local identity.
- Provide opportunity for additional residential development along an existing pedestrian, cycling and public transport corridor which reduces car dependence.
- Promotes active street-land use interfaces, with building frontages to streets as well as legible and pleasant internal private street networks which improves personal safety.
- Emphasis on supporting sustainable urban development through land efficiency across all elements.

1.3.4.2 *Statement of Planning Policy 1 – State Planning Framework Policy (2006)*

Statement of Planning Policy 1: State Planning Framework sets out the key principles relating to environment, community, economy, infrastructure and regional development which should guide the way in which future planning decisions are made. It brings together existing State and regional policies and plans which apply to land use and development in Western Australia into a State Planning Framework. It also restates and expands upon the key principles of the State Planning Strategy in planning for sustainable land use and development.

The proposed LSP is consistent with the Policy framework's five (5) key principles which define good decision-making in land use planning and development as detailed below:-

Environment – the LSP will deliver a coherent structure plan for the locality which will result in delivering a high quality of life for future occupiers which is based on environmentally sustainable principles. The design of the LSP around existing environmental features and the retention and creation of POS which exceeds the minimum 10% are also noteworthy factors.

Community – the LSP will assist in delivering a vibrant, safe and community which is cohesive with the surrounding established and expanding Helena Valley / Hazelmere locality.

Economy – The LSP will increase the economic foundation for existing businesses within the locality through an increased population base. Furthermore, the LSP will create short term employment opportunities during future planning and construction phases of the site.

Infrastructure – The LSP will promote the better use of existing transport and public utilities such as the public bus network which in turn improves service delivery to these infrastructure networks to the benefit of the wider community.

Regional Development – The LSP represents orderly and proper planning for the north-east sub-region with respect to its population demands identified in supporting State level planning documents.

1.3.4.3 *Statement of Planning Policy 5.1 – Land Use Planning in the Vicinity of Perth Airport (2015)*

Statement of Planning Policy No 5.1: Land Use Planning in the Vicinity of Perth Airport (SPP5.1) applies to land within the vicinity of Perth Airport which may be affected by aircraft noise. The objectives of SPP5.1 is to protect Perth Airport from unreasonable encroachment by incompatible (noise-sensitive) development so as to provide for its ongoing development and operation and, minimise the impact of airport operations on existing and future communities with reference to aircraft noise. The system of aircraft noise measurement used in Australia for the purposes of evaluating land use compatibility is known as the Australian Noise Exposure Forecast (ANEF) system.

The LSP area is affected by a 20-25 and 20 or less ANEF contour rating as illustrated on the LSP. SPP5.1 imposes various restrictions on zoning or development within the various ANEF contours as illustrated in Table 3 below.

Building type	Forecast noise exposure level (ANEF)			
	less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	25 to 30 ANEF	30 to 35 ANEF
House, home unit, flat, caravan park	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)	Unacceptable (Note 4) (Note 5)
School, university	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)	Unacceptable (Note 4) (Note 5)
Hospital, nursing home	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)	Unacceptable (Note 4) (Note 5)
Hotel, motel, hostel	Acceptable	Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)
Public building	Acceptable	Conditionally Acceptable	Conditionally Acceptable	Unacceptable (Note 4) (Note 5)
Commercial building	Acceptable	Acceptable	Conditionally Acceptable	Conditionally Acceptable
Light Industrial	Acceptable	Acceptable	Acceptable	Conditionally Acceptable
Other industrial	Acceptable	Acceptable	Acceptable	Acceptable

Table 3 – Extract of SPP 5.1: Building Site Acceptability Table

1.3.4.5 Statement of Planning Policy 3.7 – Planning in Bushfire Prone Areas (2015)

Statement of Planning Policy No 3.7: Planning in Bushfire Prone Areas (SPP3.7) applies to land identified and designated by the Fire and Emergency Services Commissioner under the *Fire and Emergency Services Act 1998 (as amended)*. Such areas are identified on the Map of Bush Fire Prone Areas. Designation of an area as being bushfire prone reflects the potential of bushfire to affect that site.

Under the provisions of SPP3.7, strategic planning proposal are to be accompanied by the following information:

- a) (i) the results of a BHL assessment determining the applicable hazard level(s) across the subject land, in accordance with the methodology set out in the Guidelines. BHL assessments should be prepared by an accredited Bushfire Planning Practitioner; or (ii) where the lot layout of the proposal is known, a BAL Contour Map to determine the indicative acceptable BAL ratings across the LSP area, in accordance with the Guidelines. The BAL Contour Map should be prepared by an accredited Bushfire Planning Practitioner; and
- b) the identification of any bushfire hazard issues arising from the relevant assessment; and
- c) clear demonstration that compliance with the bushfire protection criteria in the Guidelines can be achieved in subsequent planning stages.

Further detail on bushfire planning for the proposed LSP is contained under the *Site Conditions and Constraints* section below.

1.3.5 Local Government Planning Strategies and Policies

1.3.5.1 Shire of Mundaring Local Planning Strategy

The Local Planning Strategy has been prepared to set out the long term planning directions for the Shire and to guide land use planning within the Shire over the next ten to fifteen years. The Local Planning Strategy outlines and applies the wide range of relevant State, regional and local planning policies and strategies, and provides the rationale for the land use and development controls in Local Planning Scheme No. 4.

The 'key strategic objectives' and 'subsidiary aims and objectives' of the Local Planning Strategy are as follows:

Key strategic objectives

- *to set promote and support sustainable development within the Shire.*
- *to protect, manage and enhance the environment.*
- *to increase community engagement and well-being through the provision of quality services that are accessible to all.*

Subsidiary aims and objectives

- *to identify and respond to significant medium and longer-term challenges facing the Shire.*
- *to manage development to actively contribute to the Shire's unique character and to protect and enhance its natural hills environment.*
- *to sustain the Shire's hills heritage and village identity.*
- *to ensure that development results in an appropriate level of services that the community desires and can afford.*
- *to provide for increased business and employment opportunities.*
- *to provide for tourism opportunities which encourage visitors to experience Mundaring's natural environment, heritage and the arts.*
- *to protect and enhance key environmental assets.*
- *to protect and manage biodiversity within the Shire and reduce threat to the diverse forms of life within the district.*
- *to minimise the Shire's contribution to climate change and to lead the community in developing environmentally sustainable practices.*
- *to identify, enhance and preserve elements of cultural significance.*

Figure 12 below illustrates the LSP area within the context of the accompanying Strategic Plan map.

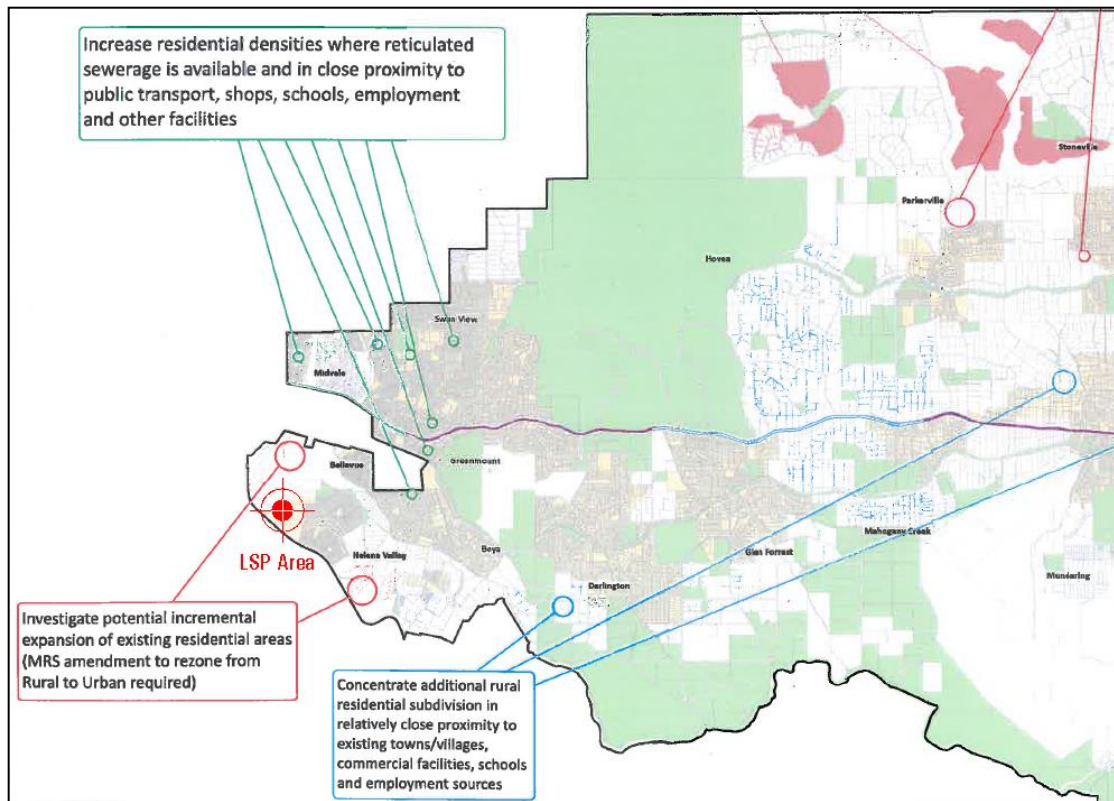


Figure 12 – Extract of Shire of Mundaring Strategic Plan Map

The proposed LSP is considered to be consistent with the above aims and objectives on the basis that:

- It involves the planning of land already zoned 'Urban' under the MRS and 'Development' under LPS No. 4.
- The LSP has been designed around conserving and enhancing existing environmental features / assets.
- It addresses the medium and long-term challenges of the Shire in terms of providing housing and employment demand and opportunities.

1.3.5.2 Shire of Mundaring Local Commercial Strategy

The Shire of Mundaring Local Commercial Strategy (LCS) was recently adopted by the Shire at its ordinary meeting of council held on 13 March 2018. The adopted LCS replaces the previous LSP which was adopted in 1992. With significant change with respect to urban growth principles, planning policies and consideration of commercial centres, a review and adoption of a new strategy has been timely.

The Strategy comprises a detailed assessment of the demand and supply for retail, commercial and industrial development in the municipality, and presents recommendations to guide the future development of activity centres and commercial areas.

The Strategy is intended to inform future updates of the Local Planning Strategy, as well as various plans and strategies relating to specific activity centres, commercial areas and identified urban growth areas. A framework for developing a sustainable network of activity centres and commercial areas serving residents of the municipality is also provided.

Whilst the LSP area is not identified within the LCS, land currently zoned ‘rural residential’ located immediately north and west of the LSP area has been identified as land suitable for ‘potential future employment land’ – refer Figure 13 below.

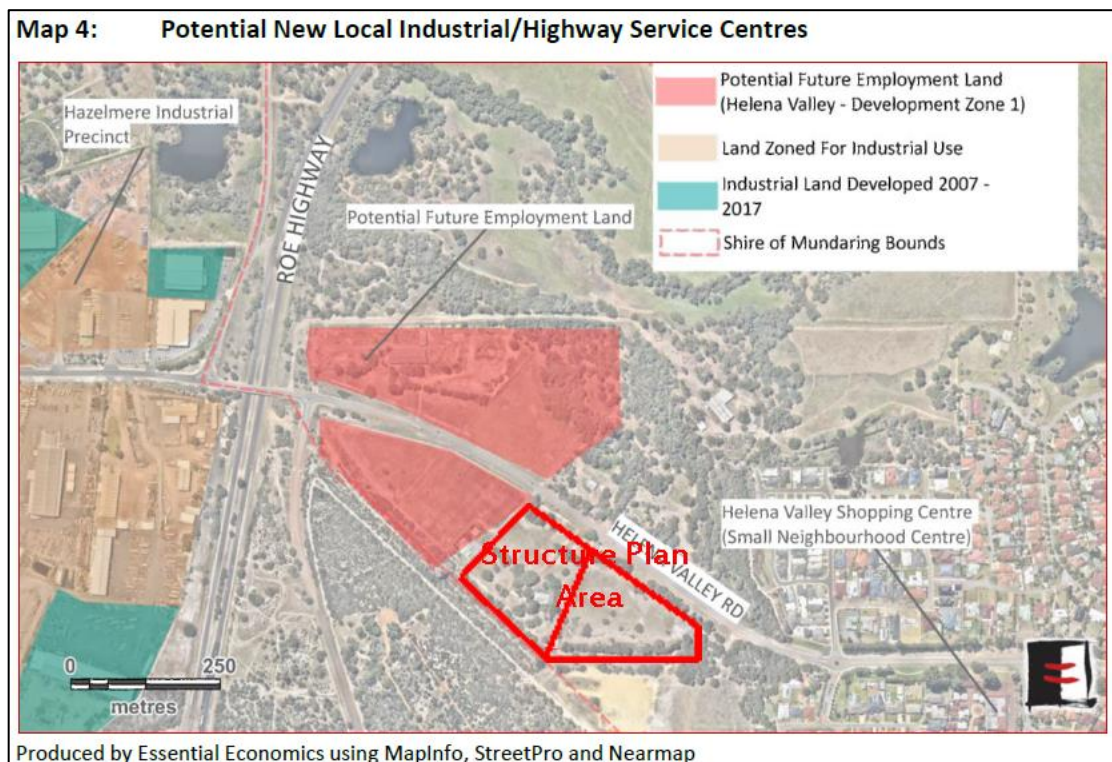


Figure 13 – Extract of Map 4 of LCS

Table 1 of the LCS further outlines the role and example of centre features which would form part of the above area of which an extract of the table is illustrated under Figure 14 below.

Centre Hierarchy/Centre	Role/Description	Examples of Centre Features
<p>Light Industrial / Service Commercial Centres</p> <ul style="list-style-type: none"> • Mundaring Employment Precinct • Midvale Light Industrial and Service Commercial Precinct • <i>Potential Future</i> Helena Valley Employment Precinct • <i>Potential Future</i> Sawyers Valley Employment Precinct 	<p>Light Industrial / Service Commercial Centres typically comprise a mix of business areas are <u>important</u> employment hubs for the Shire of Mundaring and surrounding region.</p> <p>These centres provide for a range of industrial, bulky goods, service orientated business that would not typically be provided in activity centres.</p>	<p>Examples of services and facilities provided in Light Industrial / Commercial Service Centres:</p> <ul style="list-style-type: none"> • Industrial: All forms of industrial activities including manufacturing, service industry, warehousing, transport & logistics etc. • Bulky goods retail: Including large format homemaker retailing and showrooms providing there is direct access and exposure to major highways or roads. • Trade supplies: Including large and small format showrooms supplying trade supplies to businesses • Retail: Limited supply of local convenience retail to service the surrounding employment areas and passing traffic (if on a major highway or road) only.

Figure 14 – Extract of Table 1: Shire of Mundaring Activity Centre and Commercial Hierarchy

Whilst the proposed LSP does not include the abovementioned land as part of the LSP area, it has indicatively identified the area and its use consistent with the findings of the LCS. Accordingly, the proposed LSP is considered to complement the likely future outcome of the employment area identified on the basis that:

- It provides an additional population catchment to support the future commercial uses; and,
- Provides opportunity for residents to work and reside in the locality thereby improving the local economy and promoting self-sufficiency of the Shire.

1.3.5.3 Shire of Mundaring Local Biodiversity Strategy (2009)

The Shire of Mundaring Local Biodiversity Strategy has been prepared as a major step towards protecting or retaining most of the Local Natural Areas (LNAs) currently found in the Shire. LNAs are the natural areas that are not currently protected in the public conservation estate or included within state forests, water catchment areas or Bush Forever sites. The focus of the Strategy is to influence how LNAs (bushland, forest, watercourses, granite outcrops etc) are protected, managed or retained in local reserves and private lands, especially where land may have potential for future subdivision and development.

The main vision and goal of the Local Biodiversity Strategy is as follows:

Conserve/Protect:

Goal 1: To have 1065 ha of LNA included in the Conservation Category and recognised by the Shire’s Local Planning Strategy and TPS4; and to endeavour to increase the amount of LNA in the Conservation Category to up to approximately 1570 ha over time.

Goal 2: To have 5830 ha of LNA included in the Protection Category and recognised in the Shire’s Local Planning Strategy and TPS4; and to endeavour to increase the amount of LNA in the Protection Category to up to approximately 5865 ha over time.

Retain:

Goal 3: To have 510 ha of LNA included in the Retention Category and recognised in the Shire’s Local Planning Strategy and TPS4; and to endeavour to increase the amount of LNA in the Retention Category to up to approximately 1190 ha over time.

Manage:

Goal 4: All Council's Local Reserves for Conservation in Town Planning Scheme No. 4 are actively managed for biodiversity conservation and half of all other Conservation Category LNAs and Protection Category (at least an estimated 2925 ha) are actively managed for conservation.

All LNAs in the Shire have been assigned a protection category based on known ecological values, other environmental attributes such as proximity to watercourses, relative conservation priority, zoning under the Town Planning Scheme and/or other relevant planning considerations, such as existing LSIPs or lot size. These factors have then assigned one of five protection categories being:

- 1) Conservation.
- 2) Protection.
- 3) Retention.
- 4) Limited Protection/Already Committed by Zoning.
- 5) To Be Determined/Negotiated.

Within the context of the Local Biodiversity Strategy and accompanying Figure 4: Conservation Priority Assessment for LNAs plan, the LSP area is not within an area designated as being of Conservation Priority or Protection. To this end, the LSP area is considered suitable for urban development. The extent of existing vegetation that will be maintained and managed as part of the POS contribution which exceeds the minimum 10% is however noteworthy and is in accordance with the abovementioned main vision and goal.

1.3.5.4 Shire of Mundaring Foothills Growth Strategy

The Foothills Growth Strategy (FGS) has been prepared to supplement Directions 2031, Perth and Peel @ 3.5 million and the north-east sub-regional planning framework with regard to planning for increasing residential densities in proximity to activity centres, public transport nodes and places of employment. Strategically, Bellevue and Helena Valley are ideally located to accommodate sustainable residential infill due to their proximity to Midland.

The Strategy will inform the Shire when considering rezoning under the MRS and local planning scheme, structure plans, subdivision, development applications and operational works. Actions are required to be undertaken prior to urban expansion occurring which have been set out in the section 'Implementation Milestones.' Once these have been completed, the Shire may then seriously consider rezoning, subdivision and development of properties within the Strategy area.

In the context of the proposed LSP, the LSP area does not form part of the FGS however, as illustrated in Figure 15 and 16 below, does about the precinct 11 area which is designated for 'medium density residential development and commercial mix'.

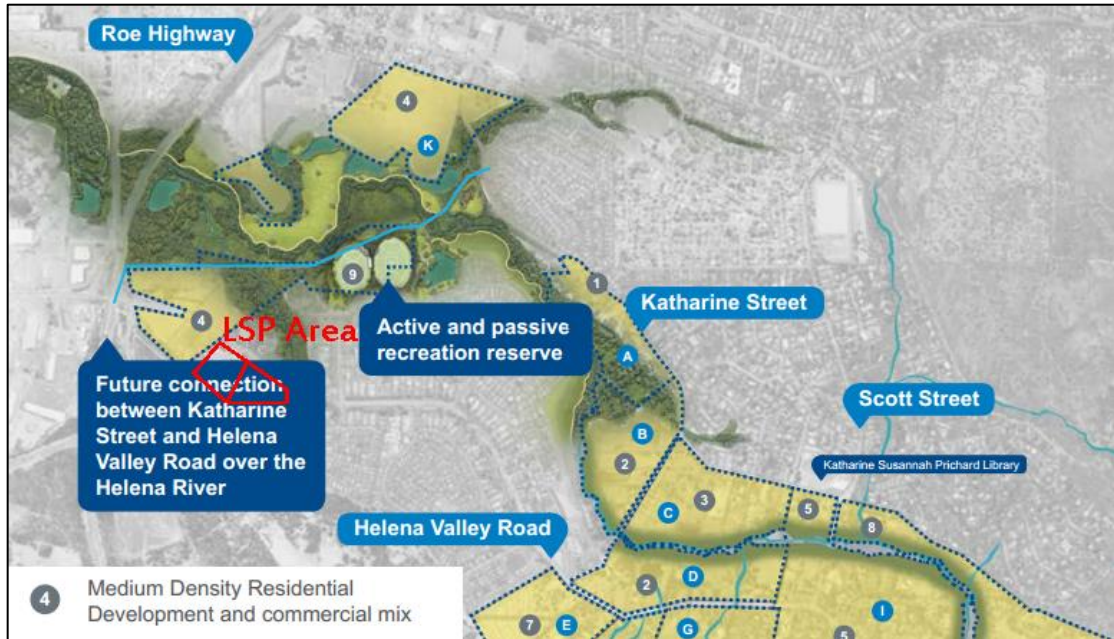


Figure 15 – Extract of FGS Summary Plan

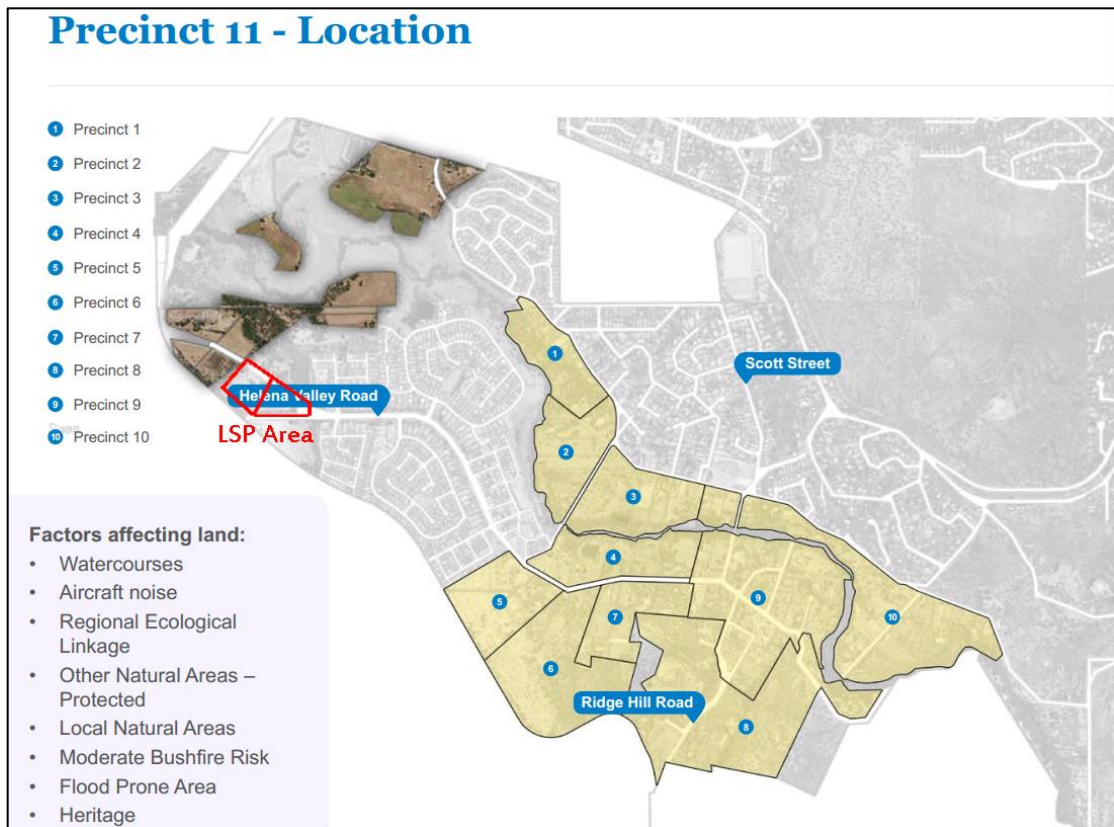


Figure 16 – Extract of Precinct 11 Location Plan

From a strategic perspective, the FGS outlines the following matters relative to this locality as summarised in Table 4 below. Whilst not all strategic items can be dealt with as part of the proposed LSP process due to the need for further detailed planning and/or involvement of

other stakeholders, it is evident that the proposed LSP has taken adequate steps towards catering for these strategic planning outcomes:

FGS Strategic Outcome	Proposed LSP outcomes
<i>Result in the ceding of land along the Helena River as foreshore reserve;</i>	LSP proposes to cede land for POS abutting the Helena River above and beyond the minimum 10% requirement.
<i>Make provision for Medium Density Residential Development and commercial mix informed by a local commercial strategy and State Planning Policy 5.1;</i>	LSP adequately caters for the intended 'potential future employment land' area as identified in the LCS through the provision of future road connections. Furthermore, land to the north-west has been recognised as potential 'development zone' land which will be the subject of further detailed investigation in the future.
<i>Possibly make provision for expansion of educational facilities;</i>	No educational facilities specifically identified at this stage however, Table 1 of LPS No. 4 prescribes 'Educational Establishment' as an 'A' discretionary use within land zoned 'Residential'. Accordingly, land within the LSP as well as adjoining future 'development zone' land does allow for these services if and when required.
<i>Integrate with existing/proposed development and maintain view corridors/facilitate access to the Helena River;</i>	LSP proposes a seamless connection of expanding residential land located immediately east and south of the LSP area.
<i>Ensure appropriate interface with Helena Valley Road;</i>	A landscape buffer and road upgrades are proposed along the portion of Helena Valley Road contained within the LSP area.
<i>In relation to residences and commercial properties, front Helena Valley Road but limit direct access from Helena Valley Road;</i>	Access points have been consolidated and upgraded in accordance with Shire's engineering specifications. Refer KCTT Transport Impact Assessment (rev C) for further detail (Appendix 6).
<i>Retain existing trees and incorporate verge trees;</i>	POS areas have been designed around existing and established vegetation in order to maximise their retention.
<i>Consider on-street parking;</i>	Road reservation widths have been designed to accommodate on-street parking. Refer KCTT Transport Impact Assessment (rev C) for further detail (Appendix 6).
<i>Limit alteration to the natural topography;</i>	Proposed residential areas have been designed to retain existing, lower vegetation areas. Further detailed site works will otherwise occur at the

	subdivision stage post endorsement of the proposed LSP.
<i>Provide passive surveillance onto streets and reserves;</i>	Detailed design on passive surveillance will occur at the subdivision and local development plan stages.
<i>Consider augmenting POS with foreshore reserve;</i>	POS areas have been designed to protect existing vegetation, wetland and associated foreshore reserve areas.
<i>Comply with an adopted development contribution position;</i>	Not applicable.
<i>Comply with an adopted Infrastructure Plan;</i>	Not applicable.
<i>Establish a road connection between Helena Valley Road and Katharine Street;</i>	Whilst this does not form part of the LSP area, the indicative future road connection has been identified on the LSP and design to link seamlessly with the proposed road network.
<i>Establish district recreation grounds;</i>	Not applicable.
<i>Comply with an adopted Helena River Reserve Development and Management Strategy; and demonstrate that installation of utilities does not prejudice future development.</i>	Not applicable.

Table 4 – FGS Strategic Outcome Analysis

2.0 Site Conditions and Constraints

2.1 Biodiversity and Natural Area Assets

A Level 1 Vegetation Survey, Fauna and Black Cockatoo Habitat Assessment has been undertaken by Smithson Environmental as well as a comprehensive Environmental Assessment (inclusive of Level 2 flora and vegetation and black cockatoo habitat assessment) by Strategen JBS&G. A copy of both reports are contained as Appendix 1 and 2 of this LSP. The assessments concluded as follows:

Smithson Environmental Report

- *A Level 1 vegetation survey, fauna and Black Cockatoo habitat assessment was carried out at Pt. Lot 205 (South), 655 Helena Valley Road, Helena Valley (“South Block”), between 18th August and 8th September 2015.*
- *South Block was a former paddock for Elders’ Midland Stockyards, though grazing ceased prior to 1986. Vegetation today is predominantly open paddock. No threatened or protected native species or communities were identified on site. Native vegetation condition was in the main completely degraded, with the majority of vegetation cover in the area comprising introduced understory (open paddock) species.*
- *The central area of the block comprised open paddock with few scattered remnant native trees. Some of the remnant trees were large, and some retained stumps with potential nesting holes for Black Cockatoos (*Calyptorhynchus sp.*), but overall their ecological and habitat values were considered to be moderate due to tree isolation.*

- Two belts of trees had been planted at the north and south boundaries of the block, probably in the late 1980's, many of which had reached maturity.
- The south tree belt contained predominantly mature *Eucalyptus maculata* over *Chamaecytisus palmensis* and offered limited ecological or habitat value.
- The north tree belt contained a mixture of introduced gums with local *Eucalyptus rudis* and *Corymbia calophylla* that were reaching maturity, but understory here was limited. One *Corymbia calophylla* in the north belt was acting as a food source for *Calyptorhynchus banksia naso* (Forest Red Tailed Black Cockatoos). The north belt offered good potential scaffold for biodiversity restoration.
- At the south east corner of the block, a small area (30m x 30m) of *Eucalyptus rudis* was present, comprising two mature remnant trees and dense regrowth saplings of various sizes. There was a very sparse understory of one *Melaleuca preissiana* over *Juncus pallidus*, *Lepidosperma*, *Astartea affinis*, and introduced grasses. This community is best described as a highly degraded small fragment of *Eucalyptus rudis* wet woodland with closest affinities to SCP community 11 (Gibson et al 1994).
- Few habitats for fauna were identified during survey. Native fauna records were limited to kangaroo (*Macropus fuliginosus*) and common skink (*Menetia greyii*) with common bird species. Evidence was found of feeding by *Calyptorhynchus banksia naso* (Forest Red Tailed Black Cockatoo) on one tree and these were observed on the block.
- Recommendations for management with a view to maximising the ecological function and habitat diversity of open space areas in the block were made should the block be developed as urban housing.

Strategen JBS&G Report

- A field survey was conducted within Lot 252 (as well as lots to the north, outside of the project area) according to standards set out in Guidance Statement 51 Terrestrial flora and vegetation surveys for environmental impact assessment in Western Australia and Technical Guide – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2004; Parks and Wildlife 2015). The assessment of flora and vegetation within the survey area was undertaken by two ecologists from Strategen on 30 September 2016. The 2016 survey also included a targeted Threatened Orchid survey within suitable habitat areas (including areas within Lot 252), in accordance with the Draft Survey Guidelines for Australia's Threatened Orchids (DotE 2013).
- The 2016 survey undertaken by Strategen within Lot 252 identified the majority of the lot as 'parkland cleared' with one native vegetation community:
 - VT2- *Banksia menziesii*, **Leptospermum laevigatum* and *Allocasuarina fraseriana* woodland over *Xanthorrhoea preissii*, *Adenanthos cygnorum* and *Jacksonia sternbergiana* scrub over **Ehrharta calycina* and **Avena barbata* open bunch grassland over **Ixia polystachya* and **Fumaria capreolata* herb/forbland on sandy loam soils.
- The survey conducted by Emerge Associates identified two vegetation communities within the southwestern portion of Lots 2 and 3, these are:
 - ErOF- Open Forest of *Eucalyptus rudis* over Closed Grassland/Herbland of broadleaf weeds and pasture grasses
 - ErMrLOF- :Low Open Forest of *Eucalyptus rudis* over Isolated Trees to Low Open Woodland of *Melaleuca raphiophylla* over occasional dense patches of **Gomphocarpus fruticosus* over Sparse Sedgeland of *Juncus kraussii* fringing

*the creek lines, and *Cynodon dactylon, *Paspalum dilatatum and *Lolium rigidum Closed Grassland.*

- *No Threatened flora species as listed under section 178 of the EPBC Act or pursuant to Schedule 1 of the WC Act and as listed by Parks and Wildlife (2015), and no Priority flora species as listed by Western Australian Herbarium (1998-) were recorded within any of the areas surveyed (Lots 2, 3, 205 and 252). No Bush Forever sites are present within the property.*
- *The EPBC Act listed TEC Banksia woodlands of the Swan Coastal Plain has the potential to occur within the project area. Vegetation within Lot 252 was surveyed as containing Banksia menziesii and Banksia ilicifolia in a woodland structure and may resemble the TEC. It is likely that adjacent lot, Lot 205 also contains Banksia vegetation potentially consistent with the EPBC Act listed TEC.*
- *The site contains potential roosting and nesting hollows for Black-Cockatoo species (Strategen 2017). Management of Black-Cockatoo habitat will be considered at the subdivision stage.*

The findings of the above assessments are expected to guide the preparation of a Landscaping Plan as a condition of subdivision approval which details the retention as well as proposed management of the environmental attributes and values that exist within the LSP area in support of the proposed residential use and development.

2.2 Wetlands

Investigations undertaken in relation to wetland considerations note the following:

- A Resource Enhancement Category Wetland (REW) that contains Kadina Brook is located to the north and east of the LSP area. The Government's aim of managing REW types is retention and rehabilitation.
- A nominal 30m buffer to REW would ordinarily impact Lot 205 within the LSP area. However, due to further investigation of the buffer area, it has been determined that the nominal buffer has no environmental value and as such is unable to act as a buffer to the REW. The investigations undertaken to confirm this include:
 - The Level 1 Vegetation Survey, Fauna and Black Cockatoo Habitat Assessment prepared by Smithson Environmental; and
 - Correspondence from the Department of Water and Environmental Regulation (DWER).
 Further, the wetland is separated from Lot 205 by physical barriers such as the existing road and roundabout.
- The site does not adjoin the Swan Canning Development Control Area (SCDCA) as identified by State Planning Policy 2.10 Swan Canning River System.

In light of the above points, the LSP map (Plan 1) does not reflect the nominal 30m REW buffer, instead this area will be considered as unrestricted Public Open Space.

2.3 Landform and Soils

Investigations undertaken by Strategen Environmental in relation to landform and soil considerations note the following:

- *The geology and soils are not considered to be a constraint to development of the site.*
- *The regional geological mapping based on the Urban Geology Mapping 1:50,000 Map sheet indicates the site to be underlain by:*
 - *Mgs1 - Guildford Formation pebbly silt. which can include clayey and sandy clay to clayey sand formations) in the north and east of the site*
 - *S10- light grey to yellow Bassendean sands over Guildford Formation in the higher elevation areas in the south of the site.*
- *Groundwater bores were installed on site in 2015, as part of a monitoring program covering the site and areas to the west. The soils recorded during drilling of the monitoring bores consisted of 1 to 6.5 m of sand overlying clayey sand to clay of the Guildford Formation. The exception to this is MB05 (located to the north and off the site) which encountered clay materials throughout the profile. In general, the depth to clayey material increases in the higher elevation areas in the south of the site.*

2.4 Acid Sulfate Soils

Investigations undertaken by Strategen Environmental in relation to acid sulfate soils note the following:

- *The majority of the site is mapped as not having a risk of Acid Sulfate Soils (ASS).*
- *The south western portion of the site is mapped as having a low to moderate risk of ASS in the top 3m of the soil profile, as does the Helena River floodplain to the north.*
- *Excavations in or adjacent to the areas mapped as low to moderate risk may require ASS investigations to determine if ASS is present, and if so, any management measures required to address this issue.*

2.5 Contaminated Sites

Investigations undertaken by Strategen Environmental in relation to site contamination note the following:

- *The DWER Contaminated Sites Database (DWER 2017a) does not identify the site as contaminated, with the nearest registered contaminated site being located approximately 720m north-west of the site.*
- *Lots 2 and 3 have been historically exposed to a number of potentially contaminating land uses including use of the site as an inert landfill with numerous recorded incidents of putrescible waste being deposited at the site with the potential to generate leachate and landfill gas (Emerge Associates 2015). Given the historic land uses, these lots were classified by the Department of Environment Regulation (DER) as “Possibly contaminated - investigation required” pursuant to the Contaminated Sites Act 2003.*

- *A Preliminary Site Investigation (PSI) was undertaken for Lots 2 and 3 by Emerge Associates in 2015 which identified that the site will require further investigation (and potential remediation), however it was concluded that ‘there does not appear to be any significant contamination related impediments to the proposed land uses that cannot be addressed during earthworks associated with a standard residential development’ (Emerge Associates 2015).*
- *Historic aerial imagery is available from 1953 and does not indicate any potentially contaminating land uses have occurred across the remaining portions of the project area. These areas have historically comprised cleared pasture land with the exception of scattered trees, and a band of vegetation in the southern portion of Lot 252. Review of historical aerials indicates the project area appears to have been utilised for rural and rural residential land uses since 1953.*

2.6 Ground water and Surface water

2.6.1 Ground Water

Investigations undertaken by Strategen Environmental in relation to ground water considerations note the following:

- *The superficial formation on the site largely consists of sandy materials. Groundwater monitoring was undertaken on site between July 2015 and February 2017 (18 month period) by Emerge and Ace Environmental.*
- *Groundwater flow is in a generally north-easterly direction towards Kadina Brook.*
- *Groundwater quality sampling was undertaken in December 2016 and February 2017. Results indicate that groundwater quality is generally worse than both the Swan Canning Water Quality Improvement Plan (WQIP) water quality targets and the ANZECC (2000) water quality guideline values for lowland river ecosystems for total nitrogen, total phosphorus and NO_x-N.*
- *Historical contamination of the site from grazing of livestock is likely to be the cause of current groundwater quality at these locations.*

2.6.2 Surface Water

Investigations undertaken by Strategen Environmental in relation to surface water note the following:

- *The site lies in the catchment of Kadina Brook. The site contains an approximately 100m portion of Kadina Brook along the western boundary. Kadina Brook flows in a north to north-westerly direction and joins the lower Helena River approximately 500 m northwest of the site.*

- *The site is not located in the 1 in 100 year Average Return Interval (ARI) flood fringe of the Helena River based on information provided by Department of Water. Flood levels in the vicinity of the site are quoted by DWER as 11.05m AHD near the eastern (upgradient) boundary of the site. An unpublished study of Kadina Brook to the south of the site indicates a 100 year ARI flood depth of approximately 0.8m near the south-eastern corner of the site. On this basis, a flood depth of 1 m above the invert level of the creek is considered a conservative 100 year ARI flood level in Kadina Brook.*
- *Kadina Brook is an ephemeral stream that flows during the rainfall season (Shire of Kalamunda [SoK] undated). Water quality monitoring in Kadina Brook in 2011/12 indicates that the water quality generally meets ANZECC Guidelines with:*
 - *pH neutral: pH 6.9 – 7.8*
 - *electrical conductivity: 487-904 μ S/cm (slightly brackish)*
 - *total suspended solids: less than 6 mg/L*
 - *total nitrogen: 0.3-1.2 mg/L*
 - *total phosphorus: 0.006-0.02 mg/L (SoK undated).*
- *Drainage on the site is limited to informal road drainage alongside Helena Valley Road.*

2.7 Bushfire Hazard

Strategen Environmental were engaged to prepare a Bushfire Management Plan (BMP) in support of the proposed LSP.

Examination of strategic development design in accordance with the Structure Plan concept and post development bushfire hazard levels has identified the following bushfire hazard issues to be considered at future planning stages:

- *A direct vegetation interface exists between proposed lots at the south-western corner of the site and Class B Woodland vegetation within Lot 253. It is anticipated that this vegetation will be cleared in future to facilitate development of Lot 253. Future stages of planning are to ensure that sufficient separation exists for future habitable development to achieve BAL-29 or lower. In the absence of clearing/ management of vegetation within Lot 253, a 14 m asset protection zone (APZ) will be required to achieve BAL-29.*
- *Class B Woodland vegetation to the south of the site within the Crown reserve and Bush Forever site 213 will likely pose a permanent bushfire hazard. As such, a 14 m APZ will be required for any lots at the south-western site boundary. The APZ will be provided by a managed vegetation and road-interface. It is anticipated that the APZ will be shown on future plans of subdivision, thus will be exempt from requiring a Part V Environmental Protection Act 1986 native vegetation clearing permit.*
- *Class A forest, Class D scrub and Class B woodland may remain within the POS, within the eastern portion of the site. An APZ will be required for lots at the POS interface. It is noted that the Structure Plan proposes a public road interface which provides a level of separation.*
- *The Concept Plan includes direct interfaces with adjacent rural-residential lots to the west. The Shire of Mundaring Firebreak and Fuel Hazard Reduction Notice (Appendix 2) requires grassland within the adjacent lots to be maintained below 50 mm. On this*

basis, the majority of vegetation to the west can be excluded as low-threat vegetation in accordance with AS 3959 Clause 2.2.3.2 (f).

- *It is noted that the 'Rural' portion of Lot 252 will include a low-threat staging buffer that will be maintained across this area, to ensure that residential dwellings within the project area are not subject to a rating greater than BAL-29. The low-threat staging buffer will be maintained by the landowner, in accordance with Schedule 1 of the Guidelines (i.e. the relevant Asset Protection Zone requirements).*

Ultimately, Strategen considers the bushfire hazards within and adjacent to project area and the associated bushfire risks are readily manageable through standard management responses outlined in the Guidelines and AS 3959. These responses will be factored into proposed development as early as possible at all stages of the planning process to ensure a suitable, compliant and effective bushfire management outcome is achieved for protection of future life, property and environmental assets.

Future subdivision applications are to be supported by a Bushfire Management Plan that reconciles environmental and landscape objectives for the Rural zoned land and POS areas in consultation with the Shire of Mundaring.

A copy of the BMP is contained as Appendix 3.

2.8 Heritage

2.8.1 Local, State and Commonwealth Heritage

The LSP area is not subject to any statutory heritage listing on either the State Heritage register or the Shire of Mundaring municipal inventory.

2.8.2 Aboriginal Heritage

A review of the Aboriginal Heritage Online Inquiry System indicates the following registered sites existing within the LSP Area – refer Table 5:

Site ID	Name	Status	Type	Location
Registered Aboriginal Heritage Site				
3758	Helena River	Registered Site	Ceremonial, Mythological, Repository / Cache	LSP area and surrounds
3966	Holding Paddock 1-4	Registered Site	Artefacts / Scatter	Northern portion of Lots 252 and 205

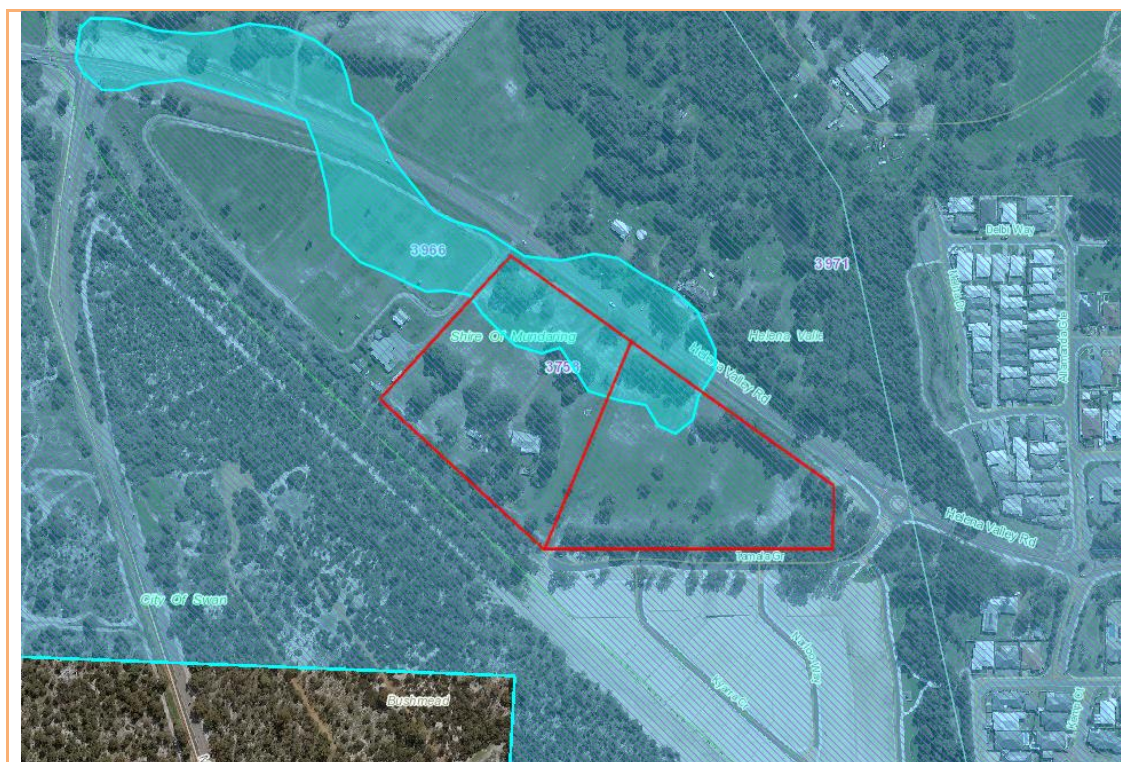


Table 5 -Extract of Aboriginal Heritage Enquiry System Map

The presence of registered heritage sites within the LSP area will require further investigations to be undertaken in accordance with the provisions of the *Aboriginal Heritage Act 1972*. Consultation with relevant parties as well as an Aboriginal Heritage Survey can be conducted over the LSP area as a condition of future subdivision approval prior to any ground disturbances occurring within the LSP area.

2.9 Context and other Land Use Constraints and Opportunities

2.9.1 Acoustic Noise

Herring Storer Acoustics were engaged to prepare an acoustic assessment to assess the noise impacts affecting the LSP area. Specifically, their engagement related to investigating the impacts of two noise key sources affecting the LSP area, these being noise from traffic on Roe Highway and noise from aircrafts associated with Perth Airport.

The criteria which need to be considered for these two noise sources are outlined in State Planning Policy 5.4 “Road and Rail Transport Noise and Freight Considerations In Land Use Planning” (SPP 5.4) and State Planning Policy No. 5.1 - “Land Use Planning in the Vicinity of Perth Airport” (SPP 5.1).

Analysis of the noise impacts affecting the LSP area has concluded as follows:

- *Due to the distance of residential lots from Roe Highway (more than 400 metres), the relative level (RL) of Roe Highway in relation to the development (in a cutting)... it is unlikely there will be any acoustic requirements for the residential lots.*

- *Review of the concept plan shows the ANEF 20 and 25 noise contours running across the southeastern side of the development. This information is based on the current City of Swan Intramap advice.*

Upon review, this is not in line with the current Ultimate Practical Capacity ANEF noise contours produced in the 2014 Perth Airport Master Plan. The ANEC contours on the current Master Plan are difficult to locate onto a map, however, further investigation has been carried out with the following being noted:

- *The Perth Airport Noise Portal provides a look up function for addresses and returns the proposed Ultimate Practical Capacity ANEF noise contour for the location. (<http://perthmasterplan.bksv.com/future-noise-impacts/>).*
- *The Perth Master Plan 2014 Ultimate Practical Capacity ANEF noise contours has the 20 and 25 noise contour reduced in area, from those contained in the city of swan mapping service.*

The proposed LSP and its nominated residential densities have been proposed to accord with the provisions of SPP5.1 and SPP5.4.

A copy of the Acoustic Assessment is contained as Appendix 4.

3.0 Land Use and Subdivision Requirements

3.1 Design and Land Use

The proposed Helena Valley – Local Structure Plan 76 provides for the redevelopment of the LSP area for the purposes of residential development consistent with the established policy framework for the site and development in the surrounding locality.

The LSP has been designed having regard to existing residential development in the locality and is proposed to be at a residential density of R30 facilitating predominantly single or two storey dwellings.

An indicative site layout for the LSP area has been provided in Appendix 5.

An overview of the LSP’s key elements is provided in Table 6:

Item	Data
Total area covered by LSP	6.03 ha
Gross subdivisions area	6.03 ha
Area of each land use proposed <ul style="list-style-type: none"> Residential (R20) Residential (R30) 	0.4266ha 3.19ha
Estimated area and percentage of public open space given over to: <ul style="list-style-type: none"> Unrestricted Public Open Space Restricted Public Open Space 	0.5465ha 0.0602 ha
Residential Site Density	R20 & 30
Estimated Number of Dwellings	94
Estimated Population	253 persons*
*Based on Australian Bureau of Statistics (2016) data for Helena Valley relating to average people per household of 2.7	

Table 6 – LSP Statistical Overview

3.2 Public Open Space (POS)

Liveable Neighbourhoods requires the following in respect to POS:

- Minimum 10% of a subdivision to be given up for POS;
- Minimum 80% of the total POS required to be unrestricted; and,
- Allowance for up to 20% of the total POS land required to be comprise of restricted use POS, such as drainage reserves and natural wetlands.

The proposed LSP will contribute a total of 10.61% or 0.6067 ha of natural area, this comprising 0.5465 ha of unrestricted POS and 0.602 ha of restricted POS. Put simply, the provision of POS as part of the proposed LSP meets the minimum expectations.

By way of POS distribution / configuration, it is noted that the LSP area has focused the POS along Helena Valley Road. This has been in direct response to the Shire of Mundaring’s desire to achieve a landscaped visual buffer along Helena Valley Road. This POS configuration is already evident east of the corner of Helena Valley Road and Drummond Gardens. This is considered to result in a hybrid design approach which incorporates a minimum 15m wide linear POS fronting Helena Valley Road and private lots separated from POS by a public road. This is intended to deliver:

- A visual buffer (trees) between Helena Valley Road and residences;
- A more conducive environment for pedestrians and cyclists;
- Improved passive surveillance over public and private properties; and
- Tree preservation.

There are rows of established trees on properties fronting Helena Valley Road. The POS has been designated to retain this vegetation for aesthetic and conservation reasons. To address any gaps in the tree cover within the POS and ensure the integrity of the landscape values, a Landscape Management Plan is to be approved and implemented at subdivision. It is expected that the Landscape Management Plan will be principally concerned with:

- Ensuring the visual buffer (trees) along Helena Valley Road is continuous. It is expected that this will be achieved through the retention of existing vegetation as well as plantings where gaps exist; and
- The retention of two mature Eucalyptus Rudis trees in the south-east corner of Lot 205.

In light of the above and the fact that the total amount of POS provided is in excess of the minimum 10% requirement being 0.6067 ha or 10.61% and, given the bulk of the POS is contiguous, the LSP area is considered to satisfy the key objectives of Liveable Neighbours in ensuring that public open space of appropriate quality and quantity is provided for the current and future community.

	POS Required	POS Area Proposed	Compliance
Lot 205 2.8992ha (excluding deductions)	10.61%	Unrestricted – 3572sqm Restricted – 476sqm Total – 4048sqm	972sqm surplus
Lot 252 2.8181ha (excluding deductions)	10.61%	Unrestricted – 1893sqm Restricted – 126sqm Total – 2019sqm	971sqm shortfall
Note: As Lot 252 proposes a shortfall of POS it is envisaged that, through a condition of subdivision approval, the developer will be required to pay a cash-in-lieu payment for the 971sqm shortfall.			

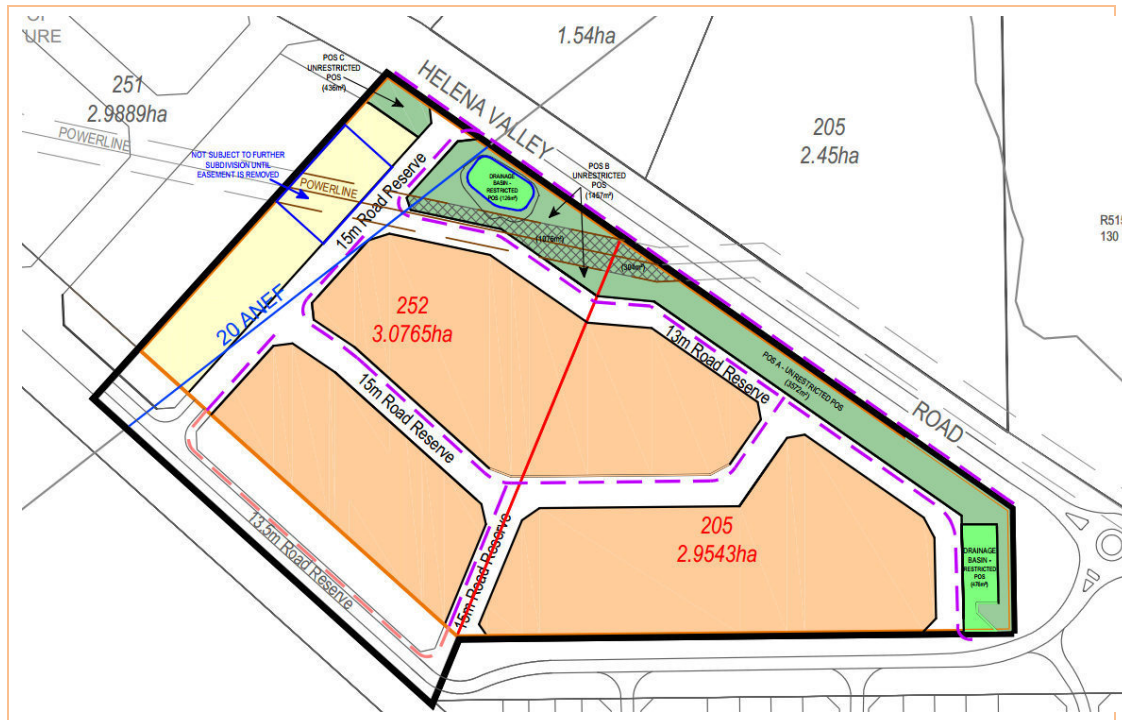


Table 7 – POS distribution / configuration schedule

3.3 Residential

The LSP anticipates a notional yield of 94 dwellings which will be predominately single or two storey dwellings based on a residential density coding of R20 and R30.

The land use / residential density has been proposed in order to create an optimum housing density with an emphasis on achieving consistency with the existing housing typology within the locality having regard to site conditions and constraints.

In the context of SPP 5.1 - Land Use Planning in the Vicinity of Perth Airport, areas rated below 20 ANEF are not subject to any restriction on zoning or development. For areas with a rating between 20 to 25 ANEF being only a small portion of land north-west of the LSP area (which accounts for approximately 9 allotments or less than 11% of the expected yield), SPP5.1 stipulates that dwelling densities should generally be limited to R20.

As the proposed LSP has assigned a residential density of R20 for all areas contained within the 20 to 25 ANEF noise contour, no variations are sought to the dwelling density provisions of SPP5.1.

3.4 Movement Network

A Traffic Impact Assessment in support of the LSP and Indicative Development Plan has been prepared by KCTT and is provided at Appendix 6. The purpose of this document is to provide commentary and analysis on the parking requirements and potential traffic and transport impact that the proposed development of this site may have on the surrounding road and transportation networks. This Transport Impact Statement has been completed in accordance

with the guidelines as shown in the WAPC Transport Impact Assessment Guidelines – Part 4 (Developments).

The report makes the following key conclusions with respect to the LSP / Indicative Development Plan:

- The proposed structure plan area consists of Lot 205 south (2.9543ha) and Lot 252 (3.0765ha), with total area of 6.03ha. The Structure Plan area is 6.03 ha.
- It is expected that all residences will provide parking on the premises in accordance with the R-Codes. KCTT believe that every house will have their own garage, providing parking for the owner in the garage and visitors in front of garage.
- It is assumed that residents of houses will store their bicycles and equipment within their respective dwellings. KCTT believe that there is no need for additional bicycle parking requirements.
- It is expected that delivery and service vehicles (such as waste removal vehicles) servicing the residential area will not require designated parking spaces given that they can operate safely within the road reserve.
- A review of the plan for the proposed development indicates there are sufficient sight distances for safe traffic movements.
- According to the Liveable Neighbourhoods, proposed roads can be classified as Access Street D (based on the expected traffic volumes) with pedestrian path on both side of the road reservation.
- The main existing route connecting the LSP area to the surrounding network will be via Helena Valley Road.
- Residents can access Helena Valley Road via the proposed Road 01 from the southern part of proposed structure plan.
- Bushfire protection requirements stipulate that a temporary access way (6.0m wide gravel or limestone paths) should be allowed in the interim until the full structure area is developed and full connectivity is allowed. Future road connections to land to the west will require temporary cul-de-sacs which would be designed as per SPP 3.7 requirements, with:
 - Maximum length of 200m;
 - Turn around area of minimum of 17.5m diameter head.

Temporary cul-de-sacs will be removed once the adjoining area is constructed and road connections are fully enabled.

- Structure Plan for Helena Valley locality foresees two more potential access/egress points on each side of Helena Valley Road however, these are to be closely defined under future Local Structure Plans.
- Helena Valley Road will be the main distributor of LSP area generated traffic after the construction of the Local Structure Plan Area is completed as both access/egress points in and out of the Structure Plan are on Helena Valley Road. No significant upgrades to Helena Valley Road are required as a result of the proposed structure plan and a future subdivision as the additional traffic will not result in Helena Valley Road changing category under Liveable Neighbourhoods. In saying that it is expected that Helena Valley Road will be upgraded to an 'Urban' standard consistent with the land to the east. The Shire of Mundaring have also indicated that Helena Valley Road may undergo a further upgrade at some point in the future as there is anticipated traffic growth in the area. It is expected that an equitable contribution will be made

to the Shire based on the extent of frontage the structure plan has to Helena Valley Road.

3.5 Water Management

A LWMS has been prepared by Strategen JBS&G in support of the proposed LSP and is provided at Appendix 7. This LWMS has been prepared to support the LSP consistent with Planning Bulletin 92: Better Urban Water Management (WAPC 2008).

The principal objective of the LWMS is to achieve better urban water management outcomes by specifying a development that manages the total water cycle in a sustainable manner and meets objectives for water sensitive urban design. This includes consideration of:

- Water conservation and efficiency (water use).
- Water quantity management (groundwater levels and surface water flows).
- Water quality management (groundwater and surface water quality).

The LWMS derives its key principles and objectives from:

- Liveable Neighbourhoods Edition 4 (WAPC 2009).
- Water Resources Statement of Planning Policy 2.9 (WAPC 2004).
- Stormwater Management Manual for WA (Department of Water 2007).
- Better Urban Water Management (WAPC 2008).
- Upper Swan Urban Precinct District Water Management Strategy (ENV 2013).

The preparation of the LWMS is consistent with Better Urban Water Management (WAPC and DPI 2008) and demonstrates the development area is capable of achieving appropriate water management outcomes with the proposed urban land use.

3.6 Infrastructure Coordination, Servicing and Staging

McDowall Affleck have prepared an Engineering Servicing Report in support of the LSP (refer Appendix 8). The key findings have been extracted from the report and summarised below.

3.6.1 Wastewater (Effluent) Disposal

The proposed subdivision falls within the catchment of the proposed Helena Valley 'A' Wastewater Pumping Station near Parkview Gardens, to the northeast of the site. Water Corporation Sewer Planning indicates a proposed DN225 sewer main across Helena Valley Road to the east of the site. Construction of this Wastewater Pumping Station has commenced and is expected to be completed by July 2020.

There is also an existing connection point for sewer along Helena Valley Road at the north-north-east corner of Lot 205 on the south side of Helena Valley Rd. This sewer line can be extended to both Lot 205 and Lot 252 by approximately 315m to the proposed road onto Helena Valley Road on Lot 252. Accordingly, sewer connection is not reliant on the completion of the abovementioned Wastewater Pumping Station.

3.6.2 Water Supply

Water Corporation ESInet data indicates an existing DN250 PVC water main along Helena Valley Road to the east of the site, terminating at the boundary between Lots 205 (North) and the adjacent Public Open Space (POS). The existing water main will need to be extended approximately 335m along Helena Valley Road, and 30m across the road reserve to service the proposed subdivisions at Lots 205 (South) and 252. The proposed subdivisions can be serviced internally by DN100 PVC mains.

The site can ultimately be serviced with water reticulation.

3.6.3 *Underground Power*

Overhead and Underground Power Network mapping supplied by Western Power indicates the following:

- The site is serviced by the Western Power Hazelmere substation to the west of the site;
- Lot 252 is currently serviced by a 'pillar to post' connection to the existing rural residence;
- An existing high voltage overhead distribution line along the northern side of Helena Valley Road.

As there are no existing ground mounted transformers within the vicinity of the site, it is likely that a ground mounted transformer/s will be required to supply power to the proposed subdivisions.

The Western Power Network Mapping Tool indicates that the site would be serviced by the existing Western Power Hazelmere substation, which has a forecast remaining capacity of 5 to 10 MVA. The Hazelmere substation is forecast to have a remaining capacity up to 10MVA through to 2019, with the forecast remaining capacity at less than 5MVA from 2020 onward.

Where the powerline traverses the area identified for R20 residential development on Lot 252, the infrastructure is to remain within a single allotment as indicated on the LSP map (Plan 1). Development on the lot is to be restricted to one single dwelling until such time as the electricity supply infrastructure is relocated. Upon relocation of the electricity supply infrastructure the lot may be further subdivided and/or developed to the maximum permitted in the Residential R20 zone.

The site can ultimately be serviced with underground power.

3.6.4 *Communications*

Network information supplied by Telstra and NBN Co. indicates existing in-service cables/ducts along Helena Valley Road, and the existing private road at the rear of Lots 252 and 205 (south). It is anticipated that the proposed subdivisions can be serviced by the existing services.

The site can ultimately be serviced with communications services.

3.6.5 Gas

ATCO Distribution Network mapping indicates an existing DN160 HDPE medium pressure line along Helena Valley Road, terminating at the boundary of Lot 205 and the adjacent POS area. The existing pressure main will need to be extended approximately 335m along Helena Valley Road, and approximately 30m across the road reserve to service the proposed subdivisions at Lots 205 (south) and 252.

The site can ultimately be serviced with natural gas reticulation.

3.6.6 Stormwater Drainage Requirements

Stormwater management infrastructure will be incorporated within the POS areas within each lot. Runoff from the 1 year 1 hour ARI event will be retained at source by on-site detention basins and open swales to convey the collected runoff. Sufficient storage will be provided for the 20 year ARI major storm event as per Shire of Mundaring requirements. The basin on Lot 252 is underlain by sandy soil and will dissipate collected runoff via infiltration. The basin on Lots 205 (south) is underlain by clayey soils and will discharge pre-development flows toward the open swale along Helena Valley Road. Stormwater runoff from events greater than the 20 year ARI will overflow to the open swale along Helena Valley Road for Lots 205 (south) and 252.

WSUD opportunities will be used where possible and will include the installation of flush kerbs to the roads abutting the POS areas to allow direct runoff from the roads into the swales within Lot 205 (south), minimising the need for a piped drainage system. Lot 252 is constrained by an overhead HV Western Power transmission line easement that may prevent the placement of an open swale within the easement. As such, a piped drainage system will be required to convey collected runoff to the on-site detention basin.

The design of the stormwater drainage for the site ensures the overall peak discharge from the development is controlled to pre-development peak discharge flows for up to the 5 year event as per Shire of Mundaring requirements.

Proposed lots within Lot 205 (south) and 252 are expected to be underlain by sand and subsequently able to dissipate all collected stormwater runoff for the lot via infiltration.

3.6.7 Earthworks

The soil profiles observed from the monitoring bores indicate that the soil profile varies across the site, with up to 6.5m of sand in the higher southern areas within Lots 205 (south) and 252.

A full geotechnical investigation will yield further information regarding the soil profile and site classification and provide recommendation for any required remediation to improve the soil classification of the site prior to development.

Maximum groundwater level mapping supplied by Strategen JBS&G indicates surface water near the eastern reaches of Lots 205 (south) has depths to MGL less than 1.2m immediately

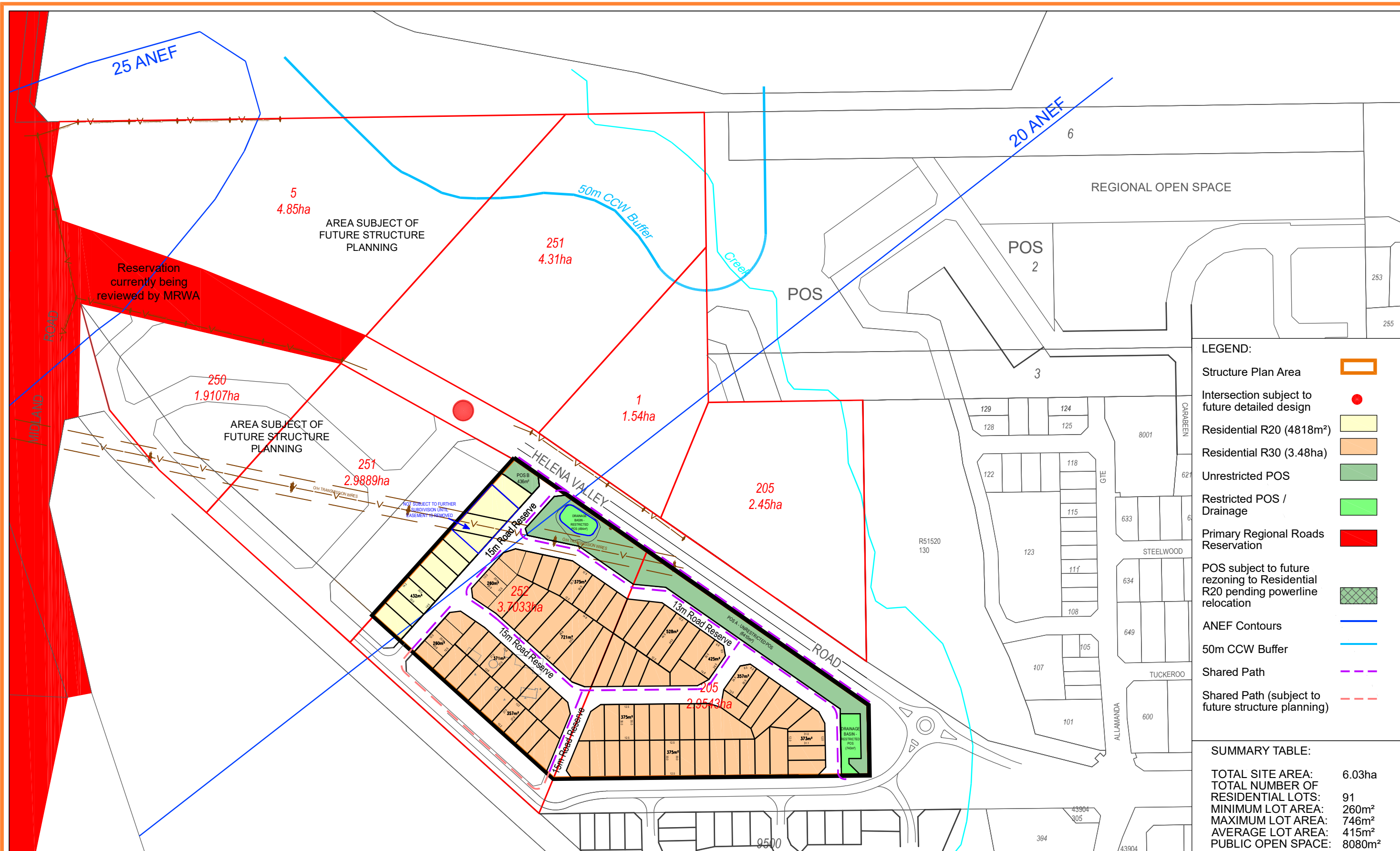
surround these areas of surface water. It is expected that additional filling will be required to provide sufficient clearance to the MGL in these areas.

It is anticipated that retaining walls may be required within Lot 205 (south) as there is approximately 6.5m to 7.5m fall across each lot. There is a lesser fall of approximately 3.5m within Lot 252, which may also require low height retaining walls for the proposed subdivision.

It is expected that the final levels will be a balance between minimising the requirements for retaining walls across each lot within the site and reducing the amount of required imported fill to yield suitable lots.

3.6.8 *Staging*

Given the small scale of the development site in the context of typical LSP's and readily available infrastructure connections in the immediate area, it is unlikely that the proposed LSP will require staging.



LEGEND:

- Structure Plan Area
- Intersection subject to future detailed design
- Residential R20 (4818m²)
- Residential R30 (3.48ha)
- Unrestricted POS
- Restricted POS / Drainage
- Primary Regional Roads Reservation
- POS subject to future rezoning to Residential R20 pending powerline relocation
- ANEF Contours
- 50m CCW Buffer
- Shared Path
- Shared Path (subject to future structure planning)

SUMMARY TABLE:

TOTAL SITE AREA:	6.03ha
TOTAL NUMBER OF RESIDENTIAL LOTS:	91
MINIMUM LOT AREA:	260m ²
MAXIMUM LOT AREA:	746m ²
AVERAGE LOT AREA:	415m ²
PUBLIC OPEN SPACE:	8080m ²

SUBDIVISION CONCEPT PLAN

HELENA VALLEY ROAD
HELENA VALLEY

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