NORTH ELLENBROOK (WEST) DISTRICT STRUCTURE PLAN

NOVEMBER 2022

OUR REF: 2270_IND01C

parcel.

ROWE GROUP DESIGN

DOCUMENT CONTROL

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PROJECT TEAM

The following multi-disciplinary project team has been engaged by Parcel Property on behalf of a main coordinating landowner group within the North Ellenbrook West District Structure Plan area to progress the preparation of the District Structure Plan:

DISCIPLINE	CONSULTANT
Development Manager	Parcel Property
Town Planning and Urban Design	Rowe Group
Environmental	360 Environmental
Civil Engineering	Pritchard Francis
Traffic	Donald Veal Consultants
Economics (Employment, Retail and Residential Needs)	Urbis
Economics (Industrial Needs)	Lucid Economics
Indigenous Heritage	AHA Logic
Hydrological	JDA Consulting Hydrologists
Bushfire	Eco Logical Australia Pty Ltd
Landscape Architecture	EPCAD
Acoustic	Herring Storer Acoustics

Rowe Group is the primary point of contact for all matters relating to the Structure Plan.

ROWE GROUP DESIGN

parcel.

RECORD OF ENDORSEMENT

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

30 August 2022

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

21 November 2022

TABLE OF AMENDMENTS

AMENDMENT NO.	SUMMARY OF THE AMENDMENT	AMENDMENT TYPE	DATE APPROVED BY WAPC

Lot 1876 - Looking South - East

EXECUTIVE SUMMARY

The ***North Ellenbrook West District Structure Plan*** ('DSP') has been prepared to provide the required framework for the urbanisation of land identified in the *North-East Sub-Regional Planning Framework* (WAPC, March 2018) ('Framework'). North Ellenbrook is identified as a future urban growth area located in Perth's North East Corridor. Based on the population forecasts developed for the *Perth and Peel @ 3.5 million*, the Sub-Region's population is expected to increase by approximately 113,700 residents over the 2016 – 2051 period, with the Sub-Region accommodating more than 70% of the future population growth in the City of Swan over this period.

Greenfield dwelling supply will continue to be critical to accommodating future housing needs and ensuring housing affordability and choice. In addition to achieving the State Government's high infill dwelling targets, there is a need to accommodate approximately 43,000 dwellings within greenfield areas in the City of Swan over the next three decades.

The DSP covers approximately 611 hectares, with some 556 hectares or 91% held by the main coordinating landowner group. The DSP will ultimately provide for an estimated 4,000 – 4,500 new dwellings, accommodating a population of 12,000 – 13,500 people. The DSP provides for this population through the provision of District and Neighbourhood Centres, school locations and areas of open space, while responding to key environmental, heritage and hydrological features.

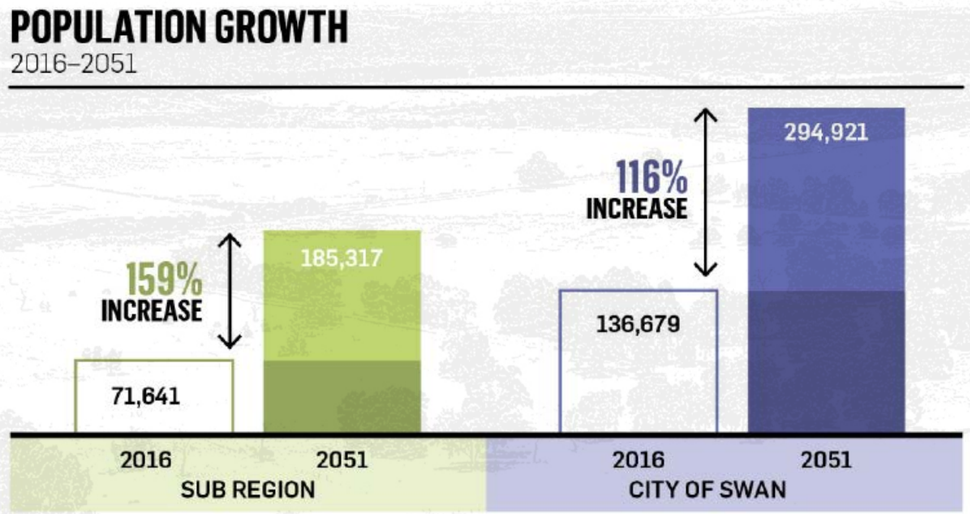
The DSP also responds to the 'Key Considerations' identified in the Framework as requiring further investigation and outlines the ongoing steps in this process. The DSP demonstrates that the Framework's North Ellenbrook Urban Investigation Area is strategically placed to support future employment areas and the growth of the Metropolitan North East Corridor.

The land is located immediately west of the Tonkin Highway extension, which provides Freeway standard access from Muchea to Ellenbrook, Morley and beyond via the Tonkin Highway to the wider metropolitan area. A new interchange, providing full-movement access to the Tonkin Highway, will service both the 'west' and 'east' cells of the North Ellenbrook Urban Investigation Area.

The land has supported a range of rural uses and this is reflected in historic clearing evident. The land is located 6.5 kilometres north of the Ellenbrook Town Centre and, via Tonkin Highway, will have high frequency access to the *Metronet* Morley-Ellenbrook Line at Ellenbrook station.

The land lies immediately south of the Framework's identified *Bullsbrook Freight and Industrial Land Use Planning Strategy* (BFILUPS). This area is forecast to provide in excess of 50,000 jobs when completed and will include a planned intermodal (road-rail) freight terminal. The DSP will provide a locally-based workforce to service these major employment areas in Bullsbrook and beyond to Muchea.

In the absence of the timely development of North Ellenbrook, Urbis forecast that residential land supply will be depleted by 2038/39. More importantly, Urbis estimate the stock of urban zoned land is forecast to decline well below adequate levels by 2026. There are estimated to be approximately 13,400 lots within Urban and Urban Deferred areas by 2026, compared to the minimum benchmark to ensure flexibility and affordability in supply of 18,000 lots.



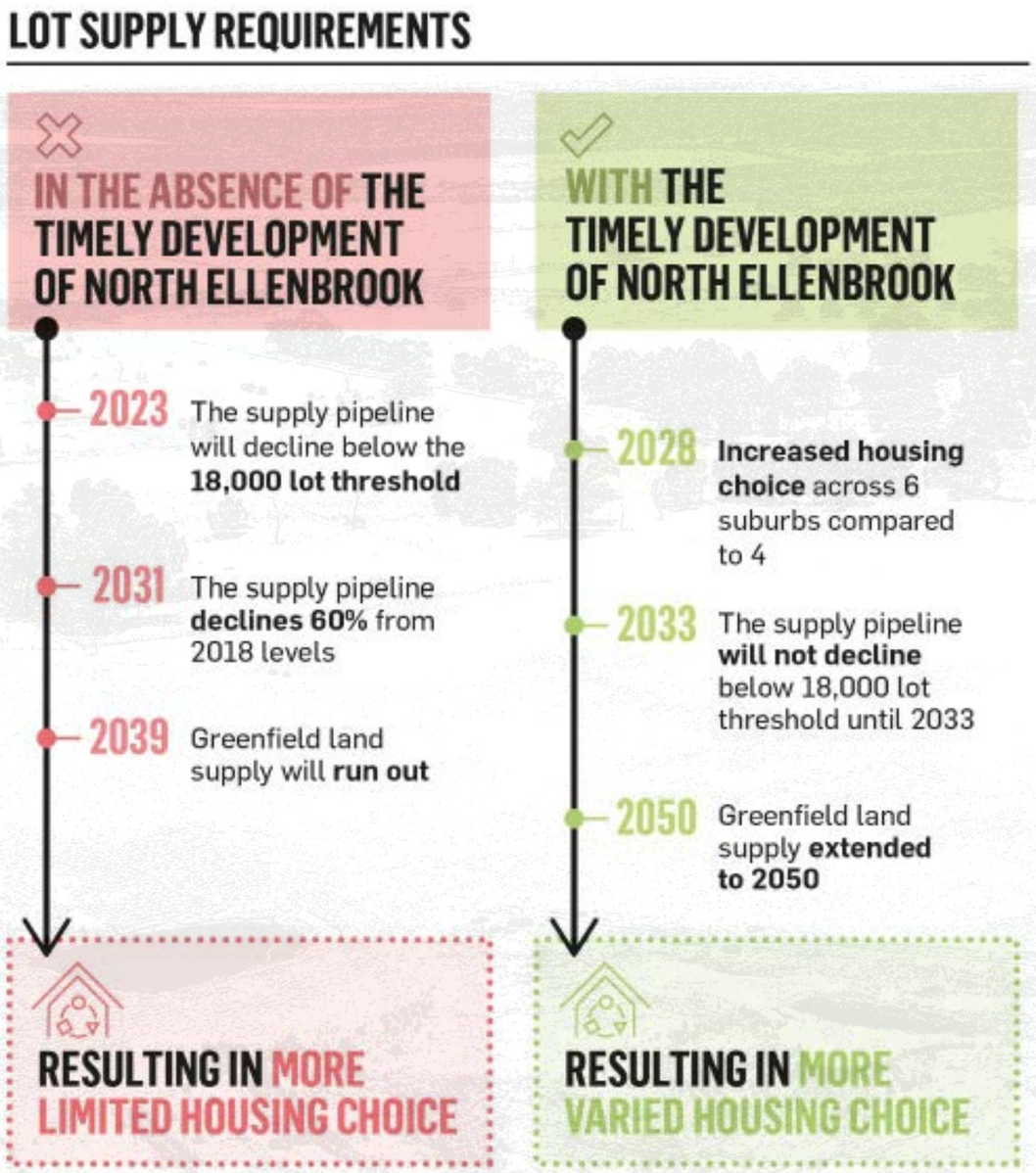
Source: Urbis, North Ellenbrook West Residential Needs Study (March, 2020)

Urbis expects the North Ellenbrook East area to start lot delivery from 2025 with the subject land within this DSP area starting from 2028. With these developments included, key issues of supply surety and housing diversity are addressed.

The DSP vision demonstrates a strong response to the original landform of North Ellenbrook West and will retain key areas of remnant vegetation, integrate and rehabilitate drainage lines for both their hydrological and heritage values and ensure these elements are central to the ultimate character and amenity provided for the future community. The transition of the North Ellenbrook Urban Investigation Area to urban is expected to occur in the medium term following the completion of access and service infrastructure provision.

The DSP is divided into three parts, being:

- ***Part One: Implementation*** - Part One outlines the key tasks to be undertaken to facilitate further planning of the DSP area. This will include the preparation of Metropolitan Region Scheme (MRS) Amendments and Local Structure Plans (LSPs). Part One includes the District Structure Plan Map which will provide the primary spatial guide to further planning.
- ***Part Two: Explanatory Section*** – Part Two outlines all relevant information that has informed the preparation of the DSP, incorporating key material from more detailed technical studies.
- ***Part Three: Technical Appendices*** – A substantial number of technical studies have been completed over several years to inform the DSP. These are included in Part Three and comprise:
  - Industrial Land Assessment;
  - Bushfire Management Plan;
  - Environmental Assessment Report (including Archaeological and Ethnographic);
  - Residential Needs Study;
  - Acoustic Assessment.
  - Transport Impact Assessment;
  - District Water Management Strategy (including Landscape Masterplan);
  - Activity Centre & Employment Strategy; and
  - Servicing Report.



Source: Urbis, North Ellenbrook West Residential Needs Study (March, 2020)

NORTH ELLENBROOK WEST DISTRICT STRUCTURE PLAN – SUMMARY

ITEM	AREA / QUANTITY (ESTIMATED)
Total area covered by the District Structure Plan	611 hectares
Estimated Dwellings	4,000 – 4,500 dwellings
Estimated Population	12,000 – 13,500 people
Estimated Commercial Floor Space	
District Centre	32,000 net lettable area / ~10ha
Neighbourhood Centre	3,300 net lettable area / ~2ha
Local Centre	1,200 net lettable area*
Estimated Employment	
Construction Phase Jobs	10,800 jobs
Ongoing Local Employment	1,300 jobs
High Schools	1
Primary Schools	3*
Estimated Area Breakdown	
Urban Residential	261 hectares
Light Industrial / Service Commercial	106 hectares
Parkland / Open Space	
New Parks and Recreation Reserves	60 hectares
District Open Space	9 hectares *(co-located with linear POS)*
Other Open Space	137 hectares

**Subject to final demand review at Local Structure Plan stage*

VISION

North Ellenbrook will be a vibrant new urban village community that embraces the environmental and historic character of the land, offers housing and lifestyle diversity and draws on locational advantages to major local transport and employment opportunities.

CONTENTS

TECHNICAL APPENDICES - PART THREE

APPENDIX NUMBER	DOCUMENT TITLE	NATURE OF DOCUMENT	REFERRAL/APPROVAL AGENCY	APPROVAL STATUS AND MODIFICATIONS
1.	Industrial Land Assessment	Supporting	-	
2.	Bushfire Management Plan	Approval Required	Department of Fire and Emergency Services	
3.	Environmental Assessment Report	Supporting	Department of Biodiversity, Conservation and Attractions	
4.	Residential Needs Study	Supporting	-	
5.	Acoustic Assessment	Supporting	Main Roads WA; City of Swan	
6.	3D Visioning Report	Supporting	-	
7.	Transport Impact Assessment	Supporting	Main Roads WA; City of Swan	
8.	District Water Management Strategy (including Landscape Master Plan)	Approval Required	Department of Water and Environmental Regulation; City of Swan	
9.	Activity Centres and Employment Strategy	Supporting	DPLH; City of Swan	
10.	Servicing Report	Supporting	Servicing Authorities; City of Swan	

FIGURES

TABLES

LIST OF ABBREVIATIONS

AHD Australian Height Datum

ASS Acid Sulfate Soils

AS Australian Standard

BGL Below Ground Level

BFI DSP Bullsbrook Freight & Logistics District Structure Plan

BMP Bushfire Management Plan

BRT Bus Rapid Transit

CBD Central Business District

CCW Conservation Category Wetland

CoS City of Swan

DBCA Department of Biodiversity, Conservation and Attractions

DOS District Open Space

DoT Department of Transport

DPLH Department of Planning, Lands & Heritage

DWER Department of Water and Environment Regulation

DWMS District Water Management Strategy

EPA Environmental Protection Authority

Ha Hectare

LDP Local Development Plan

LILO Left-in /Left-Out Road Intersection

LSP Local Structure Plan

LWMS Local Water Management Strategy

MGL Maximum Groundwater Level

MRS *Metropolitan Region Scheme*

MRWA Main Roads Western Australia

NESRF North-East Sub-Regional Planning Framework

DSP North Ellenbrook West District Structure Plan

POS Public Open Space

PTA Public Transport Authority

REW Resource Enhancement Wetland

UWMP Urban Water Management Plan

vpd Vehicles per day

WAPC Western Australian Planning Commission

WSUD Water Sensitive Urban Design

PART ONE
IMPLEMENTATION

1 INTRODUCTION

The North Ellenbrook West District Structure Plan ('DSP') area is identified for a change of land use under the WAPC's *Perth and Peel @ 3.5 Million* (March, 2018) ('Framework') and specifically the *North-East Sub-Regional Planning Framework* (March, 2018). The Framework seeks to accommodate 3.5 million people by 2050 and is intended as the primary guide for State Government agencies, Local Government and the wider community on how the urban form of Perth should evolve over the next 30 years.

The Framework includes a 'North Ellenbrook Urban Investigation Area' to accommodate future population growth and demand for housing in proximity to major transport and employment areas in the North-East Corridor. This DSP area comprises generally the western portion of the 'Urban Investigation' area.

The Framework incorporates an implementation section which outlines the tasks and responsibilities for delivery. Table 7 of the Framework recognises that Urban Investigation areas require *"District Structure Plans (where appropriate), generally prior to region scheme zoning"* (NESRPF, p60). This DSP has been prepared in conjunction with an associated MRS rezoning request for the land to be rezoned to 'Urban Deferred'.

Section 1.4.1 of Part 2 of the DSP provides the detailed investigation of 'Key Considerations' pursuant to Table 2 of the Framework document (NESRPF, p22). A northern portion of the DSP is identified within the Framework for 'Industrial Expansion', though detailed planning and discussion with the DPLH in preparing this DSP and the associated MRS Amendment request has reaffirmed that the DSP area adopted herein forms the most logical 'planning precinct' having regard to now understood environmental constraints and the extent of required industrial land. Importantly, the Framework acknowledges that Urban Expansion and Urban Investigation areas will be subject to refinement of area boundaries to accommodate more detailed planning (NESRPF, p20). The DSP accommodates approximately 106ha of Light Industrial / Service Commercial land in response to the Framework.

The Framework identified a Gross Urban Area of approximately 341ha within North Ellenbrook West. The DSP and associated Masterplan Concept demonstrate that, while encompassing a larger footprint, after environmental and other considerations are taken into account, a Net Residential Area of 261ha is expected. The DSP will provide for an estimated 4,000 – 4,500 dwellings or 12,000 – 13,500 people consistent with the Framework.

2 DISTRICT STRUCTURE PLAN OPERATION AND PURPOSE

This District Structure Plan applies to the area of land contained within the inner edge of the line denoting the District Structure Plan boundary on **Plan 1 - District Structure Plan Map**. The District Structure Plan provides the framework for the coordinated planning and development of the DSP area, including recognition of environmental, heritage, hydrology, servicing and access considerations.

Pursuant to Clause 28, Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015 (the 'Regulations'), this Structure Plan comes into effect on the day it is approved by the Western Australian Planning Commission and is valid for a period of 10 years from the date of approval, unless the period of approval is otherwise extended in accordance with the Regulations.

The principal objectives of the DSP are to:

- Confirm the role and function of North Ellenbrook West as identified future Urban land in *Perth and Peel @ 3.5Million* and the *North-East Sub-Regional Planning Framework*;
- Establish the spatial layout that guides planning and development within the DSP area based on the allocated land use mix;
- Identify existing environmental, heritage and hydrology assets at the district level, the mechanisms for retention and what further investigations are necessary;
- Identify the need for service and infrastructure requirements including movement and access;
- Inform subsequent local structure plans, scheme amendment and planning approvals.

The DSP will guide State and Local Government on subsequent stages of the planning process.

3 DISTRICT STRUCTURE PLAN IMPLEMENTATION

The DSP provides the detailed investigation of the North Ellenbrook West 'Urban Investigation Area' identified in the Framework. The DSP informs associated amendments required to the *Metropolitan Region Scheme* ('MRS') and the *City of Swan Local Planning Scheme No. 17* ('LPS 17').

Four (4) Local Structure Plans ('LSPs') are identified on the **Plan 1 - District Structure Plan Map**. The preparation of LSPs and a possible Precinct Structure Plan ('PSP') for the District Centre give effect to the District Structure Plan.

The DSP also that contributions will be required from developing landowners within the North Ellenbrook West and East DSP areas for the equitable sharing of infrastructure costs pertaining to the required new interchange over the Tonkin Highway, in addition to the State and Federal funding which has already been committed by Government.

3.1 METROPOLITAN REGION SCHEME AMENDMENTS

The DSP provides guidance on the required changes needed to MRS. The DSP recognises that these amendments comprise both requirements for the reservation and rezoning of DSP land under the MRS.

MRS Reservation of Land within the DSP

The DSP proposes the reservation of land in the MRS for:

- 'Primary Regional Roads' to accommodate the Tonkin Highway interchange that will service the North Ellenbrook West and East urban areas;
- 'Parks and Recreation' to accommodate identified Bush Forever, Conservation Category Wetland ('CCW') and EPBC Act recognised areas, in addition to the area of District Open Space; and
- 'Public Purpose – High School' to accommodate the identified High School site.

MRS Rezoning of Land within the DSP

All land within the DSP not identified for reservation will require rezoning to 'Urban Deferred' under the MRS in the first instance, in conjunction with detailed local structure planning and local rezoning.

The DSP is the subject of an existing MRS Amendment request seeking to rezone the DSP area from 'Rural' to 'Urban Deferred', rather than directly to 'Urban'. While the DSP establishes a clear framework for urban development of the land, the likely timing for development and completion of infrastructure planning warrants interim rezoning to 'Urban Deferred'. A request for the 'lifting' of urban deferment will ultimately be required upon resolution of the following matters.

1. A mesoscopic transport model and subsequent transport assessment to be prepared and undertaken by Main Roads WA in collaboration with the Department of Planning, Lands and Heritage and the City of Swan. Once completed, the Traffic Impact Assessment that accompanies the DSP is to be updated to reflect the outcomes of the State Government transport assessment. The updated DSP TIA will then inform subsequent stages of planning specifically, Transport Impact Assessments prepared to accompany local structure plans; and
2. Agreement with the Water Corporation in relation to the funding of water and wastewater headworks necessary to service the DSP with sewer and water.

Should the abovementioned matters (State-led transport assessment and funding of water / wastewater headworks) be resolved prior to an MRS amendment being initiated, then rezoning to 'Urban' may be considered. Based on current timeframes, it is expected that the rezoning to 'Urban Deferred' will be progressed ahead of the outstanding matters being fully resolved, allowing for a 'lifting of Urban Deferment' to take place once the outstanding matters are addressed.

The WAPC's *Lifting of Urban Deferment Guidelines* set out the information requirements necessary to support a request for the lifting of urban deferment. These include requirements for a conceptual layout of the land being 'lifted'; demonstration that essential urban services (including reticulated water and wastewater) can be provided; and demonstration of landowner support.

The lifting of urban deferment is expected to occur generally on a local structure plan area basis to ensure the orderly zoning and implementation of the DSP.

3.2 LOCAL PLANNING SCHEME AMENDMENTS

Implementation of the DSP will require amendment to the MRS and LPS 17 to ensure consistency. The WAPC may concurrently rezone land within the DSP to both 'Urban" under the MRS and 'Residential Development' under LPS17, pursuant to Section 126 (3) of the *Planning and Development Act 2005*. 'Residential Development' zone is considered the most appropriate LPS 17 zoning and will facilitate the preparation of local structure plans. Should concurrent MRS and LPS 17 amendments not be supported, a standalone LPS17 amendment will be necessary.

A scheme amendment will also provide the opportunity to incorporate into LPS17 guiding provisions for the preparation of local structure plans if needed.

3.3 LOCAL STRUCTURE PLANS

Local structure plans are required to be prepared for each identified area on the **Plan 1 - District Structure Plan Map**. The DSP Map identifies four (4) local structure plan areas, together with a District Centre that may require a Precinct Structure Plan ('PSP') . The final need for an PSP will be determined at the Local Structure Plan stage for LSP Area 1 when the final scale and demand for the centre is confirmed. The LSP areas on Plan 1 are indicative and subject to refinement as detailed local planning occurs.

The transition of rural to urban land use within the DSP area is expected to occur on a local structure plan basis where the separation of potential land use conflicts can will be considered in detail.

The formal process to prepare a local structure plan is detailed under Part 4 Section 15 of the *Planning and Development (Local Planning Schemes) Regulations* and may commence concurrently with lodgement of a local planning scheme amendment under LPS 17. Individual local structure plans will be responsible for defining land use and reserves at the local level, consistent with the zones and reserves prescribed under the City of Swan's Local Planning Scheme No. 17 (LPS 17).

3.4 DEVELOPMENT CONTRIBUTIONS PLANS

Development Contribution Plans (DCP) are required to be established through an amendment to LPS 17 that will define a Development Contribution Area on the scheme map to which the Development Contribution Plan/s will apply. The Development Contribution Area is expected to encompass the entire DSP area.

A Development Contribution Plan that identifies infrastructure items to be funded as well as the associated cost apportionment methodology will then be prepared either concurrently with the scheme amendment that defines the DCA, or separately consistent with *State Planning Policy 3.6 – Infrastructure Contributions*.

The new interchange to the Tonkin Highway is not to be included within any local Development Contribution Plan to be managed by the City of Swan. The interchange will instead be funded with the assistance of the Federal and State Governments (combined $75 million) with the balance to be funded by the landowners of the eastern and western DSP ($25 million). The proportion of funding from each landowner will be determined based on 'need and nexus' and the principles established by State Planning Policy 3.6 – Infrastructure Contributions.

3.5 DISTRICT OPEN SPACE

The District Open Space (DOS) identified on the DSP Map will provide district-level sporting and recreational facilities. Whilst the DOS contributes to the minimum 10% POS requirement in accordance with Liveable Neighbourhoods, its location in terms of land tenure may result in one landowner disproportionately contributing to POS for the broader area.

Based on this, the DOS – both the land component and development costs – will be funded through a future DCP.

3.6 LOCAL INFRASTRUCTURE

Consistent with the principles of orderly and proper planning, a local level DCP will be prepared for any local infrastructure items that require shared funding. The preparation of future DCPs that address local development and community infrastructure will need to be prepared consistent with *State Planning Policy 3.6 – Infrastructure Contributions*.

3.7 SUBDIVISION AND DEVELOPMENT

The provisions of the DSP and subsequent local structure plans are to be given due regard in the preparation and assessment of subdivision and development applications.

4 DISTRICT STRUCTURE PLAN ELEMENTS

The DSP identifies four (4) Local Structure Plan areas together with a District Centre. Refinement of the LSP areas will occur as detailed local planning takes place and are intended as a guide only. A local structure plan may be undertaken as landownership and service infrastructure requires and need not follow the numerical order shown on the Plan 1 DSP Map.

The DSP provides for orderly access to the regional road network and appropriate management of bushfire risk. These elements must be further considered for each local structure plan area having regard to the sequential staging of development and the establishment of compliant bushfire access.

Local structure plans shall demonstrate consistency with this DSP and the *North East Sub-Regional Planning Framework*, including the Framework's designation of density targets at 15 dwellings per gross urban hectare. Higher density targets should be considered in proximity to the District and Neighbourhood Centres identified within the DSP in accordance with *State Planning Policy 4.2 – Activity Centres for Perth and Peel*. Final density requirements in these areas shall be determined in the relevant local structure plan.

4.1 DISTRICT CENTRE

A District Centre is to be provided in the south eastern portion of the DSP area, servicing the North Ellenbrook west and east urban areas. This central location maximises the anticipated trade catchment for the District Centre and ensures its accessibility to the Tonkin Highway.

The District Centre is to provide an indicative gross land area of approximately 10 hectares, supporting a floorspace of approximately 32,000 square metres of net lettable area.

The final scale and timing of District Centre construction will be influenced by the maturing catchment at North Ellenbrook as development within the west and east urban cells occurs. The District Centre will be a key source of local employment.

The DSP envisages a Precinct Structure Plan (PSP) being prepared for the District Centre. The final scale and need for the PSP will be reviewed as part of the preparation of Local Structure Plan Area 1. In addition, a review of the land required (including retail impact testing) for the District Centre may be required at any Precinct Structure Planning / Local Structure Planning stage, consistent with the WAPC's *State Planning Policy 4.2 – Activity Centres for Perth and Peel*.

4.2 NEIGHBOURHOOD CENTRE

A review of the land required (including retail impact testing) for the Neighbourhood Centre or Local Centre may be required at any Precinct Structure Planning / Local Structure Planning stage, consistent with the WAPC's *State Planning Policy 4.2 – Activity Centres for Perth and Peel*.

4.3 LOCAL STRUCTURE PLAN AREA 1 – GATEWAY (SOUTH-EAST)

Local Structure Plan Area 1 - 'Gateway (South-East)' incorporates Lots 112, 114, 1808 and 2946 comprising approximately 120 hectares in area. The LSP area is logically defined, being bound by Chudalup Road to the north, Halden Road to the west and south, and the Tonkin Highway to the east.

Key matters to be considered in preparation of the Local Structure Plan are:

- Review and accommodate the land, interface (including noise mitigation) and access requirements for the Tonkin Highway interchange and highway corridor;
- Confirm the integrator road access concept design linking the District Centre and Highway interchange;
- Review the role, demand, land use mix and need for an Activity Centre Plan to facilitate detailed planning of the District Centre. Impact Testing may be required in accordance with *State Planning Policy 4.2 – Activity Centres for Perth and Peel*;
- Review the role and design function of Halden and Chudalup Roads and the new North-South Neighbourhood Connector;
- Review the interface to private land south of the LSP area in regard to land use (including Lot 5892), connectivity to existing Halden Road and the need for bushfire safety mitigation;
- Accommodate and review the interface to the identified 'Future Parks and Recreation Reserve' land comprising approximately 18ha at Halden Road;
- Review and confirm the extent and treatment of open space / drainage corridors identified having regard to their drainage, vegetation retention and open space functions;
- Confirm the location and requirement for the Primary School site with Department of Education;
- Consider the interface to LSP Area 2 and land identified for Light Industry / Service Commercial;
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

4.4 LOCAL STRUCTURE PLAN AREA 2 – CHITTY ROAD (NORTH-EAST)

Local Structure Plan Area 2 – 'Chitty Road (North-East)' incorporates approximately 122 hectares across Lots 1767, 7 & 1 and is bound by Chitty Road to the north, the Tonkin Highway to the east, Chudalup Road to the south and the boundary of Lot 1767 to the west.

Key matters to be considered in preparation of the Local Structure Plan are:

- Review the role, demand and land use mix to facilitate detailed planning of the Neighbourhood Centre of approximately 3,300m2 nett lettable area across LSP Areas 2 and 4;
- Review the design interface and functionality of the linear east-west open space having regard to its heritage, drainage, vegetation retention and open space integration functions;
- Review the demand, land use mix, interface and overall potential for Light Industry / Service Commercial development having regard to the proximity of the wider Bullsbrook Freight and Industrial area and established development within Ellenbrook;
- Consider the interface and access north of Chitty Road to mitigate land use impact, protect the Chitty Road linear open space corridor and limit the prospect for commercial / industrial traffic movement through the urban residential area;
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

4.5 LOCAL STRUCTURE PLAN AREA 3 – DELLA SOUTH ROAD (NORTH-WEST)

Local Structure Plan Area 3 – 'Della South Road (North-West)' incorporates approximately 185 hectares across Lots 2294, 5889, 1474 and 1876 and is bound by State Forrest to the west, State Forrest and Chitty Road to the north, Chudalup Road to the south and the eastern lot boundary of Lot 1876 to the east.

Key matters to be considered in preparation of the Local Structure Plan are:

- Review the role, demand and land use mix to facilitate detailed planning of a potential Local Centre within the LSP area of approximately 1,200m2 nett lettable area;
- Review the interface to State Forrest and private land west of the LSP area in regard to land use, connectivity to existing access and the need for bushfire safety mitigation;
- Review the demand, area and use requirements for District Open Space (DOS) to accommodate the future active district recreation needs of the community.
- Accommodate and review the interface to the identified 'Future Parks and Recreation Reserve' land;
- Review access north of the LSP via Della South Road and along Chitty Road to mitigate impact on the 'Future Parks and Recreation Reserve' land, protect the Chitty Road linear open space corridor and limit the prospect for commercial / industrial traffic movement through the urban residential area;
- Accommodate and review a concept design layout for a High School and confirm the location and requirement for the Primary School site with the Department of Education;
- Review the design, interface and functionality of the linear open space within Lot 1474 having regard to its heritage, drainage, vegetation retention and open space integration functions;
- Consider the land use within, and interface to, the gas pipeline and high voltage powerline corridors at the western edge of Lot 1474;
- Demonstrate compatibility with the P3 area of the Gnangara Underground Public Drinking Water Supply Areas (PDWSA) (within Lot 1474);
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

4.6 LOCAL STRUCTURE PLAN AREA 4 – HALDEN ROAD (SOUTH-EAST)

Local Structure Plan Area 4 – 'Halden Road (South-East)' incorporates approximately 160 hectares across ten (10) lots including a portion of Lot 5892 Halden Road located predominantly south of the LSP 4 area.

Key matters to be considered in preparation of the Local Structure Plan are:

- Review the role, demand and land use mix to facilitate detailed planning of the Neighbourhood Centre of approximately 3,300m2 nett lettable area across LSP Areas 2 and 4;
- Review the design, interface and functionality of the east-west linear open space adjoining Chudalup Road having regard to its drainage, vegetation retention and open space integration functions;
- Undertake a more detailed review of the Resource Enhancement Wetland and surrounding Saw Pit Gully Creek line to determine the need for and extent of wetland and open space retention requirements;
- Review the interface to State Forrest and private land south of the LSP area in regard to land use transition, connectivity to existing access and the need for bushfire safety mitigation;
- Confirm the location and requirement for the Primary School site with Department of Education;
- Review status of any existing basic raw materials / extractive industry operations at Lot 2382 (within the LSP area) and Lot 5892 (located to the south of the LSP 4 area) in regard to the following in the context of urban development staging:
    - \- Operation staging and life expectancy;
    - \- Access; and
    - \- Land use separation requirements.
- Demonstrate compatibility with the P3 area of the Gnangara Underground Public Drinking Water Supply Areas (PDWSA) (within Lot 1572);
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

4.7 STAGING

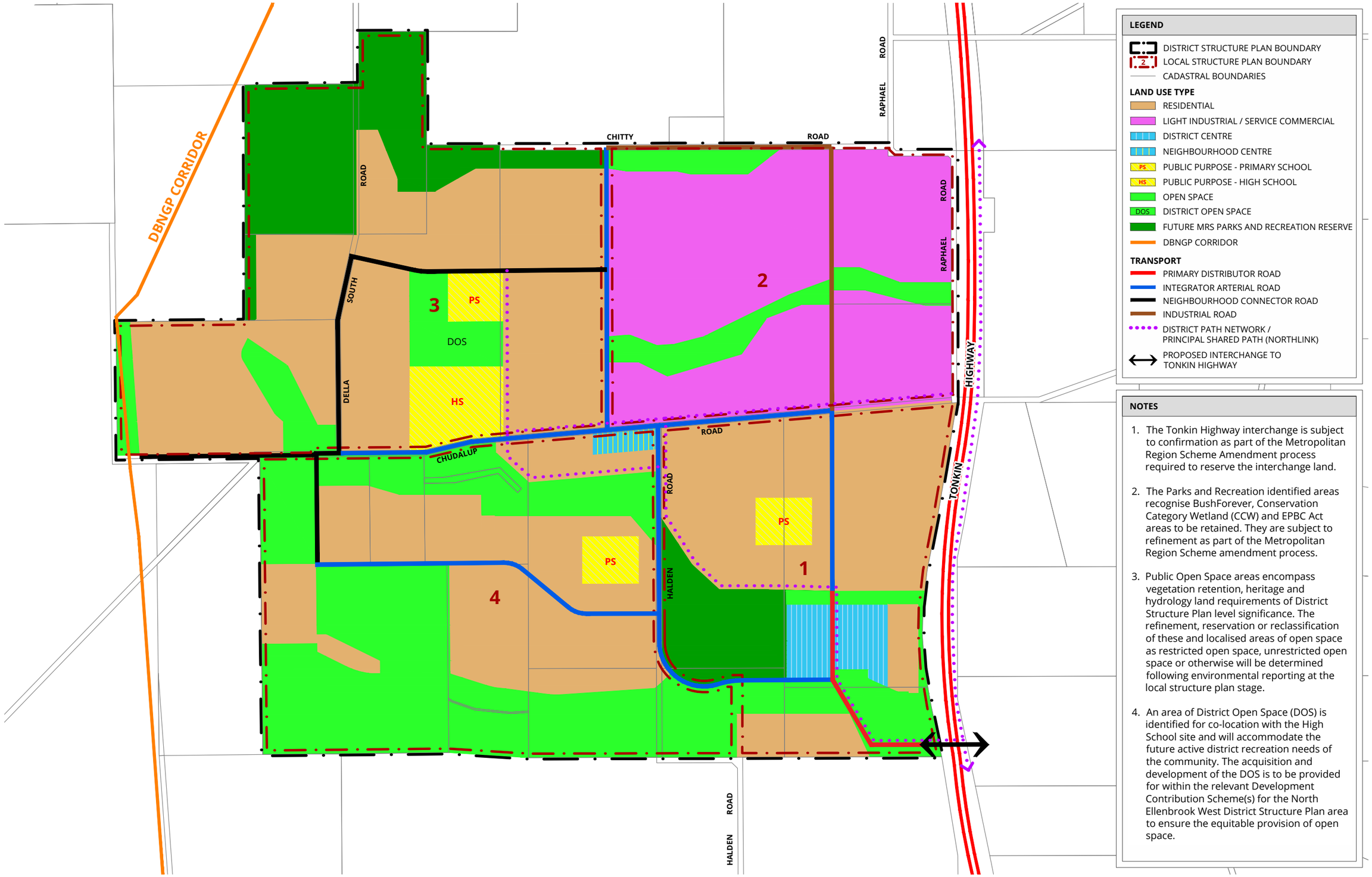
Given the size and scale of the DSP area, development will occur over multiple stages as demand for residential land within the north-east corridor evolves. The DSP area is expected to be initially rezoned to 'Urban Deferred' under the MRS

Staging of the development of the DSP area will be linked to the interchange, with the interchange required to be constructed and operational prior to the first stage of development. As such, the first stage of development is to occur with LSP Area 1 which is likely to comprise the residential area to the north of the District Centre, with the District Centre to be developed once an appropriate critical mass to sustain the viability of the centre has been established. Development is likely to extend northward towards Chudalup Road, being heading west to LSP Area 3 and subsequently LSP Area 4.

Staging of LSP Area 2 will be reviewed in context of the need for industrial / service commercial zoned land.

Final staging will be informed by infrastructure planning, landowner intentions and the need to provide orderly sequencing of development for bushfire risk mitigation. The availability of services and residential land demand will also help inform the lifting of urban deferment.

No traffic generating development will be supported within the DSP area until such time as the proposed interchange has been constructed and is operational.



LEGEND

- DISTRICT STRUCTURE PLAN BOUNDARY
- LOCAL STRUCTURE PLAN BOUNDARY
- CADASTRAL BOUNDARIES

LAND USE TYPE

- RESIDENTIAL
- LIGHT INDUSTRIAL / SERVICE COMMERCIAL
- DISTRICT CENTRE
- NEIGHBOURHOOD CENTRE
- PUBLIC PURPOSE - PRIMARY SCHOOL
- PUBLIC PURPOSE - HIGH SCHOOL
- OPEN SPACE
- DISTRICT OPEN SPACE
- FUTURE MRS PARKS AND RECREATION RESERVE
- DBNGP CORRIDOR

TRANSPORT

- PRIMARY DISTRIBUTOR ROAD
- INTEGRATOR ARTERIAL ROAD
- NEIGHBOURHOOD CONNECTOR ROAD
- INDUSTRIAL ROAD
- DISTRICT PATH NETWORK / PRINCIPAL SHARED PATH (NORTHLINK)
- PROPOSED INTERCHANGE TO TONKIN HIGHWAY

NOTES

1. The Tonkin Highway interchange is subject to confirmation as part of the Metropolitan Region Scheme Amendment process required to reserve the interchange land.
2. The Parks and Recreation identified areas recognise BushForever, Conservation Category Wetland (CCW) and EPBC Act areas to be retained. They are subject to refinement as part of the Metropolitan Region Scheme amendment process.
3. Public Open Space areas encompass vegetation retention, heritage and hydrology land requirements of District Structure Plan level significance. The refinement, reservation or reclassification of these and localised areas of open space as restricted open space, unrestricted open space or otherwise will be determined following environmental reporting at the local structure plan stage.
4. An area of District Open Space (DOS) is identified for co-location with the High School site and will accommodate the future active district recreation needs of the community. The acquisition and development of the DOS is to be provided for within the relevant Development Contribution Scheme(s) for the North Ellenbrook West District Structure Plan area to ensure the equitable provision of open space.

PLAN 1. DISTRICT STRUCTURE PLAN

PART TWO
EXPLANATORY SECTION

1 PLANNING BACKGROUND

1 PLANNING BACKGROUND

1.1 INTRODUCTION AND PURPOSE

The North Ellenbrook West District Structure Plan ('DSP') has been prepared on behalf of a main coordinating landowners group that hold approximately 91% of the DSP area. Major landowners Conoble Park Pty Ltd, Warbrook Road Pty Ltd, Rangedale Corporation Pty Ltd, Amber Oak Developments Pty Ltd and Ellenhoog Pty Ltd are the actively participating major landowners in the DSP's preparation.

The DSP is the first step in establishing a detailed land use planning framework for the area.

The purpose of the DSP is to:

- establish a clear vision for the new master-planned community;
- provide a land use planning and infrastructure framework to support the future growth and development of North Ellenbrook West;
- address urban and industrial land supply in the context of the North-East Sub-Regional Planning Framework as required;
- identify precincts for further structure planning at a localised level; and
- prioritise the provision of new service infrastructure to meet the future needs of the North Ellenbrook West community.

The DSP will guide future land use and development over the subject site and provide a framework for structure planning and local scheme rezonings to occur at a localised level. The provisions of the DSP are to be given 'due regard' by planning decision makers determining subdivision and development within the DSP area.

The following sections provide further detail and explanation for the Structure Plan Part 1 provisions.

1.2 LAND DESCRIPTION

1.2.1 LOCATION

The DSP area is located within the City of Swan approximately 6.5 kilometres north of the Ellenbrook Town Centre and 30 kilometres north-east of the Perth Central Business District ('CBD'). The site is commonly referred to as 'North Ellenbrook West' (as the land is located north of the existing Ellenbrook townsite), though it is located within the suburb of Bullsbrook. The land is immediately to the west of the Tonkin Highway. The DSP area is generally bound by the Tonkin Highway to the east, Chitty Road to the north and Parks and Recreation reserved land to the west.

Refer to **Figure 1 – Location Plan.**

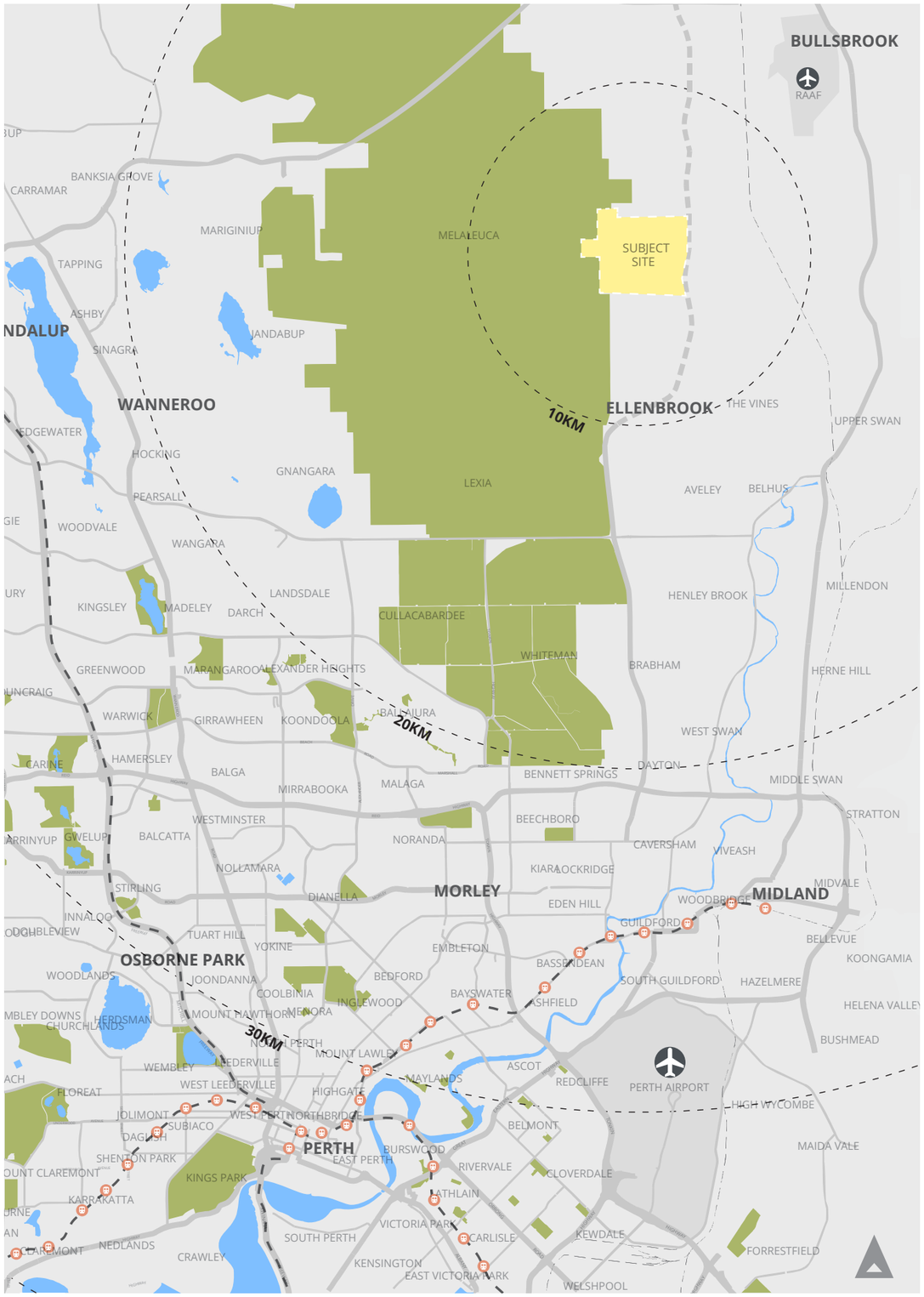
1.2.2 SUBURB NAME CHANGE

In establishing the vision for North Ellenbrook West as a future master-planned community, a new identity should be established for the land, differentiating it from wider rural or industrial surrounds. As such, the proponent is investigating names for a potential new suburb name.

Ellenbrook has a strong Aboriginal culture and this has been considered in the selection process for a new suburb name. The local Aboriginal people and custodians of the land are the Whadjuk Noongar people. The Whadjuk Noongar people have long inhabited the historic lands of the Swan Coastal Plain, dating back some 40,000 years. The land provided a natural abundance of food and water resources and the traditional owners developed a rich history of customs in the area.

While subject to a formal application and approval by Landgate, the following names are proposed for the DSP area.

- **Mooro;**
  - Mooro is the Aboriginal name for the area covered from the coast to Ellenbrook and from the Swan River to Moore River. It pays tribute to the local Aboriginal heritage.
  - George Fletcher Moore along with Lieutenant Henry Bull were credited with the establishment and maintenance of friendly relations with the indigenous people in the Bullsbrook and Ellenbrook area when the early British settlers arrived in 1799.
- **Nana;**
  - Nana is an Aboriginal name meaning 'two' with reference to splitting Ellenbrook into two suburbs.



1. LOCATION PLAN

1.2.3 AREA AND LAND USE

The DSP area comprises 23 freehold lots serviced by Halden Road, Chudalup Road, Della South Road, Raphael Road and Chitty Road.

The DSP has a total land area of 611 hectares, with 556 hectares held by a group of actively coordinated landowners demonstrating the subject site can be readily planned and developed in a coordinated manner at the appropriate time.

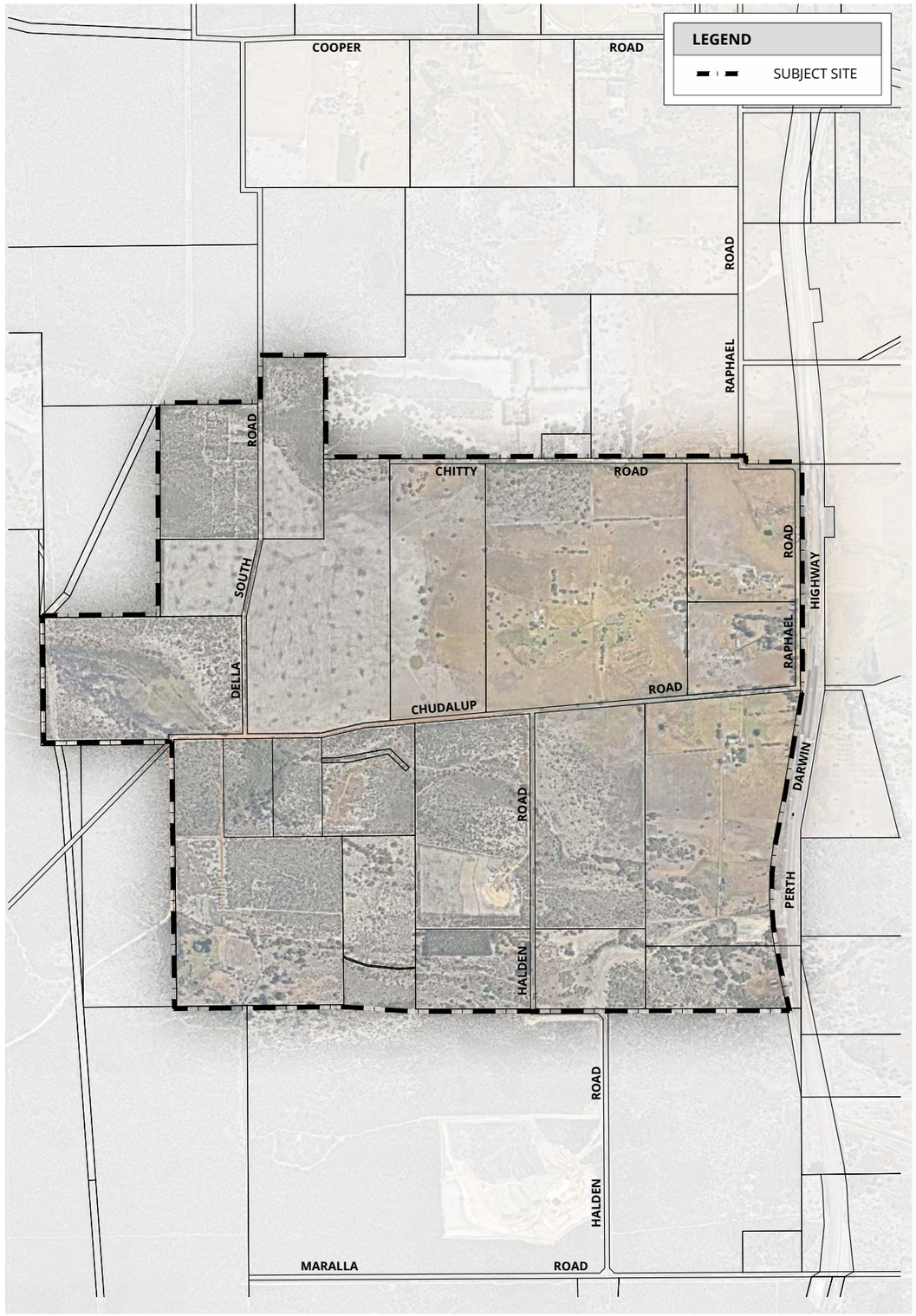
The DSP area is currently used for a range of rural land pursuits. A number of existing dwellings and associated outbuildings are located within the DSP, though these would be removed as part of future development.

The majority of the DSP area was cleared of native vegetation and subdivided for rural land uses, including pasture paddocks during the period to 1965. Some subsequent clearing occurred for sand mining, wildflower farming and pine plantations. Roads and tracks were cleared over time between 1974 and 2010, with more recent clearing occurring for the Tonkin Highway in 2018.

Lots 5889, 1808 and 1876 have been cleared (in December 2018) in accordance with Clearing Permit 5981/2 and EPBC Approval 2014/7120.

Surrounding land uses are predominantly cleared for rural activities. The Bullsbrook Material Recovery Centre and turf farm are located approximately 1.7km north of the subject site. A silica sand quarry currently operates within adjoining Lot 5892 to the south of the subject site and is accessed via Maralla Road, south of the proposed DSP area.

Refer to **Figure 2 – Site Plan.**



2. SITE PLAN

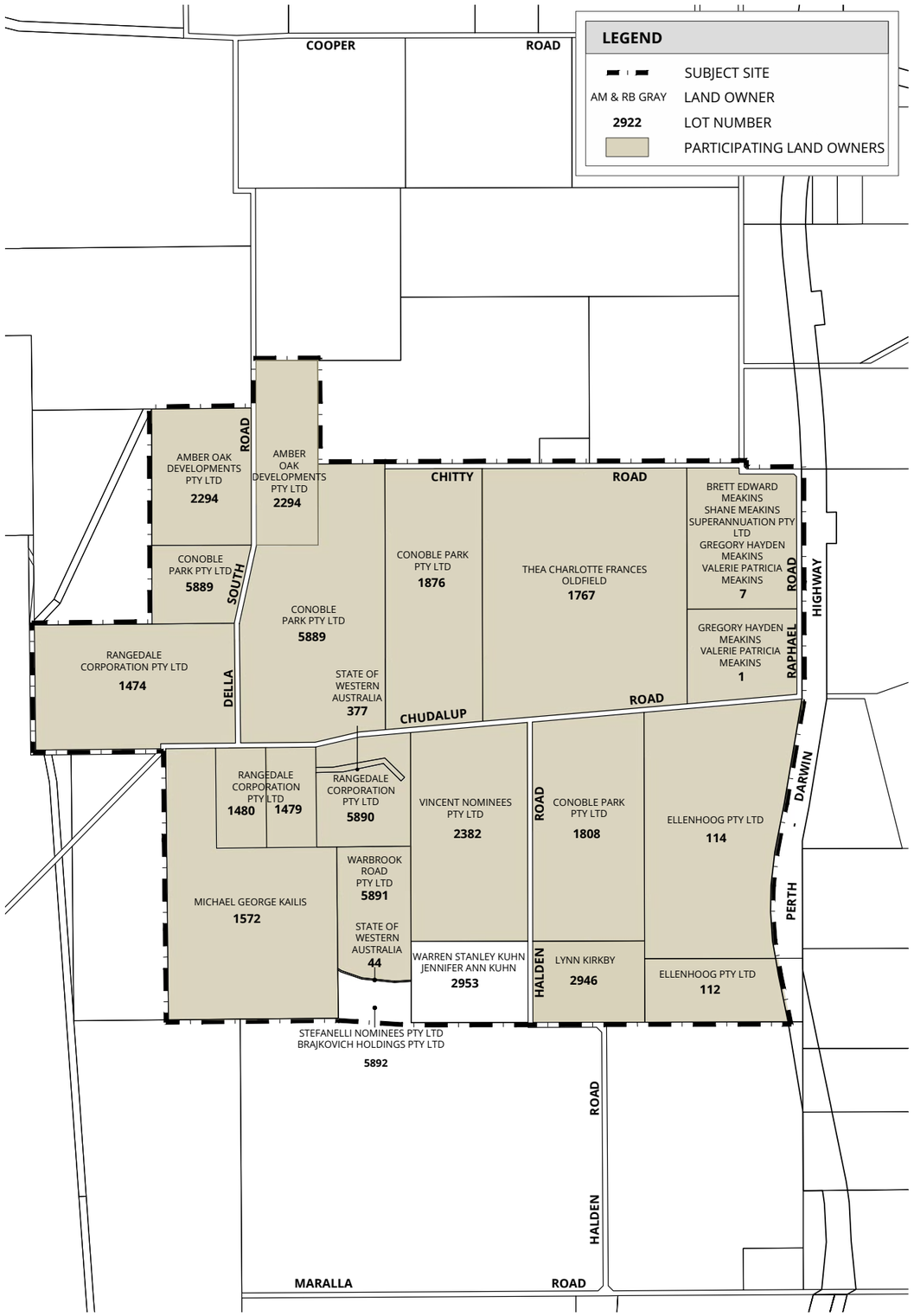
1.2.4 LEGAL DESCRIPTION AND OWNERSHIP

The lots which comprise the DSP area are summarised in Table 1.

LOT NUMBER	ADDRESS	PLAN / DIAGRAM NO.	VOL. / FOLIO	LAND OWNERSHIP
112	595 Warbrook Rd, Bullsbrook	404850	2882/135	Ellenhoog Pty Ltd
114	595 Warbook Rd, Bullsbrook	404850	2882/135	Ellenhoog Pty Ltd
2946	166 Halden Rd, Bullsbrook	143699	55/81A	L Kirkby
1808	651 Warbrook Rd, Bullsbrook	108469	411/143A	Conoble Park Pty Ltd
2953	169 Halden Rd, Bullsbrook	143703	1313/164	Kuhn, Warren Stanley Kuhn, Jennifer Ann
2382	L2382 Chudalup Rd, Bullsbrook	143703	1300/575	Vincent Nominees Pty Ltd
5890	L5890 Warbrook Rd, Bullsbrook	208236	1443/695	Rangedale Corporation Pty Ltd
5891	863 Warbrook Rd, Bullsbrook	208236	1440/515	Warbrook Road Pty Ltd
1572	893 Warbrook Rd, Bullsbrook	101340	1844/688	Kailis, Michael George
1480	L1480 Chudalup Rd, Bullsbrook	102016	1426/114	Rangedale Corporation Pty Ltd
1479	L1479 Chudalup Rd, Bullsbrook	102015	1426/114	Rangedale Corporation Pty Ltd
5889 – 2 lots	L5889 Della South Rd, Bullsbrook	208236	1319/108	Conoble Park Pty Ltd
2294 – 2 lots	88 Della South Rd, Bullsbrook	124824	1911/803	Amber Oak Developments Pty Ltd
1474	L1474 Warbrook Rd, Bullsbrook	254632	1426/114	Rangedale Corporation Pty Ltd
1876	712 Warbrook Rd, Bullsbrook	131371	1301/221	Conoble Park Pty Ltd
1767	650 Warbrook Rd, Bullsbrook	106109	873/151	Oldfield, Thea Charlotte Frances
7	41 Raphael Rd, Bullsbrook	27607	2508/334	VP & GH & BE Meakins Shane Meakins Superannuation Pty Ltd
1	25 Raphael Rd, Bullsbrook	12371	1499/655	VP & GH Meakins
5892	L5892 Maralla Rd, Bullsbrook	208236	355/124A	Stefanelli Nominees Pty Ltd Brajkovich Holdings Pty Ltd

Table 1: Cadastral Information

Refer **Figure 3 – Land Ownership.**



3. LAND OWNERSHIP

1.3 PLANNING FRAMEWORK

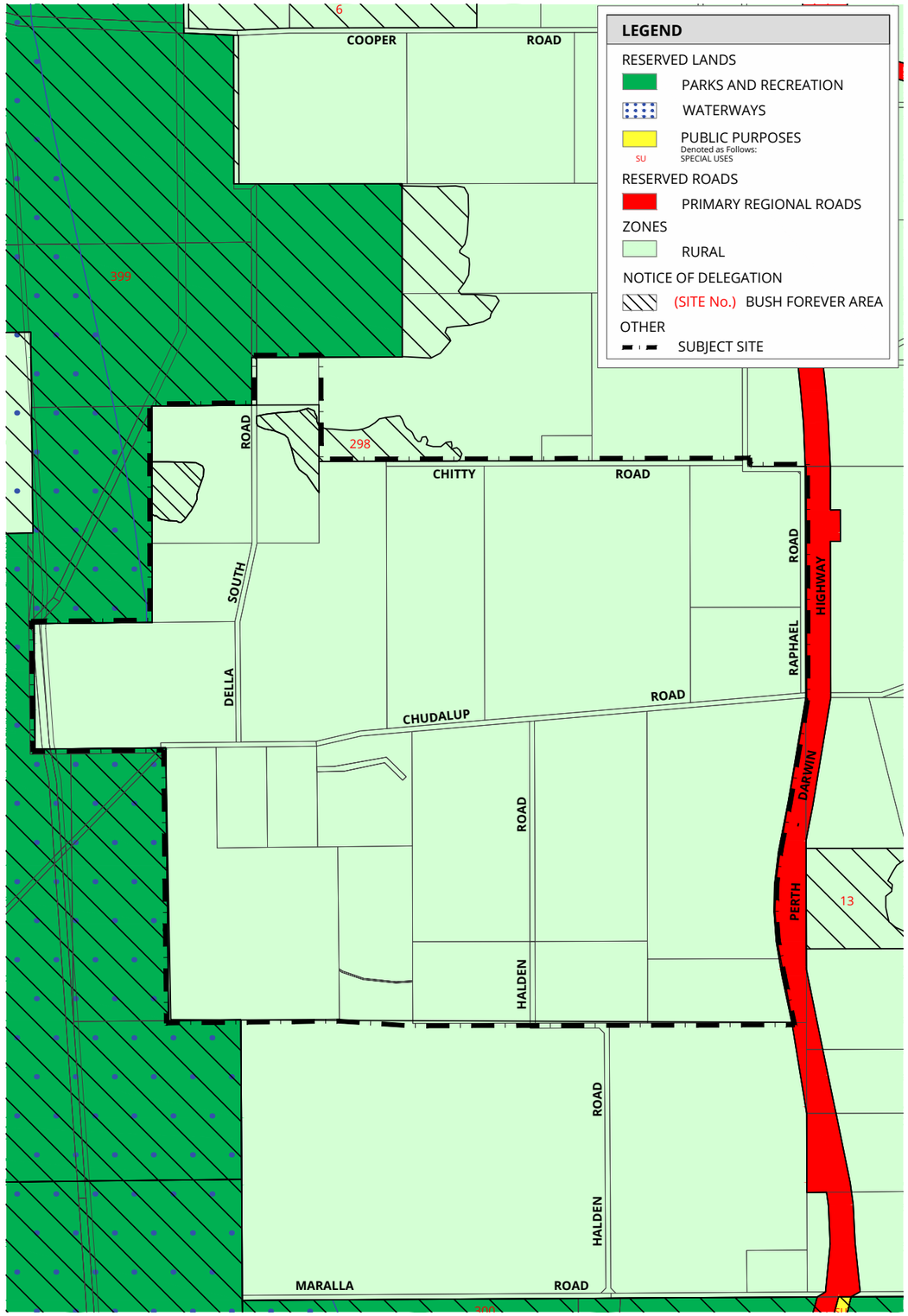
1.3.1 ZONING AND RESERVATIONS

The DSP area is currently zoned 'Rural' under the provisions of the *Metropolitan Region Scheme* ('MRS') and 'General Rural' under the *City of Swan Local Planning Scheme No. 17* ('LPS 17').

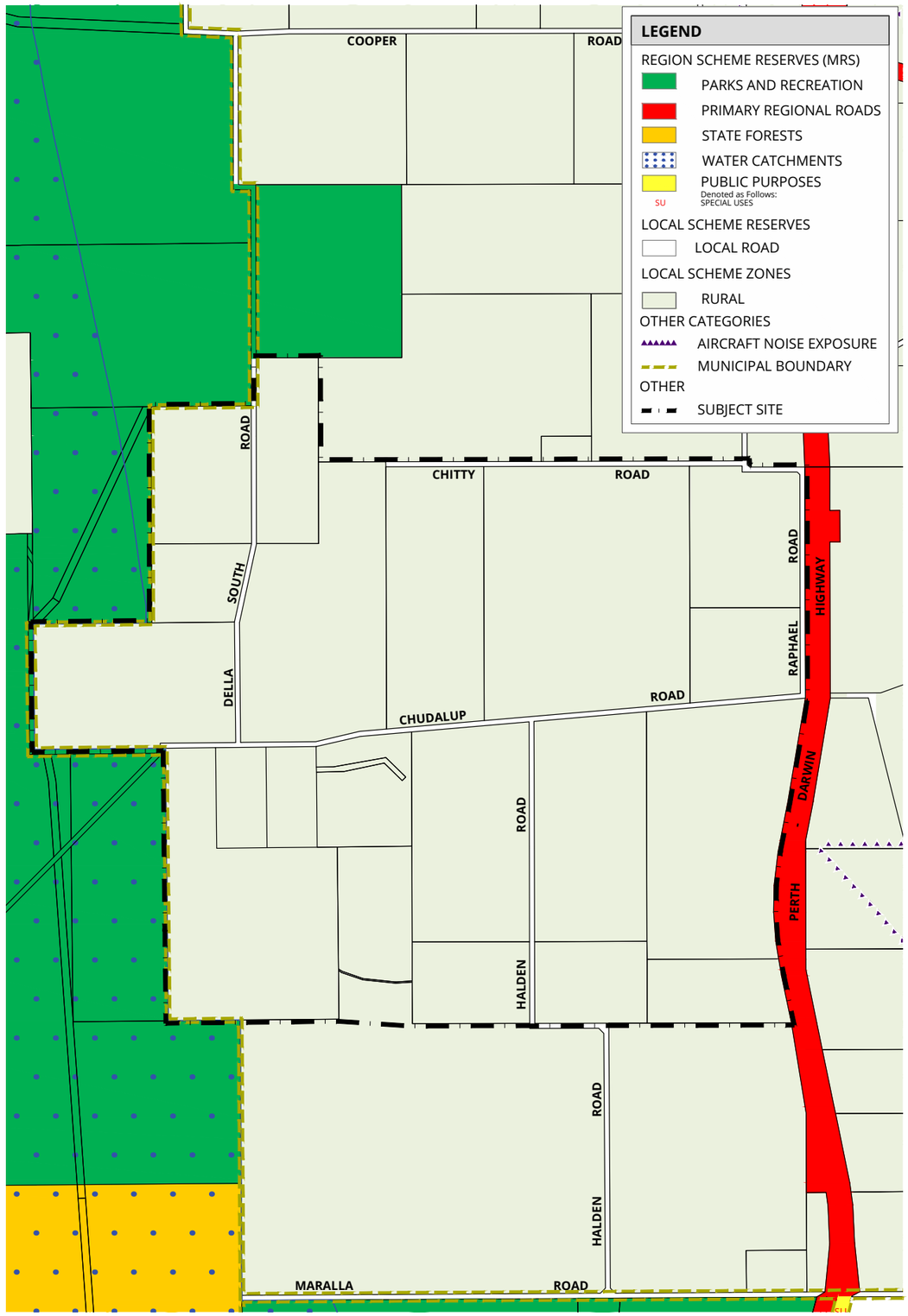
The DSP area is the subject of an Amendment to the MRS to rezone the site from 'Rural' to 'Urban Deferred' which was lodged with the WAPC in February 2019. Subsequent amendments to the MRS will be required to define areas required for 'Primary Regional Road' reservations (as applicable to the proposed interchange with the Tonkin Highway), 'Public Purposes' (for a high school site) and 'Parks and Recreation'.

Future amendments to LPS 17 will be required to facilitate the development outcomes contemplated by the DSP.

Refer to **Figure 4 – Metropolitan Region Scheme Zoning and Figure 5 – LPS 17 Zoning.**



4. METROPOLITAN REGION SCHEME ZONING



5. LOCAL PLANNING SCHEME NO. 17 ZONING

1.4 REGIONAL AND SUB-REGIONAL PLANNING

1.4.1 PERTH AND PEEL @ 3.5 MILLION / NORTH-EAST SUB-REGIONAL PLANNING FRAMEWORK

The *Perth and Peel @ 3.5 Million* (March 2018) suite of documents provide a framework for the development of the Perth and Peel regions as the population reaches an estimated 3.5 million by 2050. The documents seek to meet the targets identified under *Directions 2031* and the *State Planning Strategy 2050*. The suite of documents includes four sub-regional planning frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions. The four sub-regional planning frameworks detail where future homes and employment should be located, and where important environmental assets should be avoided and protected.

The subject site is included within the North-East Metropolitan Sub-Regional Planning Framework. The North-East Sub-Regional Planning Framework ('the Framework') recognises that the sub-region's population is predicted to more than double by 2050, growing from 209,156 people in 2011 to over 450,500 by 2050, with this growth to predominantly occur within the City of Swan.

The spatial plans forming part of the Framework identify the DSP area as both 'Urban Investigation' and 'Industrial Expansion' (refer to **Figure 6 – North-East Sub-Regional Planning Framework**), as follows.

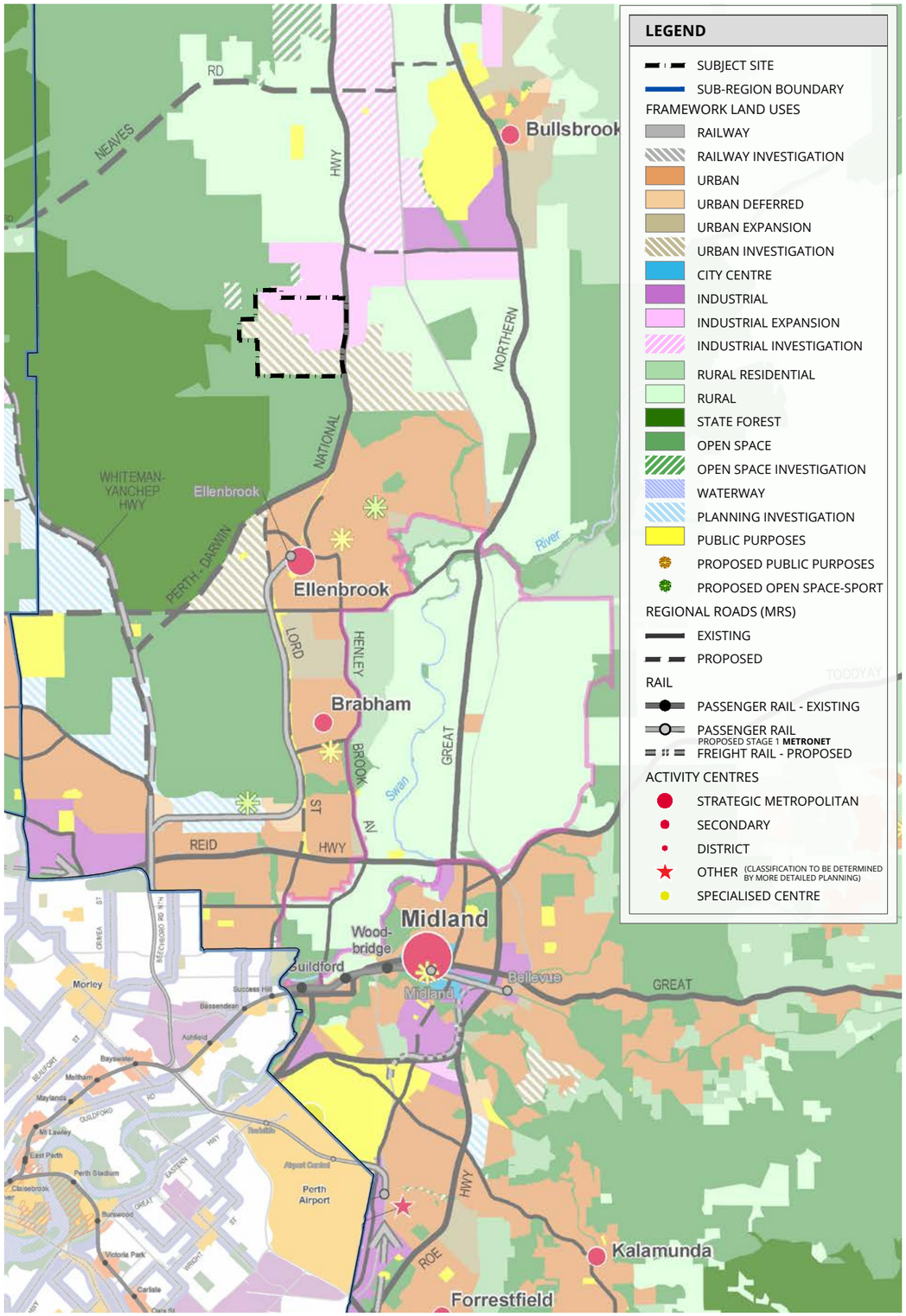
Urban Investigation

Urban Investigation is identified over 341 ha predominantly south of Chudalup Road and around the intersection of Chudalup Road and Della South Road.

The DSP uses Chitty Road as the northern extent of the proposed DSP area, allowing a well-defined urban planning precinct to be the subject of coordinated structure planning that better deals with the northern urban / industrial land use interface. The natural features of the site in this location also provide for a pre-existing and defined interface between the proposed urban and industrial areas with the existing wetland and associated vegetation providing for a natural means of separation.

The DSP identifies 261 hectares of land for urban residential purposes, in comparison to the 341 hectares identified within the Framework as 'Urban Investigation'. It should be noted that not all of this additional land is developable due to the various site constraints (predominantly in relation to environmental attributes) and given portions of the site may be developed for uses other than residential.

The Framework also identifies several 'key considerations' pertaining to the North Ellenbrook Urban Investigation area which have been addressed as part of the preparation of this DSP as summarised in **Table 2**.



6. NORTH-EAST SUB-REGIONAL PLANNING FRAMEWORK

Table 2: Key Considerations for North Ellenbrook Urban Investigation Area

SITE	KEY CONSIDERATIONS	DSP RESPONSE
NORTH ELLENBROOK	Protection of Bush Forever areas and conservation category wetlands	The two Bush Forever sites located within the DSP are to be retained in proposed 'Parks and Recreation' reserve under the MRS. The DSP also proposes to retain two Conservation Category Wetlands ('CCWs') with a generic buffer of 50m within areas of restricted public open space (in accordance with current EPA guidelines). The final wetland buffers will be determined during the local structure planning process. Refer **Sections 2.2.3 & 2.3.3** and **Appendix 3 - Environmental Assessment Report.**
	Protection of high value Carnaby's Black Cockatoo habitat and vegetation with 10-30% remaining in Perth and Peel regions	The DSP proposes to retain approximately 72.34 hectares of Black Cockatoo foraging habitat within public open space. The extent of habitat area to be cleared is subject to a separate approvals process under the EPBC Act. Additional mitigation measures will be further assessed at subsequent stages of planning. It is anticipated that such measures would require the preparation and implementation of a Construction Environmental Management Plan and a Fauna Management Plan. Refer **Section 2.2.2** and **Appendix 3 - Environmental Assessment Report.**
	Protection of threatened ecological communities and flora populations	Implementation of the DSP may require clearing of approximately 83.67 hectares of native vegetation which consists of a range of vegetation types. Of the 83.67 hectares to be cleared, approximately 51.94 hectares is representative of the Banksia Woodland SCP TEC. The DSP seeks to retain approximately 90 hectares of native vegetation, of which 54 hectares is inferred Banksia Woodland SCP TEC of varying condition (comprising 'Excellent', 'Very Good' and 'Good' condition vegetation). Careful consideration has been given as part of the DSP design response to ensure those areas of Banksia Woodland in 'Excellent' and 'Very Good' condition are retained where possible, particularly where located in large, continuous stands. Refer **Section 2.2.1** and **Appendix 3 - Environmental Assessment Report.**
	Offsite impacts on Western Swamp Tortoise habitat (EPP)	The DSP area does not contain Western Swamp Tortoise habitat. The closest area of Western Swamp Tortoise habitat is located 3 kilometres east of the site, within the Twin Swamps Reserve and the Gnangara-Moore River State Forest. Development of the site as contemplated by the DSP will not impact upon nearby Western Swamp Tortoise habitat. The District Water Management Strategy and Local Water Management Strategies will ensure surface water management is retained at predevelopment levels. Refer **Section 2.2.2** and **Appendix 3 - Environmental Assessment Report.**
	Best practice drainage and nutrient management	Stormwater quality is to be managed through implementation of best management practices in a treatment train approach to achieve water sensitive urban design. These include structural and non-structural measures to assist in reducing applied nutrient loads. The stormwater drainage and nutrient management strategies will be further explored through the preparation of the Local Water Management Strategy and Urban Water Management Plan stages of development. Refer **Section 4.5** and **Appendix 7 - District Water Management Strategy**.
	Impacts, risks and management of Gnangara groundwater resources (existing Priority 3 Source Protection Area)	A small eastern portion of the DSP is located within a Priority 3 ('P3') Public Drinking Water Source Area of Gnangara Underground Water Pollution Control Area. Urban development within the P3 area is to have regard to compatibility criteria outlined in the Department of Water and Environmental Regulation's ('DWER') Water Quality Protection Note on Land Use Compatibility and Public Drinking Water Source Areas. The land uses proposed within the Priority 3 PDWSA are acceptable (where connected to deep sewerage) or have the ability to be compatible (with conditions) and therefore, the impacts, risk and management of the Gnangara groundwater resources can be managed as part of future planning. Refer **Sections 2.3.1 & 4.5** and **Appendix 7 - District Water Management Strategy**.

SITE	KEY CONSIDERATIONS	DSP RESPONSE
NORTH ELLENBROOK	Pearce Airbase operations (Department of Defence)	The Department of Defence Royal Australian Air Force ('RAAF') Pearce Base is located 5.5 kilometres north-east of the DSP area. The latest mapped ANEF noise contours (Department of Defence, 2012) from the RAAF Pearce Air Base do not encroach upon the DSP area (with the nearest noise contour being approximately 3.7 kilometres from the site). Refer **Section 2.6.4.**
	Transition/interface with regional open space areas	The DSP recognises the need for an appropriate interface to regional open space areas in Part 1. Where appropriate the matter is identified for further review within affected local structure plan areas. The design response is likely to include an appropriate transition of lot size and densities. Other land use planning requirements such as the need to retain the high voltage powerline corridor along the western boundary of Lot 1474, respond to bushfire management setback requirements and other interface issues will ensure an appropriate transition / interface is provided. Refer **Section 4.2.**
	Bushfire risk	A Bushfire Management Plan ('BMP') has been prepared in support of the DSP (refer **Appendix 2**). The BMP concludes that bushfire hazards within and adjacent to the site and the associated bushfire risk are readily manageable through standard management responses and compliance with the acceptable solutions outlined in the Guidelines. Demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959-2018 at future stages of planning will also depend on the developer's ability to coordinate the timing and staging of clearing and development works within the subject site, with the aim of avoiding bushfire impacts from temporary retained vegetation. Refer **Section 2.4** and **Appendix 2 - Bushfire Management Plan.**
	Access to the regional road network	External access to the site is proposed via a new grade-separated interchange with the Tonkin Highway approximately 1.2km south of Warbrook Road. The final location and configuration of the interchange is subject to further investigation which is to be led by MRWA and finalized as part of the lifting of urban deferrement over the land. Refer **Sections 2.6.2 & 4.4** and **Appendix 6 - Transport Impact Assessment**.
	Basic raw materials – sequential land use allowing for extraction of sand resources	The current iteration of SPP 2.4 identifies a 'Priority Resource Location' containing 'Sand' over Lot 2382. This reserve is currently being extracted by the landowner in accordance with current approvals and licences from the Department of Mines, Industry, Regulation and Safety. The anticipated tenement timeframes for the conclusion of mining operations is expected to coincide with the first stages of development within North Ellenbrook West (circa 2028), with the extractive industry operations to cease use prior to nearby landholdings being developed for residential use. Part 1 of the DSP requires consideration of transitioning and staging land uses. The existing quarry operations are likely to provide fill for earthworks within the DSP area. Excluding Lot 2383, while the locality has previously been the subject of enquiry for raw materials, there are no current proposals affecting the subject site. Land to the south of the subject site is identified under the Draft SPP 2.4 as 'Sites with Prior State Environment Minister Approval' with *"the land being identified as having a 'Significant Geological Supply – Sand"*. It is noted that the land to the south (on Lot 5892 Maralla Road) is operated for the purposes of sand extraction, however, this property does not form part of the proposed DSP area and is not identified for development under the Framework. Refer **Section 1.6.1.**

Industrial Expansion

The Framework identifies 270 hectares of DSP area as 'Industrial Expansion'. The DSP proposes a zoning of 'Light Industry' / 'Service Commercial' over the north-eastern area of the DSP in response to the Framework which may be developed for land uses consistent with the intent of the 'Industrial Expansion' designation. Through subsequent stages of planning, if it is determined that an appropriate supply of industrial land exists, this land may be developed for other purposes, subject to appropriate local structure planning and scheme amendments being in place to facilitate such an outcome. This DSP, in conjunction with the request to rezone the site to 'Urban Deferred' under the MRS, allows flexibility for this planning to occur in parallel.

The *North East Sub-Regional Planning Framework* acknowledges that (in relation to land identified as Industrial Expansion / Investigation):

> *"Minor refinement of expansion or investigation area boundaries may be required to accommodate more detailed future planning."*
>
> and:
>
> *"Industrial Investigation areas will require further detailed planning to be undertaken prior to consideration for rezoning under the MRS. The identification of these areas is not to be construed as a commitment by the WAPC to support any rezoning as this will depend upon the outcome of further detailed planning investigations." (p36)*

The Framework allows for refinement of the land use boundaries identified under the spatial mapping to occur at this stage of planning, where accompanied by appropriate justification.

To provide detailed justification, Lucid Economics, on behalf of the proponent group, prepared an Industrial Land Assessment for the DSP which analyses the current and future demand projections for industrial land within the Perth Metropolitan Region and more specifically, within the North East Sub-Region. Lucid Economics identified a number of key findings which support the reduced allocation of industrial zoned land under the DSP, as follows:

- The Sub-Regional Framework (and previously the Economic and Employment Lands Strategy) likely overestimate the future requirement for industrial land across the Perth and Peel Metropolitan regions by a considerable margin.
- The majority of future industrial land demand highlighted in the Sub-Regional Planning Frameworks will take place between 2031 to 2050, which is so far into the future it is impossible to understand likely future demand.
- The North-East Sub-Regional Planning Framework does not include Muchea Industrial Park (comprising 1,150 hectares of industrial zoned land) which is more advanced in its planning and development than the area marked for industrial expansion and industrial investigation.
- The Muchea Industrial Park can accommodate considerable industrial land demand for the North-East Sub-Region and is readily accessible today.
- The North-East Sub-Regional Planning Framework shows a surplus of 119 hectares by 2031 (under very ambitious demand projections).
- The 207 hectares of industrial land identified within the DSP area comprises a relatively small proportion (22%) of the current future supply of industrial land in the North-East Sub-Region (1,765 hectares) and including the Muchea Industrial Park (1,150 hectares), its proportion is even smaller (14%).

The extent of land provided for industrial purposes is appropriate in light of the surplus of land identified under the Framework.

Refer **Appendix 1 - Industrial Land Assessment.**

The following summarises the basis for the inclusion of 106ha of Light Industry / Service Commercial land in variance of the 270ha identified within the DSP area in the North East Sub-regional Planning Framework (NESRPF).

- The extent of 270ha within the NESRPF was not specifically based on demand need, cadastral lot boundaries or physical features within the DSP area. The extent reflected a phosphorous mapping layer used to inform the draft Green Growth Plan. This is not an impediment to either urban residential or industrial use. As a result, the extent of industrial land required refinement to achieve a more orderly urban / industrial land use interface;
- Review of the irregular boundary of identified industrial land under the NESRPF with DPLH staff confirmed that Chudalup Road / Warbrook Road should be used as the southernmost limit of industrial use. This resulted in a reduction of 30ha of identified industrial land in the draft North Ellenbrook (East) DSP, and similarly a reduction of 55ha within this DSP.
- The extent of industrial land identified within the DSP area in the NESRPF was mapped at strategic level and did not consider all of the localised Bush Forever, conservation covenant, natural water course and indigenous heritage constraints. The detailed mapping undertaken to inform this DSP results in a reduction of potential industrial land within the DSP to 217ha of which 162ha is north of the agreed boundary being Chudalup Road;
- The inclusion of 106ha within the DSP reflects a further refinement of the potential 162ha, to deliver coordinated, connected areas of industrial and urban residential development within the DSP.

The rationalisation of industrial land under the NESRPF was reviewed in conjunction with DPLH staff and referred to the State Government's Industrial Land Steering Committee in September 2020. The report recognised that there is 1,450ha of land is identified within the NESRPF and analysis suggests there is an unconstrained supply of industrial land across both the North East and North West corridors to 2050. The Industrial Land Steering Committee had no objections to the extent of industrial land proposed in this DSP.

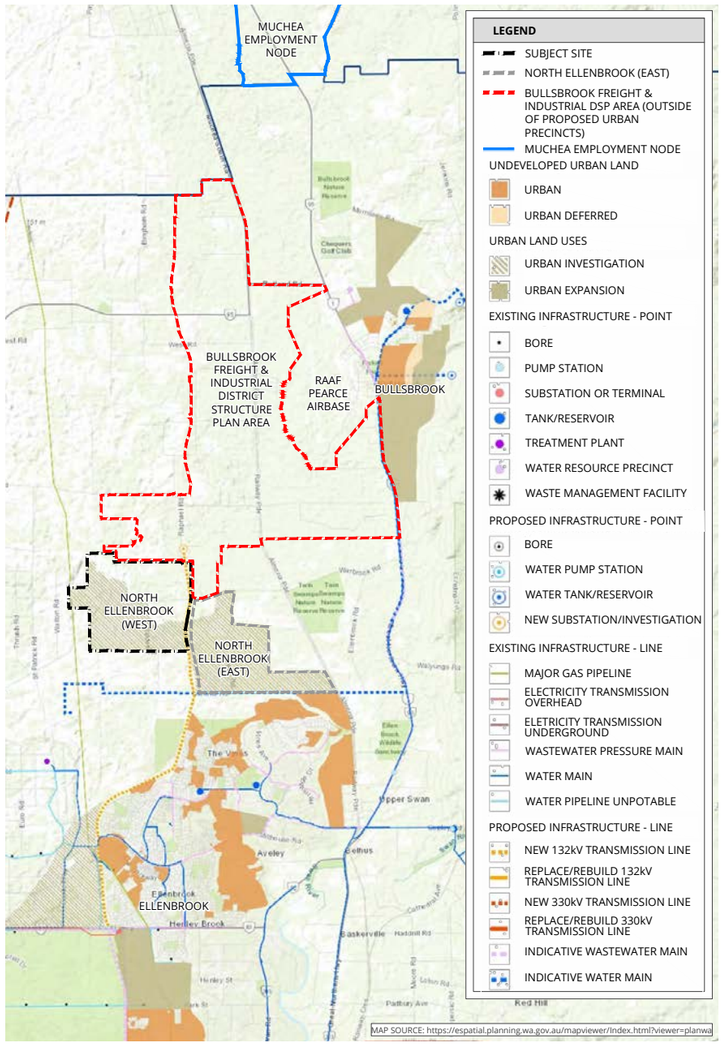
This DSP is accompanied by Appendix 1 – Industrial Land Assessment which further confirms there is a significant supply of industrial land and the refinement proposed will have no material impact. Notably, the Draft Muchea Industrial Park Structure Plan (2020) is similarly supported by a review of industrial land titled Muchea Industrial Park Land Demand And Economic Assessment (Syme Marmion & Co, 2019). The draft Muchea structure plan and economic assessment acknowledge there is an over supply of industrial land in the north east subregion. In addition, demand and future take up of land will occur in the Muchea Industrial Park, reducing demand at North Ellenbrook/Bullsbrook.

In light of the above and the review of industrial demand and the Muchea Industrial Park, this DSP provides a practical response to the SRPF in relation to the supply of light industrial / service commercial land at North Ellenbrook. The DSP also acknowledges the need for ongoing review to occur as local structure planning is undertaken.

Service Infrastructure

The Sub-Regional Framework incorporates an overview of more significant capital works identified to facilitate Framework implementation (refer **Figure 7 – Servicing**). The Framework acknowledges the "…need for alignment between servicing authorities is necessary to ensure that the release of land for housing and employment purposes is commensurate with population growth." (p48)

The service infrastructure planning identified within the Framework is acknowledged as being high level. While the document references indicative Water Corporation water main and wastewater main alignments, together with potential new Western Power terminal and substation locations, it is accepted that detailed planning by these agencies is ongoing, however, a certain level of detail must be provided in order for such planning to commence. This DSP is therefore an integral component to ensure service planning for North Ellenbrook.

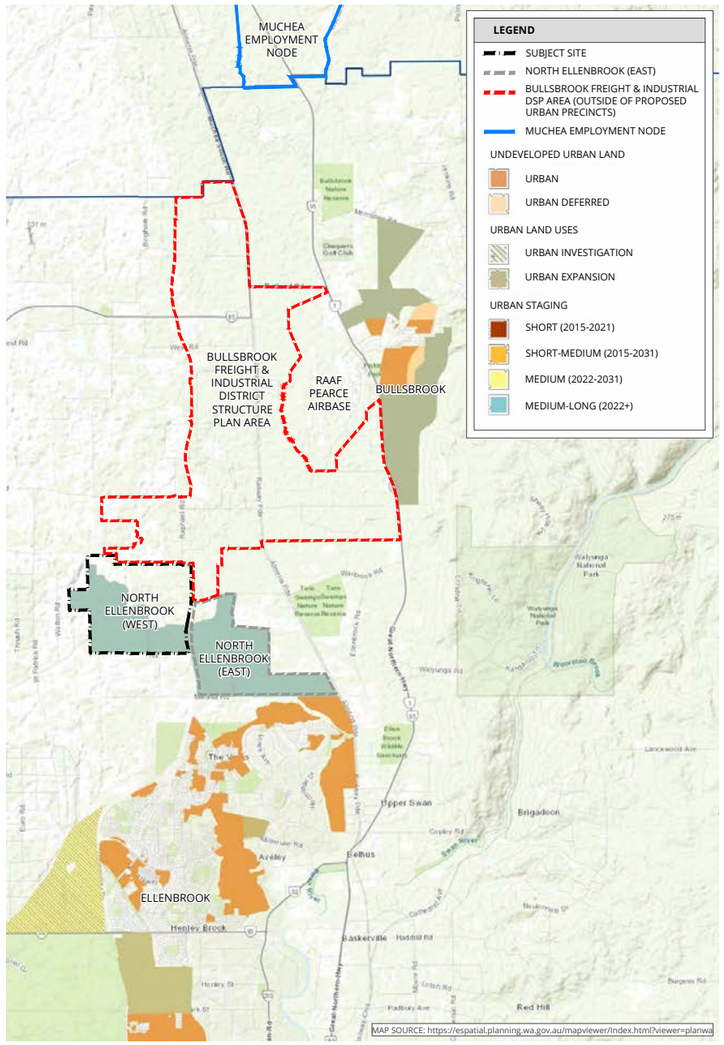


7. SERVICING

Staging and Sequencing

The Framework incorporates a high-level staging and sequencing guide both to assist land supply considerations and guide infrastructure service planning. There is also an expectation that development be undertaken in a sequential manner, as logical extensions to existing development fronts, to assist land supply. The Framework also notes that this should "…not be construed as preventing further detailed planning from occurring in the interim." (p65).

The Framework identified the subject site for medium-long term development, with a development timeframe of '2022+'. When considering the various planning and development processes which must occur prior to development occurring on-site, the submission of this DSP, in addition to the already lodged MRS Amendment request (seeking the rezoning of the land to 'Urban Deferred') is entirely consistent with the timings outlined in the Framework's 'Urban Staging' plan (refer **Figure 8 – Urban Staging**). Subsequent local structure planning and infrastructure service planning will continue to occur over the immediate period.



8. URBAN STAGING

Summary

The proposed urbanisation of the subject site, as contemplated by this DSP and concurrent MRS Amendment Request, is consistent with the objectives of the Framework for the following reasons:

- The proposal represents a logical expansion and consolidation of the broader Ellenbrook area;
- The proposal is compatible with the economic development of the area and the directly adjoining provision of employment land within the proposed *Bullsbrook Freight and Industrial Land Use Planning Strategy* area and the existing Bullsbrook South Industrial Area;
- The proposal will directly support the sustainable development of the Morley-Ellenbrook rail line and the viability of the Ellenbrook terminus. Additionally, public bus transport can be readily designed to ensure high-frequency service from the subject site to the Ellenbrook Station (refer Section 3.4.4);
- As a key element of the State Government's Metronet initiative, the Morley-Ellenbrook rail line will provide connectivity to Ellenbrook and the wider surrounds. Road and public bus access to Ellenbrook from the subject site and other growth areas will serve to support this Metronet initiative. The Morley-Ellenbrook rail line alignment has now been finalised, with the DSP proposing a potential Rapid Transit Bus Service to provide residents a high frequency public transport option to access the Ellenbrook Train Station;
- The proposal is entirely consistent with the urban staging identified within the Framework and aligns with the planning and development of North Ellenbrook East. North Ellenbrook East is expected to progress to an 'Urban' zoning under the MRS ahead of this proposal, reflecting its anticipated early development commencement (expected timeframe of approximately 2025, ahead of the western cell which seeks an 'Urban Deferred' zoning with an expected development commencement of 2028);
- Concurrent district structure planning over each of the eastern and western precincts will ensure the coordinated delivery of essential services by servicing agencies, with discussions regarding servicing to continue as planning progresses.

The DSP and associated MRS Amendment Request seek to facilitate urban residential development in support of population targets identified in *Perth and Peel @ 3.5 Million* for the North East Corridor **Table 3** below details the approximate dwelling yield for the DSP area, based on a minimum average density target of 15 dwellings per gross urban hectare.

Based on a total of 3,915 dwellings and an average household size of 3 people* per household, this equates to an additional population of approximately 11,745 people. (**The average household size for the suburb of Ellenbrook at the 2016 census was 3.0. Source: .idcommunity*)

NORTH ELLENBROOK WEST – DWELLINGS PER GROSS HECTARE	
Site Area:	611 hectares
Less Non-Residential Land Uses:	
- Light Industrial / Service Commercial	- 106 hectares
- District Centre	- 10 hectares
- Neighbourhood Centre	- 2 hectares
- Public Purpose – High School / Primary School	- 13 hectares
- District Open Space (Playing Fields)	- 9 hectares
- Parks and Recreation Reserve	- 60 hectares
- Primary Regional Road Reserve (PDNH Interchange)	- 4 hectares
- Environmental Constraints and Open Space	- 146 hectares
Total Non-Residential:	204 hectares
Gross Urban Area:	261 hectares
Total Dwellings @ 15 dwellings per gross urban hectare:	3,915 dwellings
Estimated Dwelling Range:	4,000 – 4,500 dwellings

Table 3: Dwelling Yield Calculations.

1.4.2 PERTH AND PEEL GREEN GROWTH PLAN FOR 3.5 MILLION

The WA State Government released the draft Perth and Peel *Green Growth Plan* for 3.5 million people in December 2015. The documents and environmental mapping are intended to integrate environmental protection and land use planning as part of the Perth and Peel Planning Framework. While under review for finalisation, the mapping undertaken has been used to inform the finalisation of the above-mentioned Sub-Regional Planning Framework.

While the draft *Green Growth Plan* maps areas of vegetation within the DSP, particularly at the western end of Chitty Road, their consideration for retention does not preclude the proposed urban rezoning of the land. These vegetated areas and the environmental attributes of the subject site generally are assessed in **Section 2** of this report.

1.5 PLANNING STRATEGIES

1.5.1 CITY OF SWAN LOCAL PLANNING STRATEGY

The *City of Swan Local Planning Strategy* ('LPS') identifies the DSP area as 'Future Urban Area' which is consistent with the land use zoning proposed (refer **Figure 9 - Local Planning Strategy Zoning Map 1**). A small portion of the site is identified as 'Future Industrial Area', being the portion of the site identified for 'Industrial Expansion' under the Framework. As outlined in **Section 1.4.2**, the DSP and concurrent MRS Amendment Request seek to rationalise the 'Industrial Expansion' boundary based on there being a significant oversupply of industrial land within the north-east corridor, in addition to significant portions of the land being environmentally constrained, thereby reducing the actual developable extent of land for urban purposes.

Further, Map 4: Activity Centres, Community Facilities (refer **Figure 10 –Local Planning Strategy Map 4**) and Housing of the LPS recognises the DSP area and provides the following commentary:

> *"Identified as Urban Investigation in the North-East Sub-regional Planning Framework. Key considerations to be addressed prior to development in the longer term."*

The DSP and concurrent MRS Amendment Request are the first steps in the planning process which will ultimately facilitate the use of the land for urban purposes.

The LPS identifies three (3) other areas of 'Future Urban Area' within the City's municipal boundary, being:

- **West Ellenbrook:**
  - Identified as Urban Investigation in the North-East Sub-regional Planning Framework. Development anticipated over the medium term.
- **Gidgegannup Townsite:**
  - Significant constraints will need to be addressed before urban expansion can be supported over the longer term.
- **Bullsbrook:**
  - Residential area to develop over the medium term.
  - Future District Centre identified in the Bullsbrook District Structure Plan.

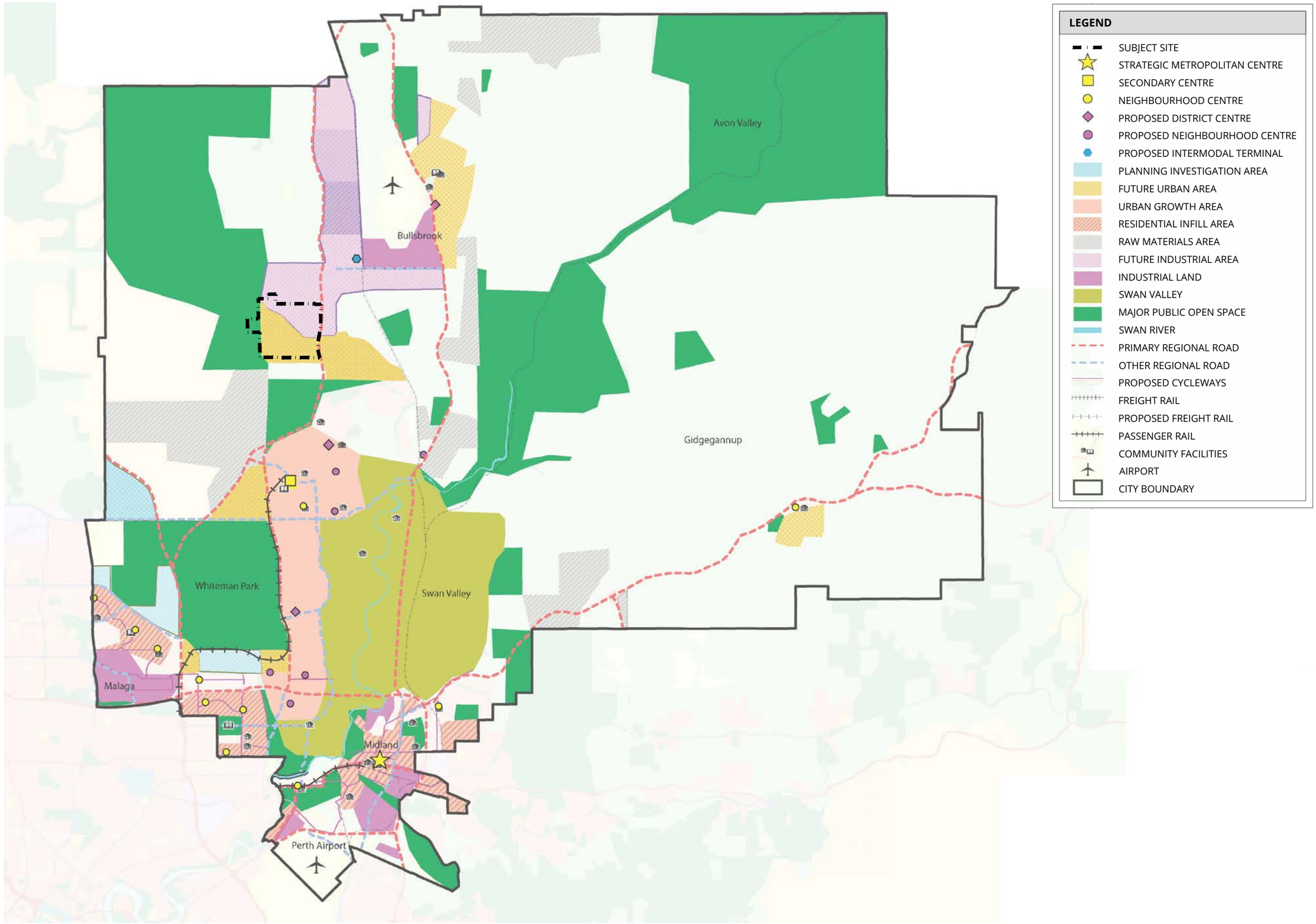
North Ellenbrook is considered to represent the most logical northern extension to the Urban Growth Corridor which, as depicted on Map 4 of the LPS, extends south of Ellenbrook, covering the suburbs of Brabham, Dayton, Bennett Springs and Caversham. Whilst West Ellenbrook sits alongside Ellenbrook and is identified for development in the 'Medium (2022 – 2031)' term in accordance with the Framework. The West Ellenbrook land is identified as a 'Priority Resource Area' under the *State Planning Policy 2.4 – Basic Raw Materials*. Whilst an Improvement Plan was prepared for West Ellenbrook in 2019 to facilitate more detailed planning with regard to the supply of residential land, extraction of the priority resource is expected to significantly delay residential development in this location. North Ellenbrook West is therefore expected to be commencing civil works in 2028, ahead of the West Ellenbrook land becoming available.

Gidgegannup Townsite, whilst zoned 'Urban' under the MRS, is faced with challenges pertaining to servicing and its remote proximity to the North-East Urban Growth Corridor. The recent construction of the Perth to Darwin National Highway significantly increases the serviceability of North Ellenbrook to Ellenbrook and the broader Perth Metropolitan Area, making the urbanisation of North Ellenbrook the logical extension to the North-East Urban Growth Corridor.

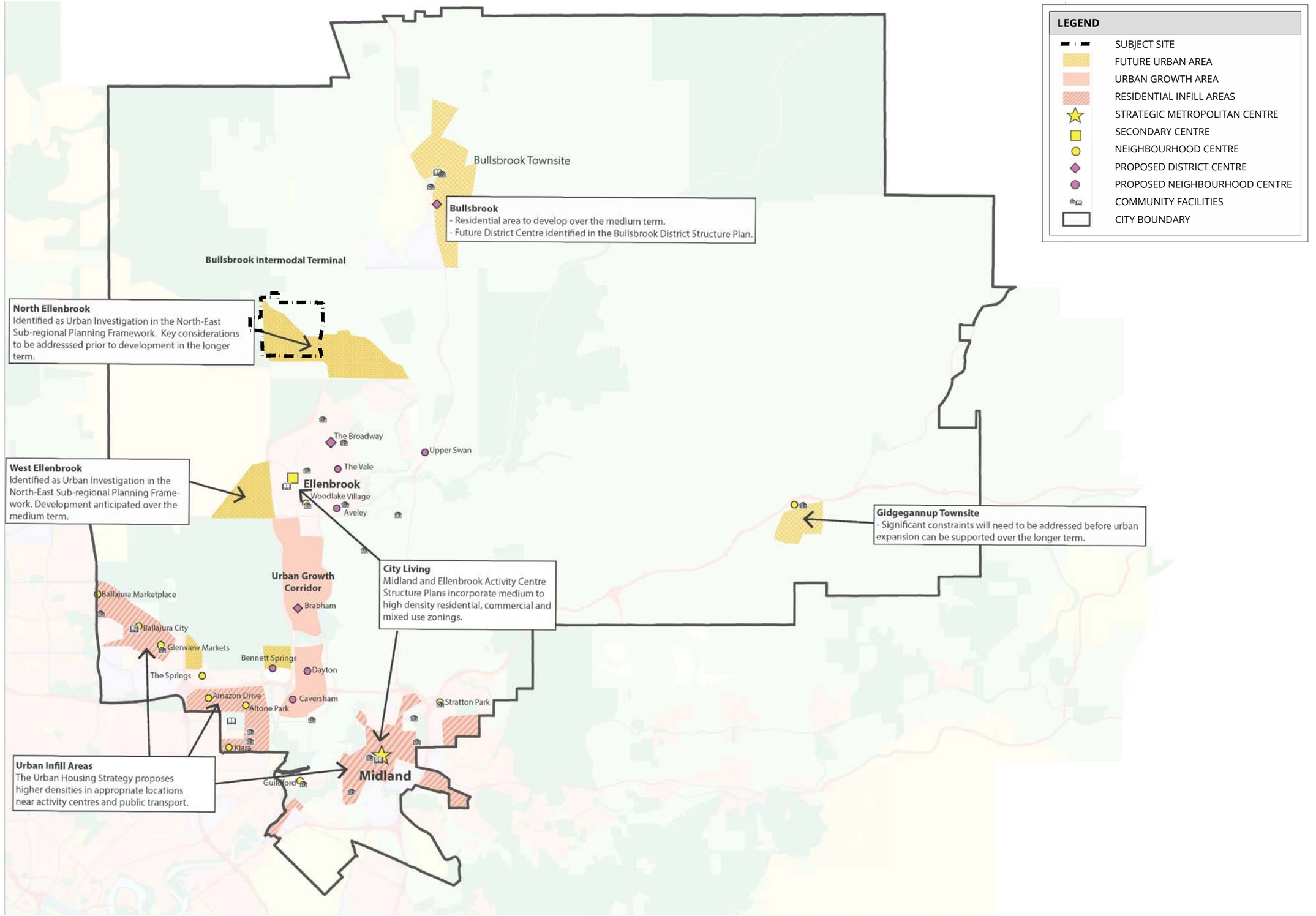
Bullsbrook is similarly identified for development in the 'Medium-Long (2022+)' term, consistent with the urban staging identified for North Ellenbrook. While portions of the Bullsbrook Townsite and surrounds have recently been rezoned under the MRS, the land is expected to offer a different supply choice to North Ellenbrook and both are required for adequacy and flexibility of supply (refer **Section 2.6.1 – Residential Land Supply – North-East Corridor**).

The development of the land for urban purposes is entirely consistent with the designation of the land under the LPS, with the key considerations identified under the Framework having been addressed as part of this DSP.

Refer **Figure 9 –Local Planning Strategy Zoning and Figure 10 –Local Planning Strategy Map 4**.



9. LOCAL PLANNING STRATEGY ZONING



10. LOCAL PLANNING STRATEGY MAP 4

1.6 PLANNING POLICIES

1.6.1 STATE PLANNING POLICY 2.4 – BASIC RAW MATERIALS

The WAPC's *State Planning Policy 2.4* ('SPP 2.4') seeks to guide the use and extraction of Basic Raw Materials from land where such extraction is considered appropriate on planning and environmental grounds. The policy document is an update to an earlier version released in 2000.

The current iteration of SPP 2.4 identifies a 'Priority Resource Location' containing 'Sand' over Lot 2382, which is currently being extracted by the landowner in accordance with current approvals and licences from the Department of Mines, Industry, Regulation and Safety. The anticipated tenement timeframes for the conclusion of mining operations is expected to coincide with the first stages of development within North Ellenbrook West (circa 2028), with the extractive industry operations to cease use prior to nearby landholdings being developed for residential use. Part 1 of the DSP makes provision for the transitioning of land use, with the existing quarry operations likely to provide fill for earthworks for land within the DSP area.

A portion of the DSP is also identified as containing 'Regionally Significant Basic Raw Materials (Silica Sand) under SPP 2.4. A 'key considerations' of the North Ellenbrook Urban Investigation Area (as per the WAPC's *North-East Sub-Regional Planning Framework*) is to consider sequential land use allowing for the extraction of sand resources, consistent with SPP 2.4. The resource will therefore be extracted prior to urban development for use as cut to fill across the DSP area, with any interim land use buffers which may be required to be considered at the LSP stage.

Excluding Lot 2383, while the locality has previously been the subject of enquiry for raw materials, there are no current proposals affecting the subject site.

Land to the south of the subject site is identified under the Draft SPP 2.4 as 'Sites with Prior State Environment Minister Approval' with *"the land being identified as having a 'Significant Geological Supply – Sand"*. It is noted that the land to the south (on Lot 5892 Maralla Road) is operated for the purposes of sand extraction, however, this property does not form part of the proposed DSP area and is not identified for development under the Framework.

1.6.2 STATE PLANNING POLICY 3.7 – PLANNING IN BUSHFIRE PRONE AREAS

The majority of the subject site is identified as being within a 'Bushfire Prone Area' as per the Department of Fire and Emergency Service *Map of Bushfire Prone Areas* and as such, is subject to the provisions of *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* ('SPP 3.7'). SPP 3.7 seeks to guide the implementation of risk-based planning to best mitigate the potential impact of bushfire on property and infrastructure. SPP3.7 is accompanied by the *Guidelines for Planning in Bushfire Prone Areas version 1.3 (December 2017)* (the 'Guidelines').

In accordance with the requirements of SPP 3.7 and the associated Guidelines, Eco Logical Australia prepared a Bushfire Management Plan in support of the DSP. The primary purpose of the Bushfire Management Plan is to act as a technical supporting document to inform planning assessment and provide guidance on how to plan for and manage the bushfire risk to the site through the implementation of a range of bushfire mitigation measures in accordance with the Guidelines.

The Bushfire Management Plan concludes that the proposed development is consistent with the aim and objectives of SPP 3.7 and the associated Guidelines. Further information with regard to the proposed bushfire mitigation measures are outlined at Section 2.4 of this report.

Refer **Appendix 2 - Bushfire Management Plan.**

1.6.3 DRAFT STATE PLANNING POLICY 4.1 – INDUSTRIAL INTERFACE

The WAPC's *Draft State Planning Policy 4.1 – Industrial Interface* ('Draft SPP 4.1') (2009) seeks to provide for the safety and amenity of surrounding land uses while having regard to the rights of landowners potentially affected by identified land uses. The draft policy document is an update to an earlier version released in 2004.

The policy considerations of the Draft SPP 4.1 do not preclude the DSP as proposed, though the policy is of direct relevance to the land use planning interface at the subject site's northern and southern edges. The DSP has generally sought to maintain existing environmental features in expanded areas of open space at the northern and southern interfaces, providing a natural means of separation to adjoining industrial type uses.

Lot 5892 Maralla Road to the south of the DSP area supports a current sand extraction operation. While this is well within the cadastral boundaries of the large 162-hectare property, offering internal land use separation opportunities, the use (being Extractive Industry) is identified under the Draft SPP 4.1. Further separation between the land use and any areas of proposed residential is provided by way of public open space along the southern boundary of the DSP area, as is considered in detail in **Section 2.6.3** of this report and the associated environmental review by 360 Environmental appended to this report.

To the north of the DSP area (north of Chitty Road in particular) the Framework, and recent work for the *Bullsbrook Freight and Industrial Land Use Planning Strategy*, has foreshadowed 'Light Industry' use. The land use interface considerations under the Draft SPP 4.1 and the draft plans for the Bullsbrook Freight and Industrial Land Use Planning Strategy are reviewed further in **Section 1.7.2** of this report.

1.6.4 STATE PLANNING POLICY 5.4 – ROAD AND RAIL NOISE

The purpose of the WAPC's *State Planning Policy 5.4 – Road and Rail Noise* ('SPP 5.4') is to minimise the adverse impact of road and rail noise on noise-sensitive land-use and/or development within the specified trigger distance of strategic freight and major traffic routes and other significant freight and traffic routes. SPP 5.4 has informed the preparation of the DSP, specifically in relation to the proximity of future residential development to the Perth to Darwin National Highway, which abuts the site's eastern boundary. This is discussed in detail in **Section 2.6.2**, inclusive of proposed noise mitigation measures.

1.7 DISTRICT STRUCTURE PLANNING

1.7.1 BULLSBROOK TOWNSITE DISTRICT STRUCTURE PLAN

The *Bullsbrook Townsite District Structure Plan* was adopted by the WAPC in April 2018 and provides a high-level strategy to guide the future development of the Bullsbrook townsite. The *Bullsbrook Townsite District Structure Plan* area is located approximately 3.5 kilometres to the north-east of the subject site and identifies 505 hectares of land for 'Industrial' purposes. It is noted that the draft *Bullsbrook Freight and Industrial District Structure Plan* proposes an additional 2,900 hectares of land for industrial purposes resulting in a significant amount of industrial land within the immediate vicinity of the subject site. These areas are in addition to land identified within the *Muchea Employment Node Structure Plan* endorsed structure plan map (1,100 hectares).

Aside from identified industrial land, the Bullsbrook Townsite District Structure Plan will facilitate the orderly expansion of Bullsbrook and has facilitated subsequent MRS rezonings to 'Urban'. Portions of the DSP area have commenced development and will continue to provide land supply in the longer term as a different product and lifestyle offering to North Ellenbrook.

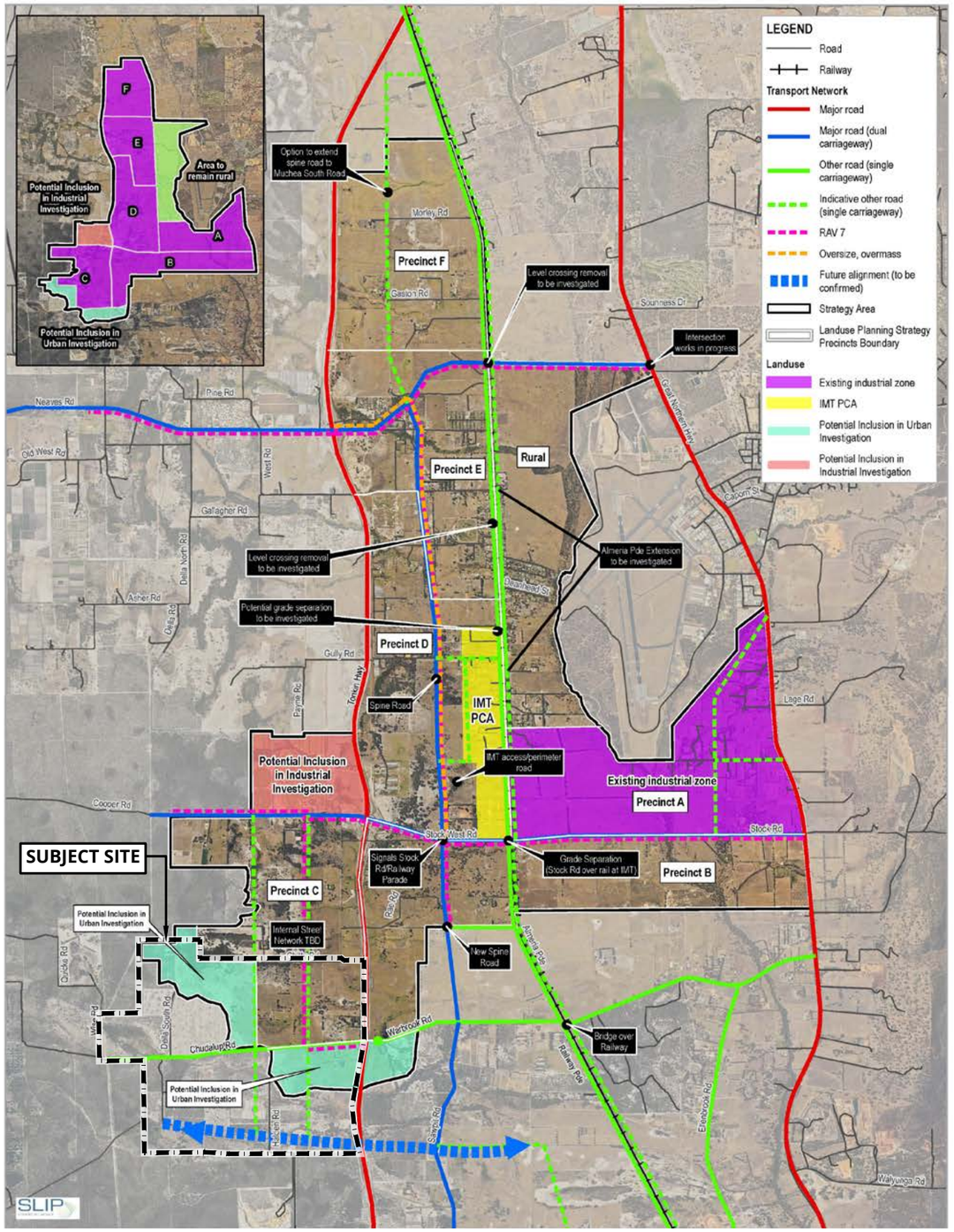
1.7.2 DRAFT BULLSBROOK FREIGHT AND INDUSTRIAL LAND USE PLANNING STRATEGY

The *Draft Bullsbrook Freight and Industrial Land Use Planning Strategy* ('BFILUPS') was released by the WAPC for public comment in early 2022 as the next stage in implementing the *Perth and Peel @ 3.5million* Framework, and relates to the large area of land identified as 'Industrial Investigation' to the north and north-east of the DSP area. The BFILUPS is intended to provide a long-term strategic vision for future development of the industrial land, service infrastructure and transport requirements including support for a proposed intermodal terminal.

The DSP area is located at the southernmost end of the BFILUPS area, to the west of the Tonkin Highway, forming part of Precinct C of the advertised Strategy. The Precinct is approximately 442 hectares and is generally bound by Cooper Road to the north, the Tonkin Highway and Precinct B to the east, Warbrook Road extension to the south and the Gnangara-Moore River State Forest to the west. The Precinct is characterised by its proximity to major arterial roads/transport linkages as well as its proximity to sensitive environmental areas (generally to the west) and the 'Urban Investigation' and 'Industrial Expansion' areas which comprise the DSP area to the south.

It is understood that the DSP area will be removed from the final version of the BFILUPS given it is captured within a higher order planning document, with the final BFILUPS mapping to be amended accordingly. At the time of writing, a date for completion of the BFILUPS is yet to be established and a new review of overall industrial land supply need is yet to be considered.

Refer **Figure 11 – Draft Bullsbrook Freight and Industrial Land Use Planning Strategy**.



11. PRELIMINARY CONCEPT – DRAFT BULLSBROOK FREIGHT AND INDUSTRIAL LAND USE PLANNING STRATEGY

1.7.3 MUCHEA EMPLOYMENT NODE STRUCTURE PLAN

The Muchea Employment Node Structure Plan was adopted by the WAPC in August 2011 to set aside an area for service-based uses, such as transport, livestock, fabrication, warehousing, wholesaling and general commercial use. The Muchea Employment Node Structure Plan states that:

> *The industrial land demand assessment shows a short-term requirement for up to 70 hectares of land in Muchea to service the wider area, inclusive of the Shire of Chittering, Upper Swan and Bullsbrook. Complementary uses to WAMIA operations (estimated at 10ha) can also be expected to locate to the area in the short-term given the commencement of operations at the Muchea Livestock Centre in May 2010. Demand for the remainder of the site (214 ha) would occur over the medium to long-term (2030).*
>
> and further, that:
>
> *Job creation in the Muchea Employment node will provide employment opportunities for the growing population of the north-east corridor.*

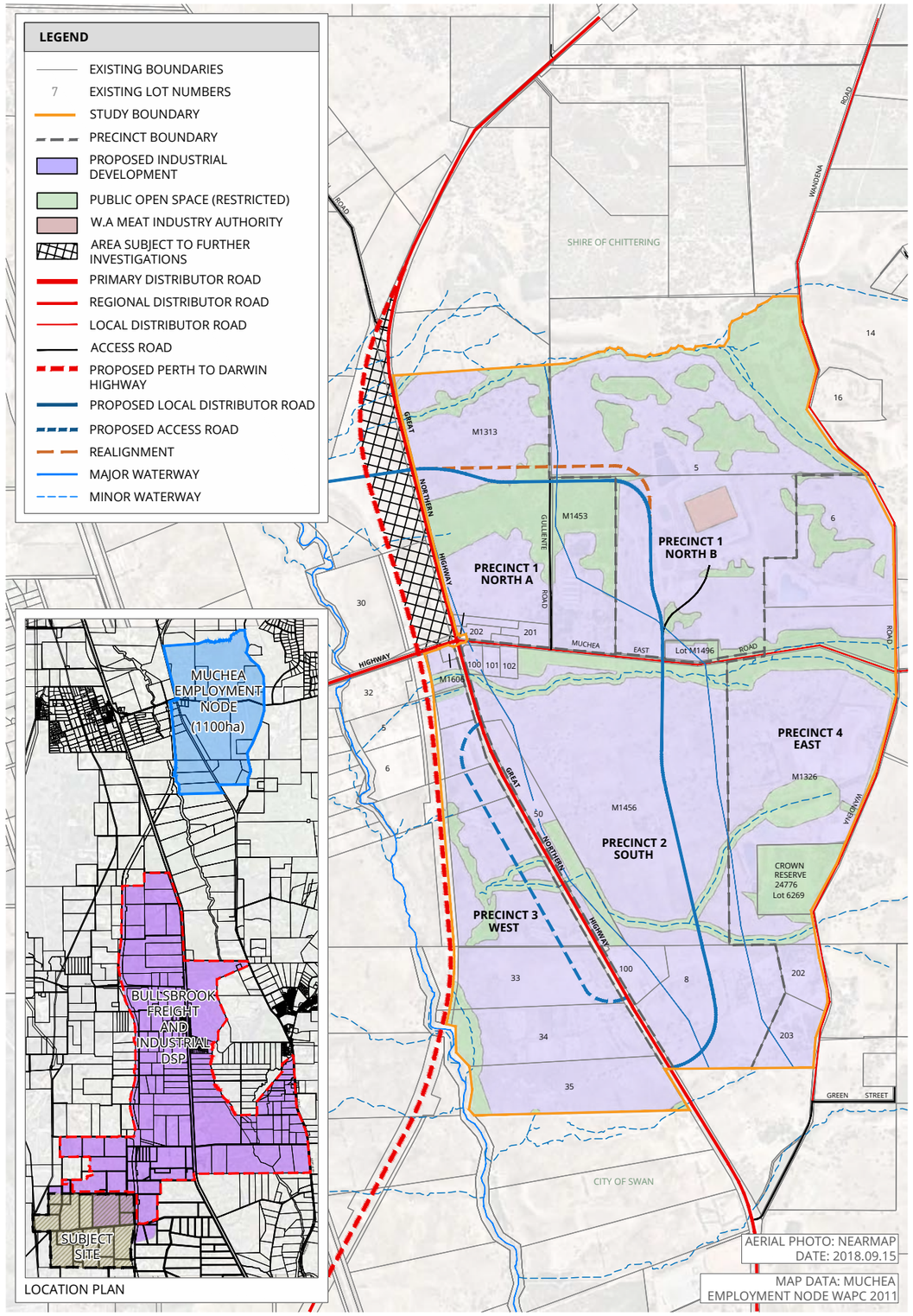
The *North-East Sub-Region Planning Framework* does not specifically acknowledge the 1,100 hectare Muchea Industrial Park, yet it is located only 10 kilometres north of the Bullsbrook Freight and Industrial identified land and is the point where Tonkin Highway will connect to the Great Northern Highway and the Brand Highway. Development has already occurred within the Muchea Employment Node in anticipation of the Tonkin Highway extension and this is expected to continue.

The *Muchea Employment Node Structure Plan* is an important consideration, given the extent of industrial zoned land within the Muchea Industrial Park and the north-east corridor generally. The extent of industrial zoned land (both existing and forecast) is considered in further detail at **Section 1.4.1** of this report.

Refer to **Figure 12 – Muchea Employment Node Structure Plan.**

1.7.4 NORTH ELLENBROOK EAST DISTRICT STRUCTURE PLAN

The proponent groups for the two North Ellenbrook DSP areas have collaborated as part of the preparation of the respective DSPs, primarily regarding the proposed Tonkin Highway interchange location. The proponent groups acknowledge that location refinement will ultimately be a decision by Main Roads WA.



12. MUCHEA EMPLOYMENT NODE STRUCTURE PLAN

1.8 PRE-LODGEMENT CONSULTATION

The preparation of the DSP has been informed through consultation with the Department of Planning, Lands and Heritage, City of Swan and other various State Government agencies. A series of meetings have been held with the DPLH and its consultants (GHD) for the BFILUPS, in addition to the proponent group for the North Ellenbrook East DSP.

The following provides a summary of consultation undertaken.

AUTHORITY	DATE OF CONSULTATION	METHOD OF CONSULTATION	SUMMARY OF OUTCOMES
DPLH, GHD & City of Swan	1 November 2018	Meeting	Preliminary discussion regarding relationship between Draft BFIDSP and planning for NEW.
DPLH, GHD, City of Swan, CLE & Lendlease	6 December 2018	Meeting	Follow up discussions regarding Draft BFIDSP, proposed urban cells and servicing constraints.
Lendlease & CLE	16 January 2019	Meeting	PDNH Interchange Meeting #1 – location analysis.
City of Swan	20 February 2019	Meeting	Lodgement of MRS Amendment (Urban Deferred) and DSP discussion. Key issues to be resolved include provision of district facilities and preparation of Development Contribution Plan(s).
DPLH	20 February 2019	Meeting	Lodgement of MRS Amendment (Urban Deferred).
Lendlease & CLE	9 April 2019	Meeting	PDNH Interchange Meeting #2 - location analysis.
DPLH (Metronet Team)	15 May 2019	Meeting	Discussion regarding Ellenbrook Train Station planning and North Ellenbrook service catchments.
DPLH	13 August 2019	Meeting	DSP and BFIDSP progression discussion, PDNH interchange locations.
DPLH & City of Swan	13 September 2019	Meeting	MRS Amendment update, discussion regarding DSP, provision of school sites based on Ellenbrook demand.
NEW & NEE Consultants	19 September 2019	Meeting	Service infrastructure planning.
Lendlease, CLE & GHD	8 October 2019	Meeting	PDNH Interchange Meeting #3 - location analysis (environmental constraints and construction costs).
Lendlease, CLE & GHD	23 October 2019	Meeting	PDNH Interchange Meeting #4 - location analysis (environmental constraints and construction costs).
Main Roads WA	19 January 2020	Meeting	Presentation of PDNH Interchange Options and likely location discussion.
DPLH	24 January 2020	Meeting	DSP Progression, MRS Amendment (Urban Deferred) and status of BFIDSP.
City of Swan	25 February 2020	Meeting	DSP update and requirements for urban deferred lifting (servicing, land supply demand and preparation of a DCP).
MLA Jessica Shaw	24 March 2020	Meeting	Project overview – DSP.

Table 4: Pre-Lodgement Consultation

2 SITE CONDITIONS AND CONSTRAINTS

2 SITE CONDITIONS AND CONSTRAINTS

The following provides a summary of the environmental site conditions and constraints relating to the subject site.

For further information, refer to the following reports:

- Bushfire Management Plan, prepared by Eco Logical Pty Ltd (refer **Appendix 2**);
- Environmental Assessment Report, prepared by 360 Environmental (refer **Appendix 3**);
- Acoustic Assessment, prepared by Herring Storer Acoustics (refer **Appendix 5**); and
- District Water Management Strategy, prepared by JDA Hydrologists (refer **Appendix 7**).

2.1 TOPOGRAPHY AND SOILS

2.1.1 TOPOGRAPHY AND SOIL PROFILE

The elevation of the subject site ranges from 44 metres Australian Height Datum ('AHD') to 68 metres AHD, falling from the west to the east.

The site's surface geology consists of Bassendean Sand and Guildford Formation, while the soil landscape contains the Bassendean System and the Yanga System.

Refer **Figure 12 - Landform**.

2.1.2 CONTAMINATED SITES

A review of Department of Water and Environmental Regulation ('DWER') Contaminated Sites Database identified there are no registered contaminated sites within a 5-kilometre radius of the subject site. The closest registered contaminated site is located 6.5 kilometres to the north-east of the site and is remediated for restricted use.

As the site has been historically and currently used for sand extraction, pasture paddocks and a wildflower farm, there is the possibility that the site may have soil or groundwater contamination as a result of the use of pesticides, herbicides, fertilisers and hydrocarbons associated with these activities and may therefore require further testing.

2.1.3 ACID SULPHATE SOILS

DWER's Acid Sulphate Soil Risk Mapping indicates that the subject site is identified as predominantly being 'Moderate to Low' risk of acid sulphate soils ('ASS') occurring within 3 metres of natural soil surface and 'High to Moderate' risk beyond 3 metres. Small pockets in the northern, centre and western portions of the site are mapped as having pockets of 'High to Moderate' of ASS occurring within 3 metres of natural soil surface which are generally associated with the areas of wetlands.

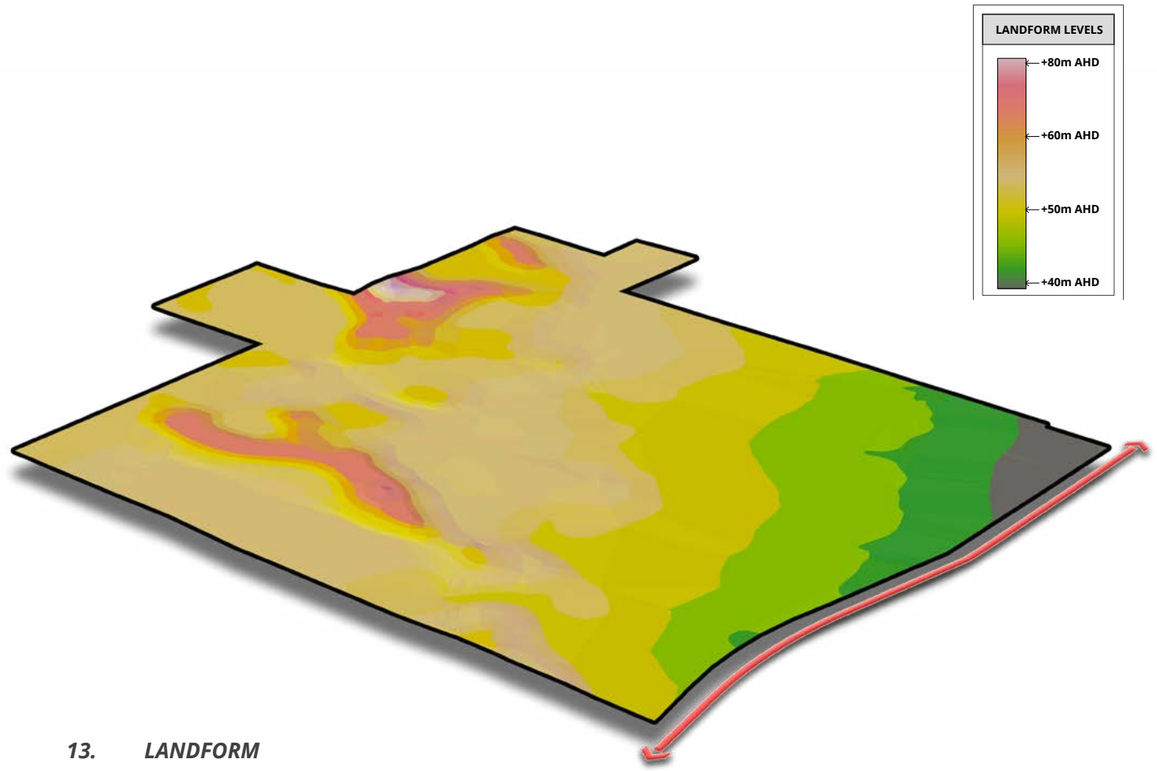
The presence of ASS within the site is not considered to be a limiting factor to the development potential of the site, with some areas of public open space having been strategically located to coincide with the high to moderate ASS risk areas at the northern and south-western corners of the site, which may limit the risk of ASS exposure. For the balance of the DSP area, risks associated with ASS can be appropriately mitigated through an ASS investigation which may be warranted at subsequent stages of planning, under the following circumstances:

- Earthworks that will disturb more than 100m3 of soil;
- Dewatering or soil draining activity.

Other areas of the site with a moderate to low ASS disturbance risk may require an ASS investigation subject to the following being undertaken at the site:

- Works involving lowering of watertable (temporary or permanent);
- Earthworks extending to beyond 3 metres below natural ground surface;
- Works within 500m of wetlands.

The risks associated with ASS will be reviewed further at the local structure planning and subdivision stages of development.



13. LANDFORM

2.2 VEGETATION, FLORA AND FAUNA

2.2.1 VEGETATION AND FLORA

The DSP area is located within the Swan Coastal Plain bioregion of the Interim Biogeographic Regionalisation of Australia ('IBRA'). The Swan Coastal Plain Perth subregion is a low-lying coastal plain composed of colluvial and Aeolian sand, alluvial river flats and coastal limestone rising to duricrusted Mesozoic sediments in the east. Outwash plains are extensive only in the south, while a complex series of seasonal wetlands and swamps extends from north to south. Vegetation comprises heath and/or Tuart woodlands on limestone, Banksia and Jarrah-Banksia woodlands on Quaternary marine dunes of various ages, Marri on colluvial and alluvial soils, Casuarina obesa on out-wash plains, and paperbark (Melaleuca spp.) in wetland areas.

The DSP area is within one vegetation association, described below.

- Bassendean 949: Low woodland, Banksia Remnant vegetation statistics of the IBRA region.

Regional vegetation complexes mapping indicates that there are two vegetation complexes across the site which relate to the underlying soil profile, being:

- Yanga Complex: closed scrub and low open forest; and
- Bassendean complex-North: Low open forest, low woodland and sedgelands.

The estimated extent of the vegetation complex remaining on the Swan Coastal Plain and within the Perth Metropolitan Region are detailed in **Table 5**.

	PRE-EUROPEAN (HA)	CURRENT EXTENT (HA)	% REMAINING	% REMAINING IN DBCA RESERVES
In IBRA Region Swan Coastal Plain				
Bassendean North	79,057	56,659	71.6	25.9
Yanga	26,176	4,268	16.3	1.8
Perth Metropolitan Region ('PMR')				
Bassendean North	22,939	11,770	51.3	2.9
Yanga	5,779	775	13.4	4.2
Local Government Authority – City of Swan				
Bassendean North	14,216	7,286	51.2	-
Yanga	5,776	775	13.42	-

Table 5: Remnant Vegetation Complex.

It is noted that EPA Policy recommends that on the Swan Coastal Plain, vegetation complexes are maintained above the threshold level of 30% of the original pre-clearing extent of each community and 10% of the original pre-clearing extent of each community representation within the Perth Metropolitan Region. The DSP has taken this into account in the design response (refer **Sections 2.2.1.4 and 3.3.1** of this report).

A desktop database search undertaken by 360 Environmental identified 50 conservation significant flora species as potentially occurring within a 5-kilometre radius of the site. Of these 50 species, 31 species are 'Priority' and 19 are 'Threatened'. The 31 Priority flora include one (1) Priority 1, five (5) Priority 2, 15 Priority 3 and 10 Priority 4 species.

Four (4) Priority Ecological Communities ('PEC') and three (3) Threatened Ecological Communities ('TEC') listed by the State were identified within a 5-kilometre radius of the site. All of these communities are also listed as TECs under the EPBC Act, being:

- Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (Priority 3 [DBCA], Endangered [EPBC];
- SCP15: Forests and woodlands of deep seasonal wetlands of the Swan Coastal Plain (Vulnerable DBCA);
- Muchea Limestone: Shrublands and woodlands on Muchea Limestone (Endangered [DBCA], Endangered [EPBC]);
- SCP23b: Swan Coastal Plain *Banksia attenuate – Banksia menziesii* woodlands (Priority 3 [DBCA], Endangered [EPBC]);
- SCP21c: Low lying *Banksia attenuate* woodlands or shrublands (Priority 3 [DBCA], Part of Endangered [EPBC]);
- SCP22: *Banksia ilicifolia* woodlands (Priority 3 [DBCA], Part of Endangered [EPBC]);
- Mound Springs SCP: Communities of Tumulus Springs [Organic Mound Springs, Swan Coastal Plain) (Critically Endangered [DBCA], Endangered [EPBC]).

Following a desktop review of the DSP area, two field surveys were undertaken by 360 Environmental in accordance with the EPA's *Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment*, being:

- 360 Environmental (2019) Reconnaissance Flora and Vegetation Survey (included Lots 1767, 114 and 112); and
- 360 Environmental (2011) Level 2 Flora and Vegetation Survey (included lots [or part lots] except Lots 1767, 114 and 112).

A total of 225 flora species were recorded across the DSP area. The most commonly occurring families were Myrtaceae (32 taxa), Asparagaceae (12 taxa) and Proteaceae (5 taxa). The most frequently recorded genus was Banksia. It is noted that the number of native species recorded with the DSP area was considered to be low for the size of the site which was mostly due to the large part of the DSP area which has been cleared for farmland purposes, or which was degraded after conversion to other land use purposes.

Refer **Figure 14 - Vegetation Mapping.**

2.2.1.1 VEGETATION CONDITION

Large portions of the DSP area have historically been used for farming purposes and therefore the cleared. While some patches of remnant native vegetation remain, they have been disturbed by previous land use. The vegetation condition of remnant vegetation within the DSP area varies from 'Excellent' to 'Completely Degraded' condition.

The areas of the DSP area mapped as being within the Yanga Vegetation complex were significantly cleared farmland, with patches of sedge regrowth in the paddocks and isolated *Corymbia calophylla*.

2.2.1.2 SIGNIFICANT FLORA

No Declared Rare Flora were recorded during the 2011 and 2019 surveys undertaken by 360 Environmental. One Priority 3 species, *Cyathochaeta teretifolia* was recorded at three (3) location within the DSP area, which has been accommodated within open space as part of the DSP response.

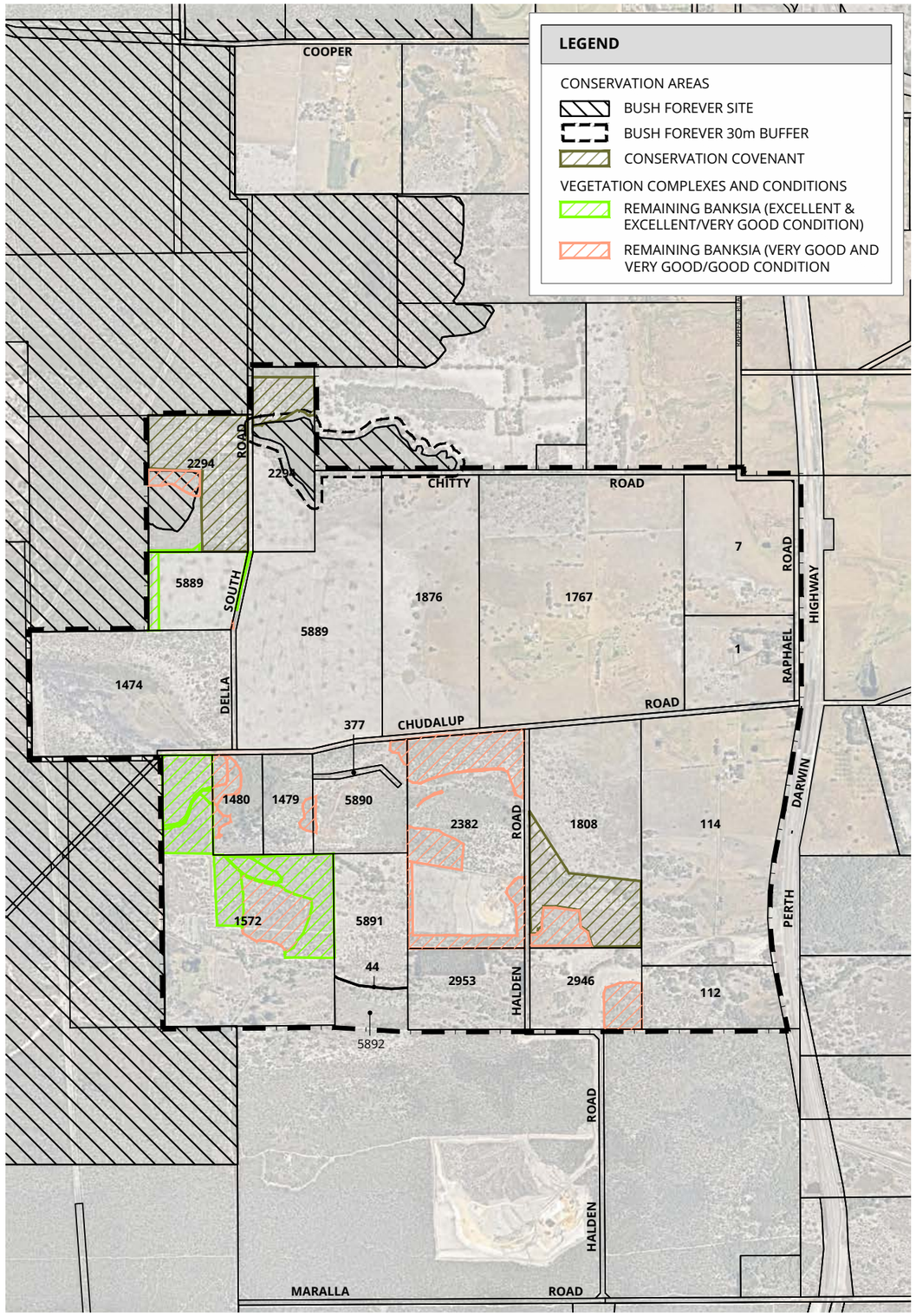
2.2.1.3 POTENTIAL THREATENED AND PRIORITY ECOLOGICAL COMMUNITIES

Vegetation type BaBmEt and BaBmBi has been inferred to have an affiliation with Floristic Community Type ('FCT') SCP23a - *Central Banksia attenuata – Banksia menziesii* woodlands. In addition, vegetation type BiXp has been inferred to have an affiliation with FCT SCP23b - *Northern Banksia attenuata - Banksia menziesii* woodlands and FCT SCP21c: Low lying *Banksia attenuata* woodlands or shrublands. These FCTs have been listed as a sub-community under the EPBC Act listed Threatened Ecological Community ('TEC') Banksia woodlands of the Swan Coastal Plain. It is noted that SCP23a is also listed as a Priority 3 by DBCA.

The following vegetation types, which are inferred to be representative of Banksia Woodland SCP TEC, are located within the DSP, comprising a total of 107.28 hectares of the DSP area. The extent and types of vegetation within the DSP area are as follows:

- Ba (1.69 ha)
- BaBmEt (87.15 ha)
- BaBmBi (13.00 ha)
- BiXp (5.44 ha).

Implementation of the DSP may require clearing of approximately 83.67 hectares of native vegetation which consists of a range of vegetation types. Of the 83.67 hectares to be cleared, approximately 51.94 hectares is representative of the Banksia Woodland SCP TEC. The DSP seeks to retain approximately 90 hectares of native vegetation, of which 54 hectares is inferred Banksia Woodland SCP TEC of varying condition (comprising 'Excellent', 'Very Good' and 'Good' condition vegetation). Careful consideration has been given as part of the DSP design response to ensure those areas of Banksia Woodland in 'Excellent' and 'Very Good' condition are retained where possible, particularly where located in large, continuous stands.



14. VEGETATION MAPPING

2.2.1.4 MITIGATION AND MANAGEMENT

The DSP has been prepared in accordance with previous environmental approvals issued over the DSP area and retains the areas of remnant vegetation required to be protected by existing conservation covenants.

Bush Forever Site Nos. 298 and 399 are also to be protected as part of the DSP. As outlined within **Section 3.2**, it is proposed that those areas of land which contain environmentally sensitive vegetation / Bush Forever sites be reserved as 'Parks and Recreation' reserves under the *Metropolitan Region Scheme* ('MRS') as part of the future MRS Amendment process.

Potential impacts to conservation significant flora and vegetation will also be addressed at subsequent stages of the planning process. This will be achieved, in part, through the requirement for a Vegetation and Management Plan at the subdivision stage to reduce the risk of introducing or distributing of pathogens or weed species to retained vegetation within the site and abutting Gnangara-Moore River State Forest. The management plan is to include ongoing monitoring to ensure the effectiveness of the management measures implemented.

As outlined in **Section 2.2.1**, areas of Banksia Woodland SCP TEC is present within the DSP area. As part of the urbanisation of the site and in order to implement the land use outcomes contemplated by the DSP, clearing of approximately 83.67 hectares of land may be required which would likely be considered as a 'significant impact' on any Maters of National Environmental Significance ('MNES') in accordance with the *Significant Impact Guidelines 1.1 – Matters of National Significance*. The DSP area presents a number of environmental challenges, including the uneven distribution of MNES across the site and given there are multiple landowners/stakeholders with varying lot sizes to coordinate.

Notwithstanding, the clearing required to facilitate the DSP can be addressed through the approvals process under the EPBC Act.

2.2.2 RESERVES AND CONSERVATION AREAS

Desktop mapping has identified that the DSP area is partially within and abutting several conservation areas, being:

- Bush Forever Site 298: Della Road South Bushland impinges the northern portion of the DSP area; and
- Bush Forever Site 399: Melaleuca Park and adjacent Bushlands abuts the western boundary of the DSP area.

The two Bush Forever sites located within the DSP are to be retained in open space with the expectation they be reserved for 'Parks and Recreation' purposes under the MRS.

In addition, one Perth Regional Ecological Linkage (ID: 13) impinges a portion of the west and south-west of the DSP area and traverses north-south connecting Bush Forever Sites. The Ecological Linkage is generally contained within areas of public open space where located within the DSP area (with the area which encroaches the DSP area being minimal). Any impact to the Ecological Linkage is considered to be negligible with sufficient area of untouched bushland to remain as part of the State Forest adjacent to the DSP area providing for appropriate means of habitat for native fauna.

The DSP area also abuts the Gnangara-Moore River State Forest to the west which is managed by the Department of Biodiversity, Conservation and Attractions and vested with the Conservation and Parks Commission under Section 5(1)(a) of the *Conservation and Land Management Act 1984* ('CALM Act'). The proposed interface to the State Forest generally comprises open space (either public or potential future reservation), with the balance of the interface to be provided as a hard edge in the form of future road reserves. It is envisioned that larger residential lots would be provided as an interface to the State Forest, to minimise impact and manage bushfire safety. The allocation of residential density will be further reviewed at the local structure planning and subdivision stages of planning.

2.2.3 FAUNA

A review of the Department of Biodiversity, Conservation and Attraction's Nature Map and the Department of Energy Protected Matters Search ('PMST') databases have identified 22 conservation significant fauna potentially occurring within a 5-kilometre radius of the DSP area. A likelihood assessment was undertaken by 360 Environmental as part of the preparation of the EAR, as summarised in **Table 6**.

SPECIES	CONSERVATION STATUS	
	STATE	FEDERAL
Forest Red-tailed Black Cockatoo Calyptorhynchus banksia naso	Vulnerable	Vulnerable
Carnaby's Cockatoo Calyptorhynchus latirostris	Endangered	Endangered
Rainbow Bee-eater Merops ornatus	-	Marine
Western Swamp Tortoise		
Pseudemydura umbrina	Critically Endangered	Critically Endangered
Black-striped Snake		
Neelaps colonotos	Priority 3	-
Southwestern Brown Bandicoot		
Isoodon fusciventer	Priority 4	-

Table 6: Fauna Species with a High Likelihood of Occurrence On- Site

Watercourses and patches of remnant native vegetation within the DSP area would likely provide suitable habitat for some of the conservation significant fauna identified in the database searches. The balance of the DSP area is largely cleared and used for rural purposes with State Forest land to the west providing larger areas of intact vegetation which may provide better fauna habitat than the DSP area itself.

The DSP proposes a series of public open space areas which form a central green spine throughout the DSP area, capturing a variety of fauna habitats such as wetland areas, transition zones from low lying to uplands and areas containing Banksia Woodland. The public open space network supports the existing ecological linkages which traverse the DSP area connecting Bush Forever Site 399 and 13 (located on the other side of the Perth to Darwin National Highway), assisting fauna movement across the DSP area.

2.2.3.1 BLACK COCKATOOS

The DSP area occurs within the known breeding distribution of the Carnaby's Black Cockatoo. A search of the Department of Biodiversity, Conservation and Attractions database search returned 282 records of the species within a 10-kilometre radius of the DSP area, 39 of which occurred in the past decade.

A Black Cockatoo Habitat Assessment identified several vegetation types, comprising approximately 145.3 hectares, within the DSP area as being representative of Black Cockatoo foraging habitat. It is noted that Marri species are commonly used for foraging by all three Black cockatoo species while Banksia sp. is commonly used for foraging by Carnaby's Black Cockatoo. Foraging evidence for both the Carnaby;s Black Cockatoo and Forest Red-tailed Black Cockatoo were recorded on site. No evidence of Black Cockatoo roosting habitat was observed on-site.

It is recommended that appropriate surveys are undertaken over the balance of the lots at the local structure planning to determine whether there is any further potential impact on Black Cockatoo breeding habitat. Provisions have been included accordingly within Part 1 of the DSP for each of the relevant structure plan areas.

The DSP proposes to retain approximately 72.34 hectares of Black Cockatoo foraging habitat within areas of public open space, with the extent of habitat area to be cleared being subject to a separate approvals process under the EPBC Act.

2.2.3.2 WESTERN SWAMP TORTOISE

The DSP area does not contain Western Swamp Tortoise habitat.

The closest area of Western Swamp Tortoise habitat is located 3km east of the site, within the Twin Swamps Reserve and the Gnangara-Moore River State Forest. Development of the DSP area, as contemplated, will not impact upon Western Swamp Tortoise habitat. The District Water Management Strategy and any subsequent Local Water Management Strategies will manage surface water movement at predevelopment levels.

2.3 SURFACE WATER AND GROUNDWATER

2.3.1 GROUNDWATER

The estimated pre-development Average Annual Maximum Groundwater Level ('AAMGL') contours indicate that groundwater flow is from west to the east. Data from the Perth Groundwater Map indicates the AAMGL ranges from approximately 54mAHD in the west, to 40mAHD in the east. Typical seasonal variation in groundwater levels range between 1.0 and 1.5m below ground level across the DSP area.

Information sourced from DWER identify three aquifers underlying the DSP area, each assigned the name of a major geological unit in which the aquifer occurs. In descending order of depth from natural surface, the aquifers underlying the DSP area are:

- Perth-Mirrabooka Aquifer (Fully Allocated);
- Perth Superficial Swan (Fully Allocated); and
- Perth-Leederville Aquifer (Confined – Fully Allocated).

There are existing licence holders within the DSP area which have a combined 75,750 kL/yr entitlement from the superficial aquifer within the Neaves and North Swan groundwater subareas which could be transferred and used for future urban development.

The eastern portion of the DSP area is located within a Priority 3 ('P3') Public Drinking Water Source Area of Gnangara Underground Water Pollution Control Area. A P3 Public Drinking Water Source is defined under *State Planning Policy 2.7 – Public Drinking Water Source Policy* as:

> *Priority 3 (P3) source protection areas are defined to manage the risk of pollution of the water source. P3 areas are declared over land where water supply sources need to co-exist with other land uses such as residential, commercial and light industrial developments, although there is some restriction on potentially highly polluting land uses.*
>
> *Protection of P3 areas is otherwise achieved through management guidelines for land use activities. If the water source does become contaminated, then water may need to be treated or an alternative water source found.*

Urban development within the P3 area is to have regard to compatibility criteria outlined in the Department of Water and Environmental Regulation's ('DWER') Water Quality Protection Note on *Land Use Compatibility and Public Drinking Water Source Areas*. The land uses proposed within the P3 PDWSA are acceptable (where connected to deep sewerage) or have the ability to be compatible (with conditions) as detailed in **Table 7** below.

LAND USE	COMPATIBILITY
Residential	Acceptable (where connected to deep sewerage).
Industrial / Service Commercial	Acceptable (where connected to deep sewerage), or compatible (with conditions).
Schools	Acceptable (where connected to deep sewerage).
Playing Fields	Compatible (with conditions).
Public Open Space	Compatible (with conditions).

Table 7: Priority 3 Land Use Compatibility

Provisions contained within Part 1 to this DSP require that future LSPs further consider the PDWSA.

2.3.2 SURFACE WATER

The DSP area is located within the Ellen Brook Catchment which is a natural ephemeral waterway and is known to be a major contributor of total nitrogen and total phosphorous entering the Swan River due to historical agricultural uses that have taken place within the Swan Coastal Plain catchment.

Several surface water features are mapped within the DSP area, including two (2) minor perennial watercourses which traverse the DSP area from east to west in the middle and southern portions of the DSP area. The DSP provides for a 30m foreshore buffer to the watercourses/drainage lines within the DSP area, however, further on-site investigations, including a biophysical assessment will be required to determine the final foreshore areas and buffer zones. It is recommended that such on-site investigations are undertaken in support of the preparation of the relevant LSPs, to be prepared at the subsequent stages of planning. Appropriate provisions have been included within Part 1 of the DSP text accordingly.

2.3.3 WETLANDS

The Department of Biodiversity, Conservation and Attractions Geomorphic Wetland mapping identifies the following wetlands within the DSP area:

- UFI 15045 Conservation Category Wetland;
- UFI 14046 Conservation Category Wetland;
- UFI 8538 Resource Enhancement Wetland; and
- UFI 13387 Resource Enhancement Wetland.

The DSP proposes to retain the Conservation Category Wetlands ('CCWs') with a generic buffer of 50m within areas of restricted public open space (in accordance with current EPA guidelines). Final wetland definition and buffers will be determined during the local structure planning process.

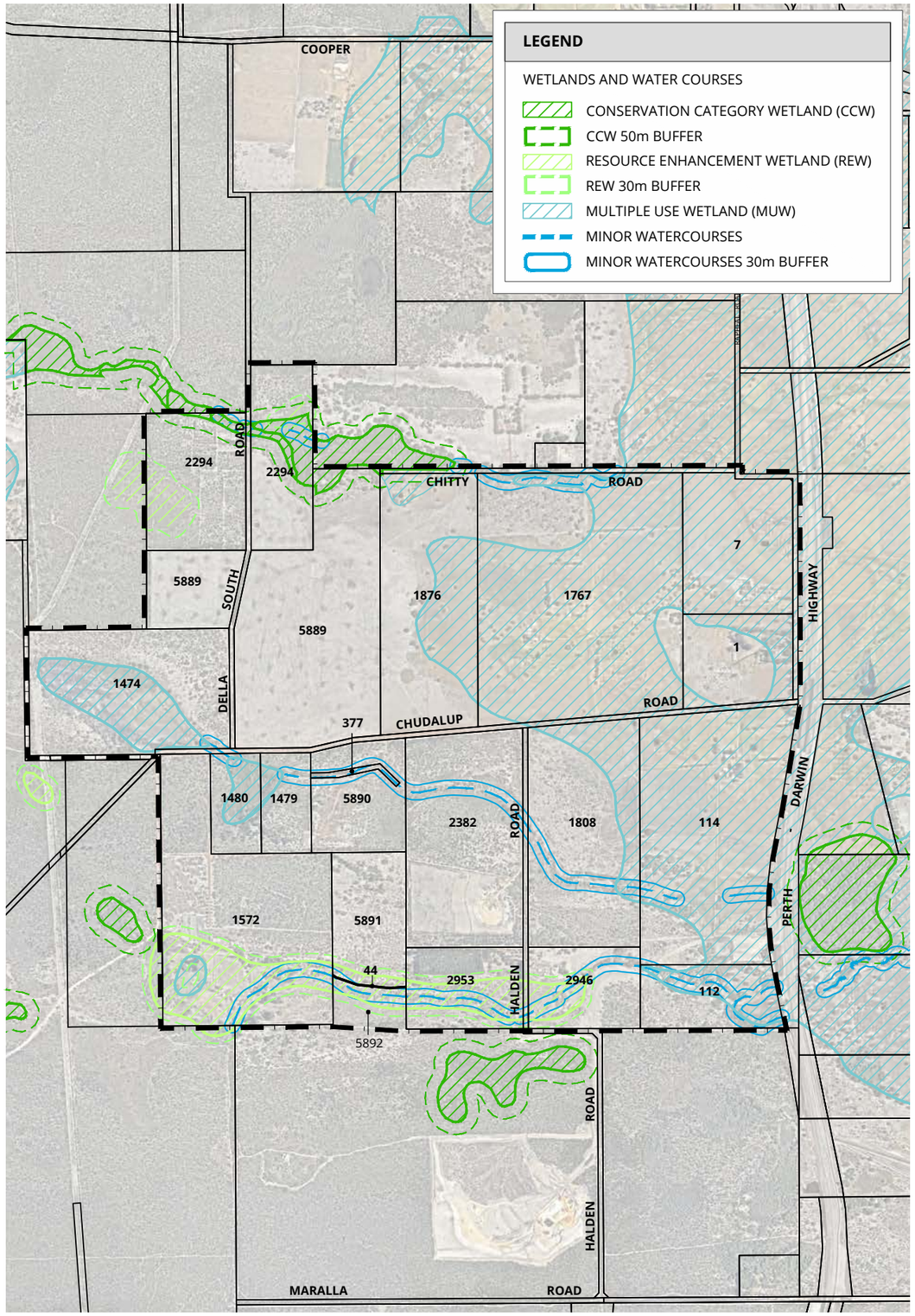
A significant portion of REW UFI 13387 is degraded due to historical clearing and grazing activities with isolated Melaleuca preissiana (Mp) recorded within the eastern section of the REW. The vegetation in the REW has been mapped as being in 'Degraded' to 'Completely Degraded' condition and therefore, may no longer support the environmental attributes, function and value associated with REW management status. A wetland reclassification and verification assessment may be undertaken by the affected landowners to confirm the management classification and inform subsequent local structure planning.

Should a wetland reclassification and verification assessment of REW UFI 13387 be undertaken, a buffer study in accordance with the Draft Guideline for the Determination of Wetland Buffer Requirements may need to be undertaken at subsequent planning phases (i.e. at the local structure planning stage) to accurately determine the buffer required to protect the wetland value or any revised wetland value. The purpose of a site-specific buffer study would be to identify the values, functions and processes of the wetland, the threats posed by the proposed changes, and the appropriate buffer required to mitigate potential threats. Appropriate commentary in this regard has been included within Part 1 of the DSP.

Multiple use wetlands ('MUWs') also exist over a large portion of the east of the site, as well as smaller portions spread out in the north, west and south-west of the DSP area. All MUWs (with the exception of UFI 8524) are proposed to be developed under the DSP.

Wetland Management Plans will be required as part of future structure planning for land comprising the central and southern watercourse/drainage lines. The Wetland Management Plan should be prepared in accordance with the Guidelines checklist for preparing a Wetland Management Plan.

Refer **Figure 15 – Wetlands and Watercourses.**



15. WETLANDS AND WATERCOURSES

2.4 BUSHFIRE

The Department of Fire and Emergency Services ('DFES') online mapping system identifies the majority of the DSP area as being 'bushfire prone'. A Bushfire Management Plan ('BMP') has therefore been prepared by Eco Logical Australia Pty Ltd in accordance with *State Planning Policy 3.7 Planning in Bushfire Prone Areas* ('SPP 3.7') and the associated *Guidelines for Planning in Bushfire Prone Area v1.3*. The BMP provides guidance on how to plan for and manage the bushfire risk to the DSP area through the implementation of a range of bushfire management measures.

Areas of retention and revegetation are proposed as part of the DSP, which has been accounted for in the post development vegetation class and Bushire Hazard Level assessments. A summary of the retention and revegetation considerations is detailed below:

- The areas proposed for future Parks and Recreation reservations under the Metropolitan Region Scheme reflect the existing *Environment Protection and Biodiversity Protection Act 1999* approval (EPA Ref: 2014/7120) retention areas and Department of Water and Environmental Regulation ('DWER') conservation covenant areas associated with Native Vegetation Clearing Permit ('NVCP') approval (DWER Ref: CPS 5981/2). Vegetation within these areas will be retained and no clearing / thinning of vegetation will occur.
- The NVCP approval included commitments to revegetate and rehabilitate a 31.1-hectare area and conservation covenant under Section 30B of the *Soil and Land Conservation Act 1945*.
- Within areas of public open space, it is noted that clearing / thinning of vegetation will be required for drainage, POS facilities, etc areas to be retained are yet to be determined and will be finalised through the subsequent planning processes (i.e. structure plans and subdivision).

Any changes to proposed areas of revegetation and landscaping will be addressed as part of the preparation of future BMPs to be prepared at subsequent stages of planning (as required by Part 1 of this DSP).

Clearing and revegetation will be undertaken within the DSP area for development purposes, and consequently the pre-development Bushfire Hazard Levels are subject to change (to be reviewed at the local structure planning and subdivision stages). Similarly, the current extent of on-site vegetation does not present as a post-development bushfire hazard since portions of the DSP area will be required to be cleared to facilitate urban development, amongst areas of landscaped/managed public open space. Hazards can therefore be managed through a staged clearing process, adequate separation to future built assets from classified vegetation and ongoing fuel management that can be undertaken in and around individual development stages.

The BMP concludes that bushfire hazards within and adjacent to the DSP area and the associated bushfire risk is readily manageable through standard management responses and compliance with the acceptable solutions outlined in the Guidelines. Demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959-2018 at future stages of planning will also depend on the developer's ability to coordinate the timing and staging of clearing and development works within the DSP area with the aim of avoiding bushfire impacts from temporary retained vegetation.

The proposed DSP achieves compliance with the bushfire protection criteria outlined within Appendix 4 of the Guidelines which would be further reviewed at subsequent stages of planning (i.e. structure plan and subdivision). A summary of how the criteria have been achieved is provided in **Table 8.**

ELEMENT	SITE RESPONSE TO BUSHFIRE PROTECTION CRITERIA
Element 1: Location	Post-development, all buildings within the DSP area will be situated in areas subject to Bushfire Hazard Levels ('BHLs') of moderate or low.
Element 2: Siting and Design	As the lot layout is currently unconfirmed, Asset Protection Zones ('APZs') are unable to be prescribed at this level of planning. APZs will be defined in BMPs supporting future planning applications (i.e. structure plans and subdivision applications) to ensure that all future lots will be subject to a Bushfire Attack Level rating of BAL-29 or lower. The majority of the DSP area will be subject to BHLs of Moderate or Low. It is expected that APZs will be able to be accommodated within road reserves, maintained Public Open Space areas and the like.
Element 3: Vehicular Access	There are currently two vehicular access points from the DSP area that join onto the existing road network. BMPs supporting future planning applications will provide greater detail on road networks and ensure that all stages of development are provided with two forms of access at all times, where relevant and possible.
Element 4: Water	The DSP area will be connected to a reticulated water supply. BMPs supporting future planning application will address this element in greater detail.

Table 8: Summary of Bushfire Protection Criteria.

Refer **Appendix 2 – Bushfire Management Plan.**

2.5 HERITAGE

2.5.1 ABORIGINAL HERITAGE

The DSP area is located within the Whadjuk Native Title Claim Area (WC2011/009). The Whadjuk region is one of six regions within Noongar Country.

The Department of Planning, Lands and Heritage online Aboriginal Heritage Information System identifies one (1) registered site and one (1) other heritage place within the DSP area, described as follows:

- **Aboriginal Heritage Site ID 3525 – Ellenbrook: Upper Swan**

  Aboriginal Heritage Site ID 3252 Ellenbrook: Upper Swan is of importance and significance for its association within the mythological narratives of the Waugal, and is associated with the waters and river bed of the Ellen Brook, the main channel of which is located approximately 5 kilometres east of the DSP area.

- **NATGAS 122 (ID 4143)**

  NATGAS 122 is an artefact scatter (ID 4143) which is awaiting formal assessment by the Aboriginal Cultural Material Committee to determine whether it is an Aboriginal site under Section 5 of the Aboriginal Heritage Act 1972.

The DSP identifies the presence of the heritage sites and seeks to implement a framework for further review and protection through subsequent stages of planning.

Refer **Figure 16 – Aboriginal Heritage**.

2.5.1.1 ETHNOGRAPHIC HERITAGE ASSESSMENT

The areas of wetlands within the DSP area have been identified by the Aboriginal survey participants as having held 'some cultural significance' given all water is important in the customs and traditions of the Noongar People. This is due to areas of water typically being associated with campgrounds, hunting and other such activities which are of significance to the Noongar People.

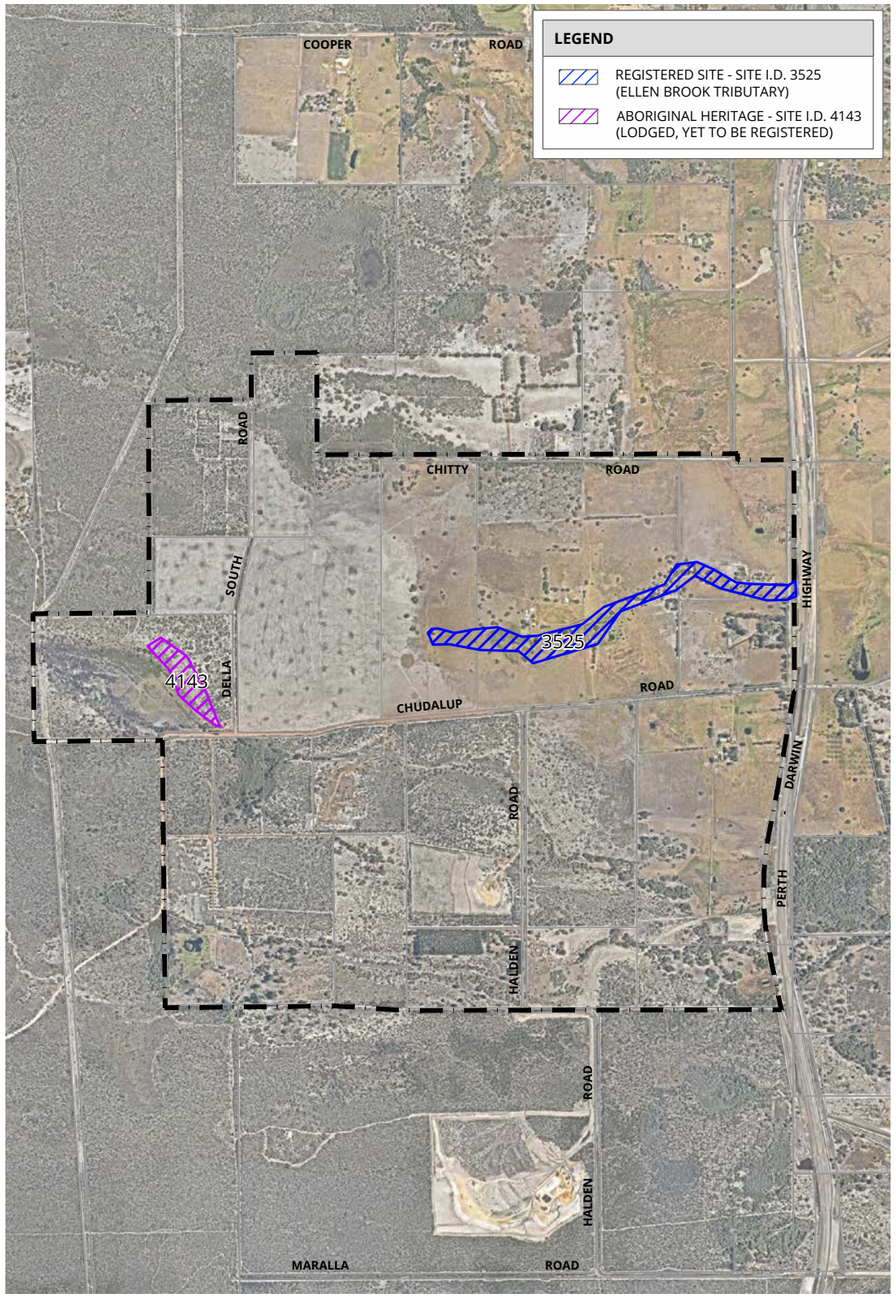
The DSP proposes to recognise the cultural significance of the wetlands through the retention of wetland areas within public open space. Other potential recognition of the wetland areas (such as heritage trails, information signs and the like will be explored at subsequent stages of planning.

2.5.1.2 ARCHAEOLOGICAL HERITAGE ASSESSMENT

A tributary of the Ellen Brook extends into the DSP area and runs north of and roughly parallel to Chudalup Road. The tributary is part of Aboriginal Site ID 3525 and is to be retained as part of the DSP, with the exception of the portion of the tributary located within Lot 1876. The portion of the tributary which is proposed to be developed does not contain any visible areas of heritage significant from on-site and desktop survey reviews, however, would be subject to further analysis as subsequent stages of planning. As development is proposed within the tributary of the Ellen Brook, consent under Section 18 of the *Aboriginal Heritage Act* would be required prior to any ground disturbing works occurring within the DSP area.

It is expected that a Cultural Heritage Management Plan will be prepared in consultation with the Aboriginal knowledge holders of the area to identify appropriate management measures and provisions for heritage retention and management.

Whilst the majority of the wetland areas are proposed to be retained either in part or in their entirety within public open space, should any potential remains, scatter or suspended artefacts are discovered, all works will be required to cease immediately and reported to the Department of Planning, Lands and Heritage in accordance with the provisions of the Aboriginal Heritage Act. Such measures would be further investigated and subsequently implemented at later planning stages (i.e. prior to subdivision and / or development).



16. ABORIGINAL HERITAGE

2.5.2 EUROPEAN HERITAGE

A search of the State Heritage Office register has identified there are no State Heritage Sites within the DSP area or within a 5km radius. No World Heritage or National Heritage places are located within a 5km radius.

One (1) City of Swan Municipal Heritage site abuts the DSP; Melaleuca Park (No. 18693), which is also registered on the National Estate (SHO 2018). This site is located outside of the DSP area and will not be impacted by the future subdivision and development contemplated by the DSP.

2.6 CONTEXT AND OTHER LAND USE CONSTRAINTS AND OPPORTUNITIES

2.6.1 RESIDENTIAL LAND SUPPLY – NORTH-EAST CORRIDOR

Role of the North East Sub-Region in Land Supply

The *North East Sub-Regional Planning Framework* covers some 2,010 square kilometres across the municipalities of Swan, Kalamunda and Mundaring.

> *"The sub-region is expected to continue to experience relatively strong population growth through to 2050. This growth will be influenced by among other things, the provision of relatively affordable housing, employment opportunities, and the semi-rural and hills lifestyle choices offered within the sub-region. The sub-regional population is predicted to more than double by 2050 – growing from 209,000 people in 2011 to over 450,000 by 2050. It is expected that this population growth will predominantly occur within the City of Swan, which is estimated to accommodate over 60 per cent of the sub-region's population by 2050." (WAPC, p18)*

Further to the above, Urbis consultants have undertaken a *North Ellenbrook (West) District Structure Plan – Residential Needs Study* (March, 2020). A number of key considerations are identified in the study and its findings are detailed below:

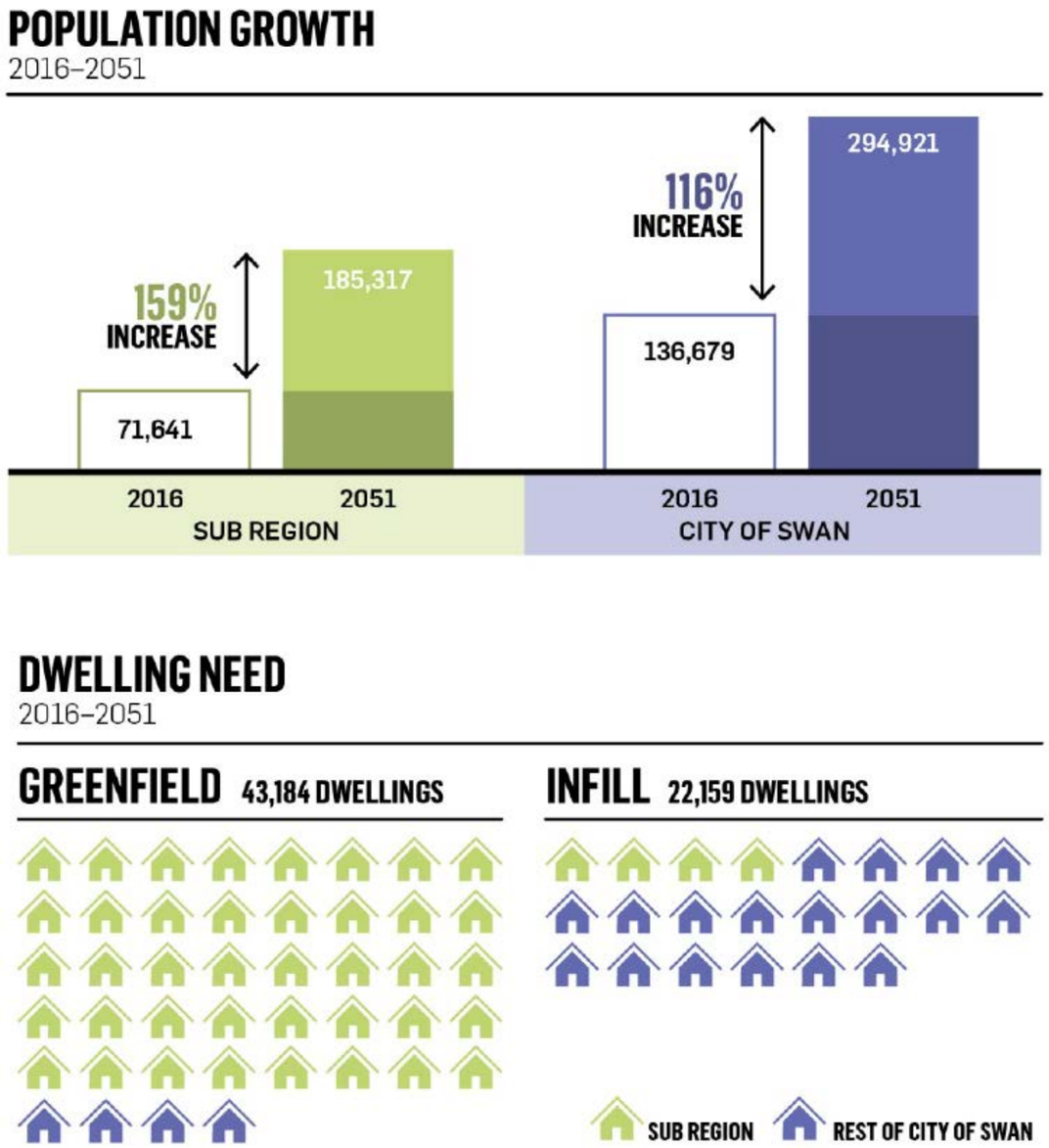
- There is a need to accommodate approximately 42,000 dwellings in new urban areas in the City of Swan over the 2016 to 2050 period;
- In order to provide a diversity of housing choice and support affordability, there will be a need for a residential land supply pipeline which is substantially larger than the 42,000 dwellings needed;
- There is only a limited opportunity to accommodate a share of future population growth within small dwelling options, unless significant changes to household preferences occur;
- There should be a short-term stock of at least 8 years of supply in the sub-region (equivalent to 9,000 lots on average over the period to 2051);
- The level of Urban and Urban Deferred land at any point in time should be adequate to ensure the short-term supply requirement of 9,000 lots can be maintained at the benchmark level of twice the require – i.e. a minimum of 18,000 lots supply;
- While it is recognised that there is a need to provide an adequate quantum of ongoing housing supply, there is a need to provide housing choice. Housing choice extends to more than the built form and includes attributes such as affordability character, amenities and accessibility amongst others;

The Urbis report highlights a key consideration, also often overlooked in strategic planning material which tends to focus on land supply as 'lot demand vs zoned land'. Most notably, Urbis recognised:

- *Clear Evidence of Lot Price Variability* – typically corridors within the Perth Metropolitan Area feature a variety of different land developments offering differing lot price points to cater for a range of buyer groups;
- *Except in the North East Corridor* – The clear exception to this trend is the North East Corridor which has minimal price differences for like to like lot products.

Urbis further notes that, in this context, reliance predominantly on central and north Bullsbrook to provide medium-long term land supply would limit housing choice. This in turn could constrain the desirability of living in the North East Sub-Region and impact on its ability to support economic initiatives that includes the expansive industrial precincts at Bullsbrook and Muchea.

The clear message is that the North-East Sub-Region is expected to be a major source of residential land supply for metropolitan Perth and this is particularly focused in the City of Swan. As this land is made available to the market, there is a need to ensure choice and affordability. An estimated 18,000 lot supply is needed at any time to ensure buys have product and lot typology choice.

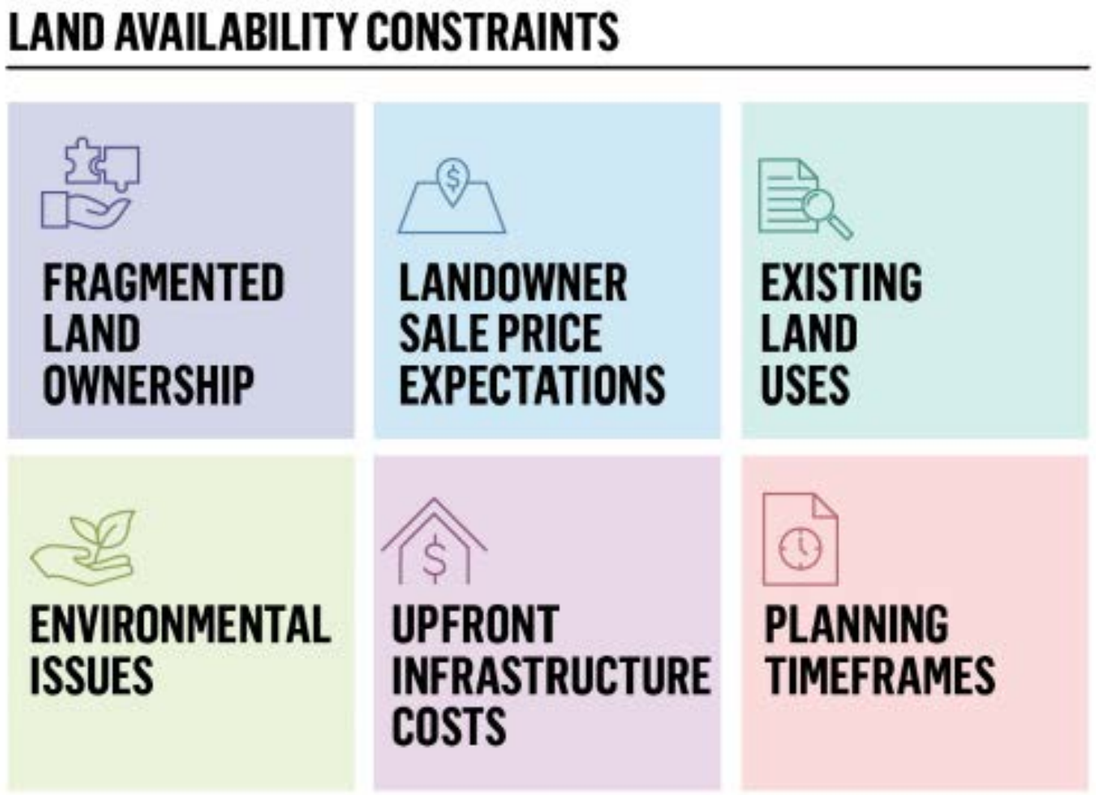


Source: Urbis, North Ellenbrook West Residential Needs Study (March, 2020)

Influences on the Availability of Identified Land

While land may be suitably zoned for residential development, there is a need to link residential land supply with a broader range of considerations that have the potential to constrain identified land. For the North East Sub-Region, Urbis note that these include:

- Fragmented land ownership – areas identified for new urban residential development that are highly fragmented generally constrain the delivery of housing as the acquisition costs and ability to coordinate are generally more challenging. Examples of this for the North East Sub-Region are evident at Dayton and now Henley Brook;
- Price Expectations on englobo land – vendor price expectations are a common inhibitor to any new development prospect as the landowner seeks a premium the market does not wish to pay. Dayton and Brabham are both areas that show evidence of this, as well located zoned land parcels remain undeveloped;
- Existing land use(s) – in many cases land may not be able to provide housing supply as ongoing land uses onsite are expected to continue, or nearby land uses impact the ability to transition to residential. The presence of operating poultry farms that are expected to continue for the foreseeable future within Caversham, Bennett Springs and elsewhere in the Sub-Region are examples;
- Environmental and Heritage factors – while environmental factors of themselves do not necessarily prevent progression of an area to urban development, the need to recognise and protect water, vegetation, flora / fauna, heritage and the like can limit the amount of available land ultimately provided. This is evidenced within this DSP, where significant wetland, heritage and remnant vegetation areas have influenced the net developable area;
- Upfront infrastructure costs – upfront infrastructure costs can often either substantially delay or limit the ability for a project to proceed until lot price growth results in market conditions being strong enough to warrant the expenditure. Similarly, the ability to gain funding agreements can delay infrastructure delivery for a period. This is likely to be the case for North Ellenbrook, where early planning and zoning is required in order to facilitate ongoing service planning by the Water Corporation and other agencies;
- Planning timeframes – the program to progress an identified future urban area from identification, through rezoning, structure planning to subdivision and development on-site can take many years. This is a major constraint to the ability to provide continued land supply;



Source: Urbis, North Ellenbrook West Residential Needs Study (March, 2020)

North East Sub-Region is still Maturing

As a relatively newer corridor of metropolitan Perth, and without the historic infrastructure delivery program or diversity of land supply that is evident elsewhere, the north-east corridor continues to be influenced by:

- Maturing Infrastructure – including the newly planned Metronet Morley-Ellenbrook rail line, upgrading of Lord Street and associated works. The commitment to and completion of these works provide confidence for developers to invest in the sub-region and purchasers to locate. This will continue to see greater North-East Sub-Region demand;

- Unresolved Policy Considerations – in many cases, areas identified for urban development remain subject to other policy commitments which may either delay or preclude development. An obvious example of this is North Ellenbrook West. North Ellenbrook West is identified as 'Urban Investigation' within the SRPF but is also Basic Raw Material Statement of Planning Policy 2.4 (SPP2.4) 'Priority Resource Extraction Area' (for sand extraction). Licenced operator Hanson currently hold licence ML70/238 which includes most of the urban identified land (generally east of Tonkin Highway and bounded by Gnangara Road and Dumpellier Drive). SPP2.4 places a clear State Government commitment on the use of resources prior to consideration for alternate land use;

- Location Preference – while a factor for any corridor, the more limited number of residential land estates and lot choice within the Nort-East Sub-Region influences a buyer's ability to purchase their preferred lot size in a location they desire, for an affordable price. For example, Kingsford Estate, Bullsbrook is one of the few locations in the sub-region where buyers can purchase a larger (~650m2) homesite for ~$250,000. Increased land supply in a variety of locations will improve this over time;

Forecast Supply Requirements – the Need for North Ellenbrook

In the absence of the timely development of North Ellenbrook, Urbis forecast that residential land supply will be depleted by 2038/39.

More importantly, Urbis estimate the stock of urban zoned land is forecast to decline well below adequate levels by 2026. There are estimated to be approximately 13,400 lots within Urban and Urban Deferred areas by 2026, compared to the minimum benchmark to ensure flexibility and affordability in supply of 18,000 lots.

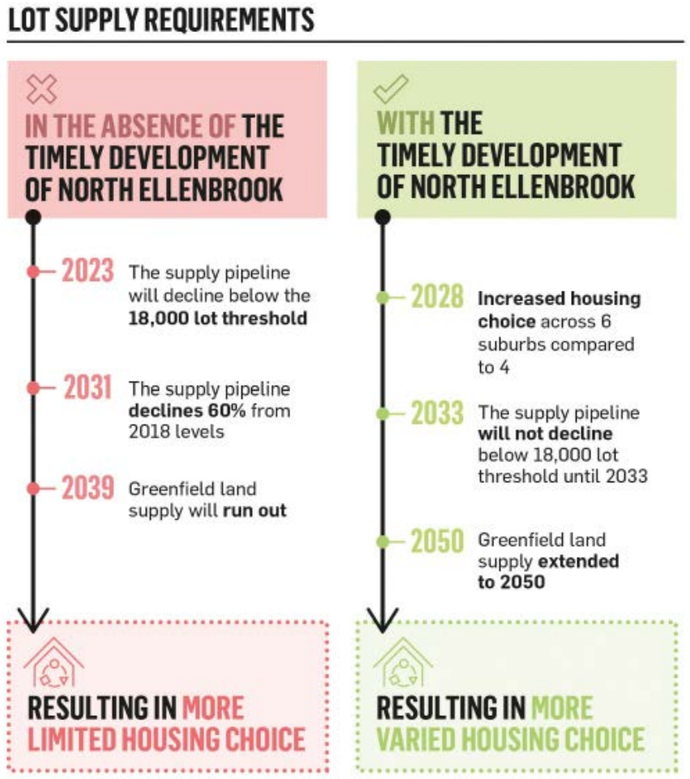
Urbis expects the North Ellenbrook East area to start lot delivery from 2025 with the subject land within this DSP area starting from 2028. With these developments included, key issues of supply surety and housing diversity are addressed.

Most importantly, Urbis' land supply review establishes quite clearly that:

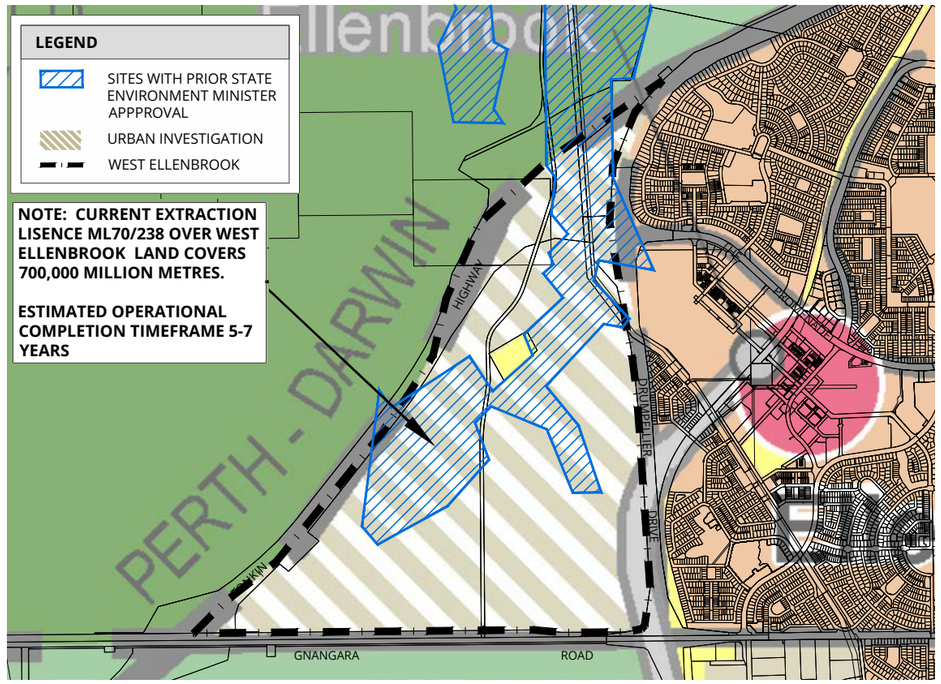
> *"As a result of the inclusion of North Ellenbrook in the supply pipeline, the level of stock in the Sub-Region is expected to be depleted by 2049/50 rather than 2038/39."* (Urbis, p31)

Refer **Appendix 4 – Residential Needs Study.**

Refer **Figure 17 – West Ellenbrook Basic Raw Materials.**



Source: Urbis, North Ellenbrook West Residential Needs Study (March, 2020)



17. WEST ELLENBROOK – BASIC RAW MATERIALS

2.6.2 TONKIN HIGHWAY

The Tonkin Highway alignment is identified as having a potential impact on nearby existing and future sensitive receptors, such as residential dwellings. Previous noise surveys undertaken for the Tonkin Highway have identified existing daytime and night time noise levels were below 55dB. An Acoustic Assessment has been prepared by Herring Storer Acoustics (refer **Appendix 5 – Acoustic Assessment**) in support of the DSP to ascertain compliance with the policy requirements of the WAPC's *State Planning Policy 5.4 – Road and Rail Transportation Noise and Freight Considerations in Land Use Planning* ('SPP 5.4').

The results of the Acoustic Assessment indicate that noise received at residences located adjacent to the Tonkin Highway would likely exceed the maximum permissible noise limits outlined in SPP 5.4. The Tonkin Highway extension adjoining the DSP area opened in the second quarter of 2020. It has therefore been designed and constructed while the DSP area remains rural land. Therefore, no noise amelioration in the form of noise walls or the like has been constructed for this section of the highway as part of recent works and will need to be reviewed as urban development occurs.

In this regard, to comply with the requirements of SPP 5.4, the following noise mitigation options are recommended (which are to be further reviewed and refined at subsequent stages of planning as detailed design across the site unfolds):

- **Buffer to Residential Use:**

  If no noise control in the form of barriers or acoustic walls are instituted, then a suitable buffer or setback for the residential land use can be adopted. Based on the modelled noise levels for the future highway, distances for the setback would be in the order of 170 metres from the boundary of the development. The setback distance of 170 metres is on the basis of there being no development within this zone and residential housing being the contemplated land use beyond the 170m setback.

- **Barriers:**

  Noise control in the form of barriers, such as noise walls or earthen bunds have been investigated as a means of ameliorating noise levels. For the purposes of the Acoustic Assessment, a 3.0-metre-high noise wall along the eastern boundary of the DSP has been contemplated which would reduce the required setback distance to 100 metres from the boundary.

  Given the distance of the highway from the boundary of the DSP area, the effectiveness of barriers such as noise walls are greatly reduced. The most efficient use of walls for noise mitigation purposes are where the walls are incorporated into the road design and hence, located close to the traffic noise source. As the highway has already been constructed, such measures would need to be negotiated with the relevant stakeholders and if possible, implemented retrospectively. Such discussions may be entered into at subsequent stages of planning, should such measures be identified as the preferred mitigation method.

- **Quiet House Design:**

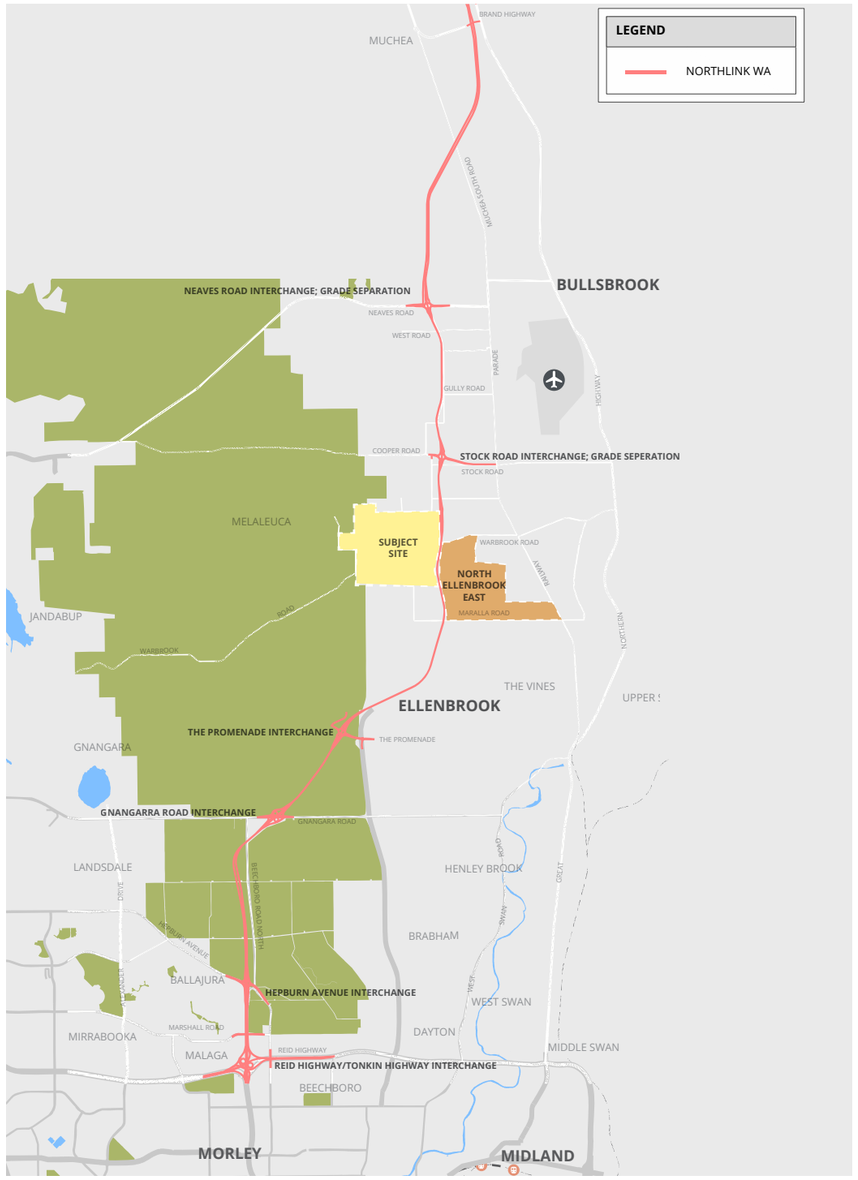
  Should residential development be located in areas with a dB(A) rating of above 60, quiet house design (as outlined in SPP 5.4) would be required to further mitigate noise arising from traffic along the Tonkin Highway.

  The design requirements will depend on the external noise levels which are subject to further review and assessment at subsequent stages of planning.

Further detailed analysis of the impacts arising from noise generated by traffic along the Tonkin Highway would need to be investigated as part of the preparation of local structure plans for Precinct 1, once the spatial layout has been further refined and detailed design has further progressed.

Precinct 2 (which abuts the Tonkin Highway to the north of Warbrook Road) is not subject to the provisions of SPP 5.4 under the current land use allocation of 'Industrial / Service Commercial' of the DSP. Should it be determined through the DSP process that the land is more appropriate for urban residential purposes, consideration of traffic noise mitigation would need to be considered.

Refer **Attachment 5 – Acoustic Assessment and Figure 18 - Tonkin Highway(NorhLink Project)**



18. NORTHLINK PLAN CONTEXT

2.6.3 MARALLA ROAD SAND QUARRY

The Maralla Road Sand Quarry is located approximately 420m to the south of the site and has the potential to be the subject of noise emissions which may impact on nearby sensitive receptors. A review of the recent City of Swan Council Minutes indicates that the licence for the sand extraction activities has approval to operate until October 2020 (which may be extended at the discretion of the operator / landowner, subject to approval from the City of Swan and Department of Mines, Industry, Regulation and Safety).

The DSP seeks to address any potential impacts arising from the nearby sand quarry by locating public open space along the majority of the southern site boundary, which results in a buffer distance of between 600m to 650m being achieved from the sand quarry operations to nearby residential dwellings. The buffer distance between the sand quarry and proposed residential area thereby meets the maximum generic buffers applied to industrial land uses in accordance with the Environmental Protection Authority's *Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses.*

Noise management measures have also been addressed as part of the Quarry's existing extractive industry approvals and licence. In addition, noise levels for surrounding environmental impacts such as the existing extractive industry operations at the Maralla Road Sand Quarry were reviewed as part of the Acoustic Assessment prepared by Herring Storer Acoustics which showed no significant impact.

2.6.4 RAAF PEARCE AIR BASE OPERATIONS

The Department of Defence Royal Australian Air Force ('RAAF') Pearce Base is located 5.5 kilometres from the DSP area.

The latest mapped ANEF noise contours (Department of Defence, 2012) from the RAAF Pearce Air Base do not encroach upon the DSP area (with the nearest noise contour being approximately 3.7 kilometres from the site). The DSP area is therefore not impacted by the RAAF Pearce Base operations and similarly, given the Perth to Darwin National Highway separates the sites and the majority of traffic is expected to travel away from base, the RAAF operations will not be impacted upon by the DSP.

2.6.5 DAMPIER TO BUNBURY PIPELINE CORRIDOR

The Dampier to Bunbury Natural Gas Pipeline ('DBNGP') corridor is located within the westernmost portion of the DSP area. The DBNGP corridor houses the high-pressure gas pipelines which supply gas to heavy and light industry consumers, electricity generation and home within Western Australia.

The DSP does not propose urban residential development over the pipeline corridor which rather, will be retained in public open space. The location of development in proximity to the DBNGP will be further considered at the local planning stage.

3 DISTRICT STRUCTURE PLAN

3 DISTRICT STRUCTURE PLAN

3.1 DESIGN PHILOSOPHY

Environmentally Responsive Design

The DSP layout has been designed to respond to key environmental, heritage and water considerations of the site, the existing road network, landownership and the site's broader context.

The spatial layout allows for urban development to be staged sequentially, corresponding with infrastructure programming and access to the Tonkin Highway. The design response provides for a logical transition in land uses and ensures the retention of areas of significant environmental value.

Neighbourhood Structure

The neighbourhood structure is predicted on a modified grid layout which allows for a well-connected and integrated community, nestled within the inherent natural amenities afforded to the DSP area. The urban layout provides pedestrian permeability which is legible and walkable, linking community facilities through safe and direct linear parkways and networks.

District Centre

The District Centre is located within proximity to Tonkin Highway. The location serves to maximise its activity with exposure to passing trade. It contributes to a point of arrival through a naturally landscaped corridor. The centre provides for a north–south main street framed with retail and commercial development incorporating on street parking with additional parking sleeved at the rear. The District Centre provides an interface with areas of landscaped open space and the retention of natural areas.

Movement Network

The DSP is well serviced and accessed via a new interchange to the Tonkin Highway.

The movement network has been designed to incorporate existing roads and is orientated predominately north-south to accord with preferred passive solar design principles providing for east-west lots. The indicative local road network has been aligned to terminate at areas of public open space, allowing for pedestrian access to recreational areas and safe pedestrian links to community services and amenity.

Education Facilities

The DSP supports three Primary Schools and one High School which have been located along the primary road connections and linear Public Open Space corridors to ensure safe and direct accessibility. The Primary Schools are strategically located to allow for accessibility within their catchment area and proximity to Public Open Space. The High School is suitably located on a major east-west connector in proximity to the Local Centre and District Open Space.

District Playing Fields

District playing fields are co-located with the High School to provide for organised sport and recreation. The playing fields form part of a broader linear Public Open Space corridor, which recognises and celebrates aboriginal heritage (in-part).

Public Open Space

Areas of Public Open Space have been located to provide for active and passive recreation within a naturally landscaped environment. Areas identified as environmentally significant have been incorporated within Public Open Space for protection and enhancement. Riparian corridors have been retained to enhance the natural environment and allow for pedestrian movement to the centres.

Industrial / Service Commercial

The Industrial / Service Commercial precinct is located along the interface with the Tonkin Highway to ensure good visibility. Whilst the precinct has a direct road link to the District Centre, it is envisaged to be primarily accessed via a road connection to the north to the proposed Bullsbrook Industrial area.

Residential Density

The DSP area will contribute to a range of housing types and lot sizes. The areas located in proximity to the Centres and community facilities will allow for a variety of housing choices, including multiple dwellings and terrace homes. Suburban homesites will contribute the majority of housing typologies to the area allowing for the construction of project homes. Areas on the periphery of the development area will allow for larger lots with an interface with the natural landscape.

3.2 DISTRICT STRUCTURE PLAN OBJECTIVES

Establish a clear vision for the new master-planned community;

Provide a land use planning and infrastructure framework to support the future growth and development of North Ellenbrook West;

Address urban and industrial land supply in the context of the North-East Sub-Regional Planning Framework as required to meet increased demand;

Identify precincts which will be the subject of further structure planning at a localised level in conjunction with key stakeholders;

Assist the City of Swan, WAPC and other service infrastructure providers, including Water Corporation, Western Power and, Main Roads to prioritise the provision of new service infrastructure to meet the future needs of the North Ellenbrook West community.

19. NORTH ELLENBROOK (WEST) MASTER PLAN CONCEPT

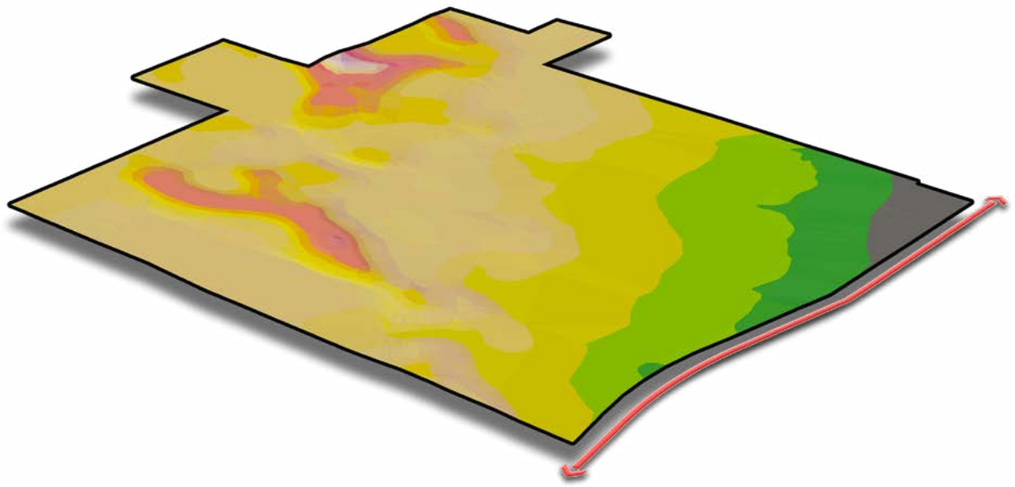
Refer **Figure 19 – North Ellenbrook West Masterplan Concept.**

3.3 URBAN DESIGN RESPONSE

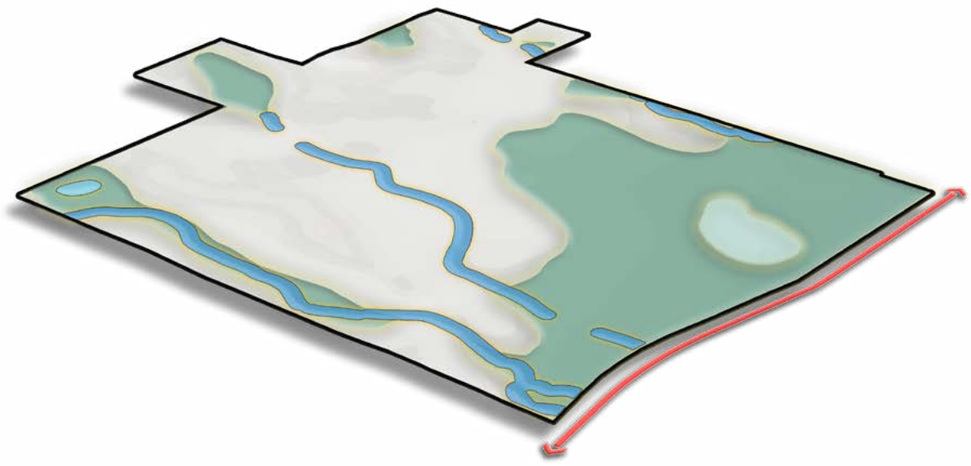
The following suite of figures depict the urban design response, which follows an analysis of the landform, opportunities and constraints to create a legible, well-connected and environmentally responsive masterplanned community.

A 3D Visioning document has also been prepared in support of the DSP (refer **Appendix 6**).

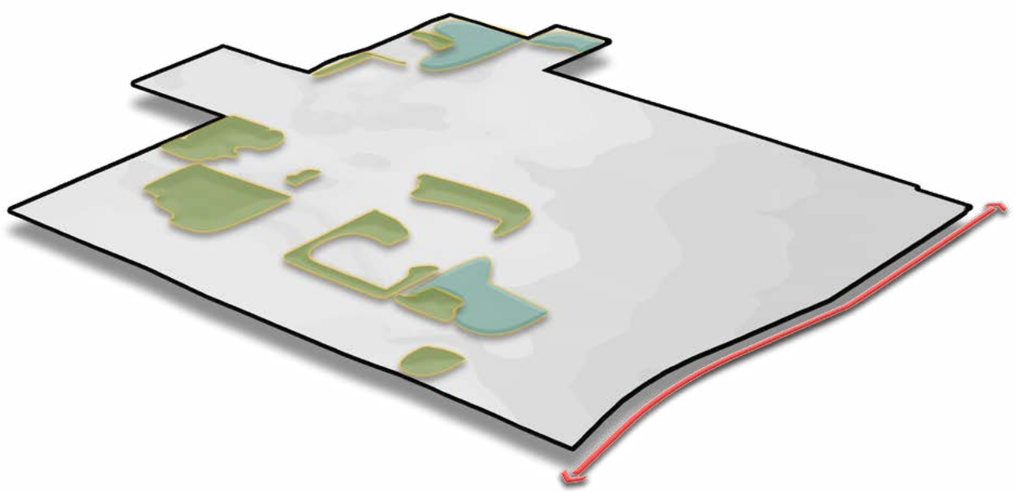
Refer **Appendix 6 – 3D Visioning Report.**



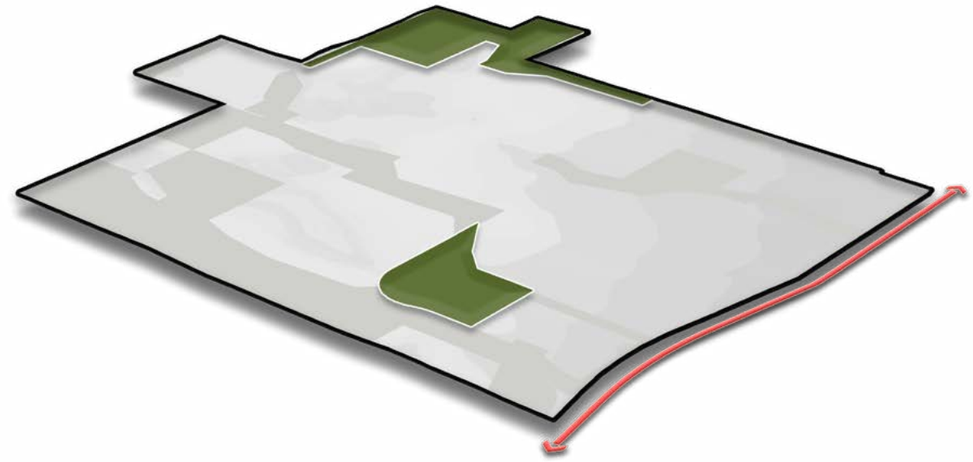
1 LANDFORM



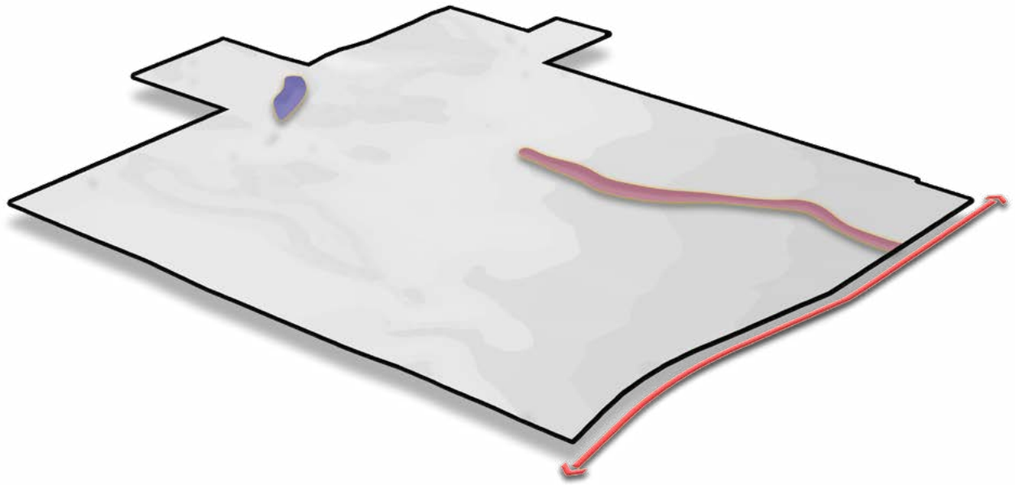
2 WETLANDS AND WATER COURSES



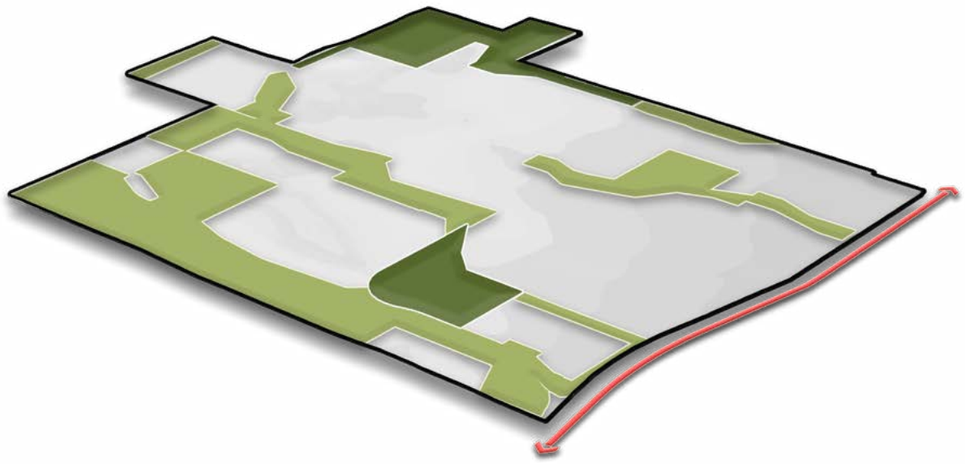
3 SIGNIFICANT VEGETATION



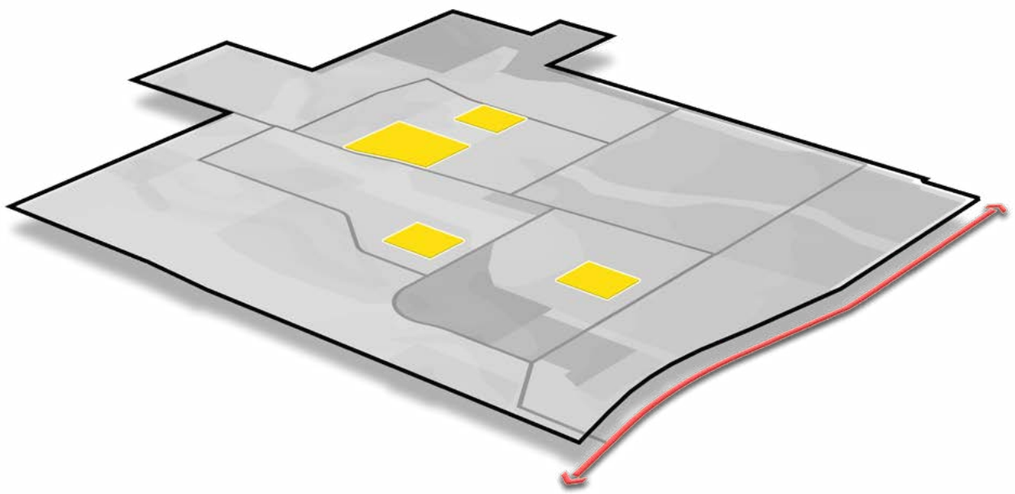
4 CONSERVATION AREAS



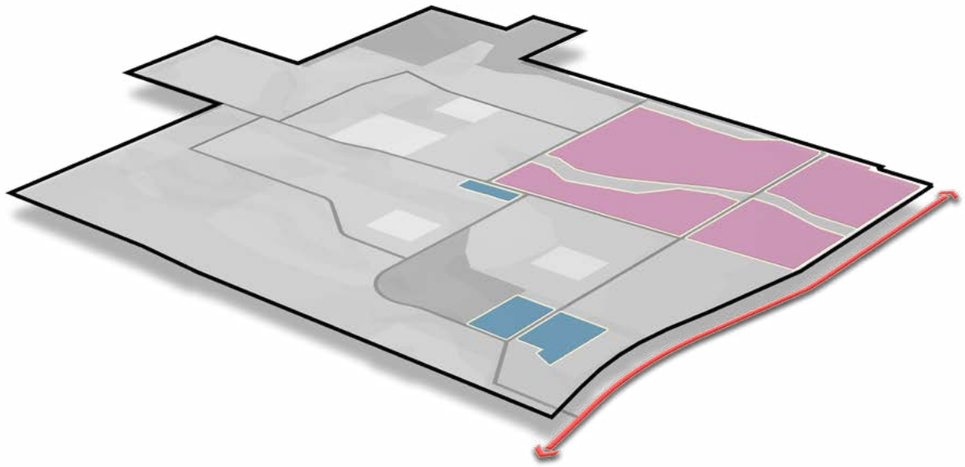
5 ABORIGINAL HERITAGE



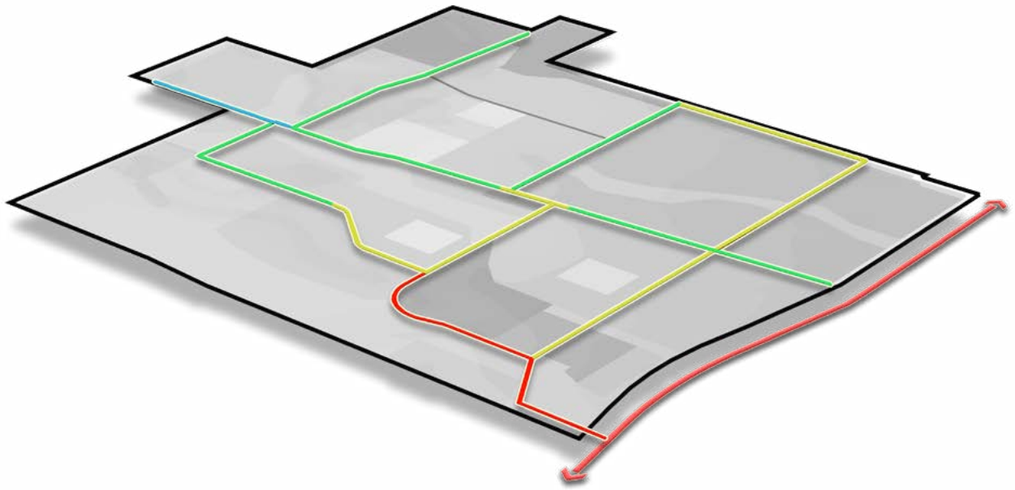
6 REGIONAL RESERVES AND OPEN SPACE



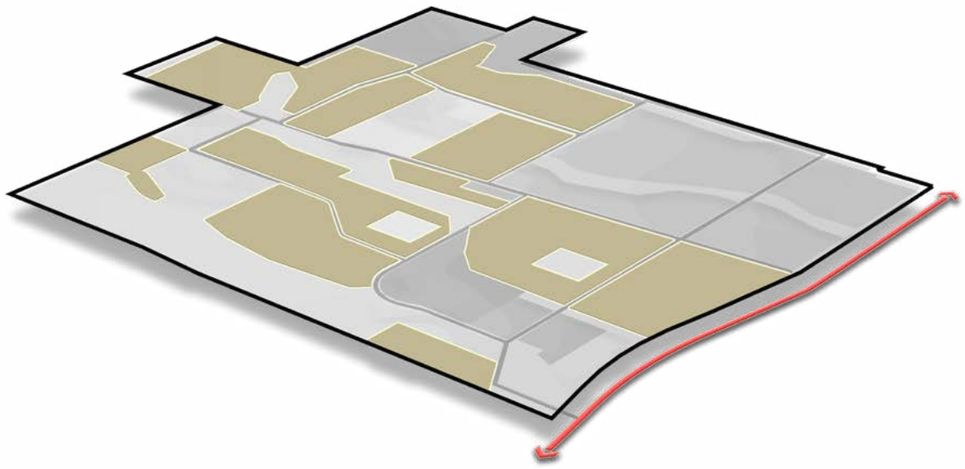
7 SCHOOL SITES



8 COMMERCIAL CENTRES AND LIGHT INDUSTRIAL



9 PROPOSED MOVEMENT NETWORK



10 RESIDENTIAL

11 DISTRICT STRUCTURE PLAN

12 INDICATIVE DESIGN RESPONSE

** Subject to Local Structure Planning and Detailed Design*

4 LAND USE AND SUBDIVISION REQUIREMENTS

4 LAND USE AND SUBDIVISION REQUIREMENTS

4.1 LAND USE

The DSP sets out high level land use zoning, open space, vehicle movements and servicing requirements which are to be further refined at the local structure planning stage.

A summary of the key land uses and population is summarised in **Table 9** below:

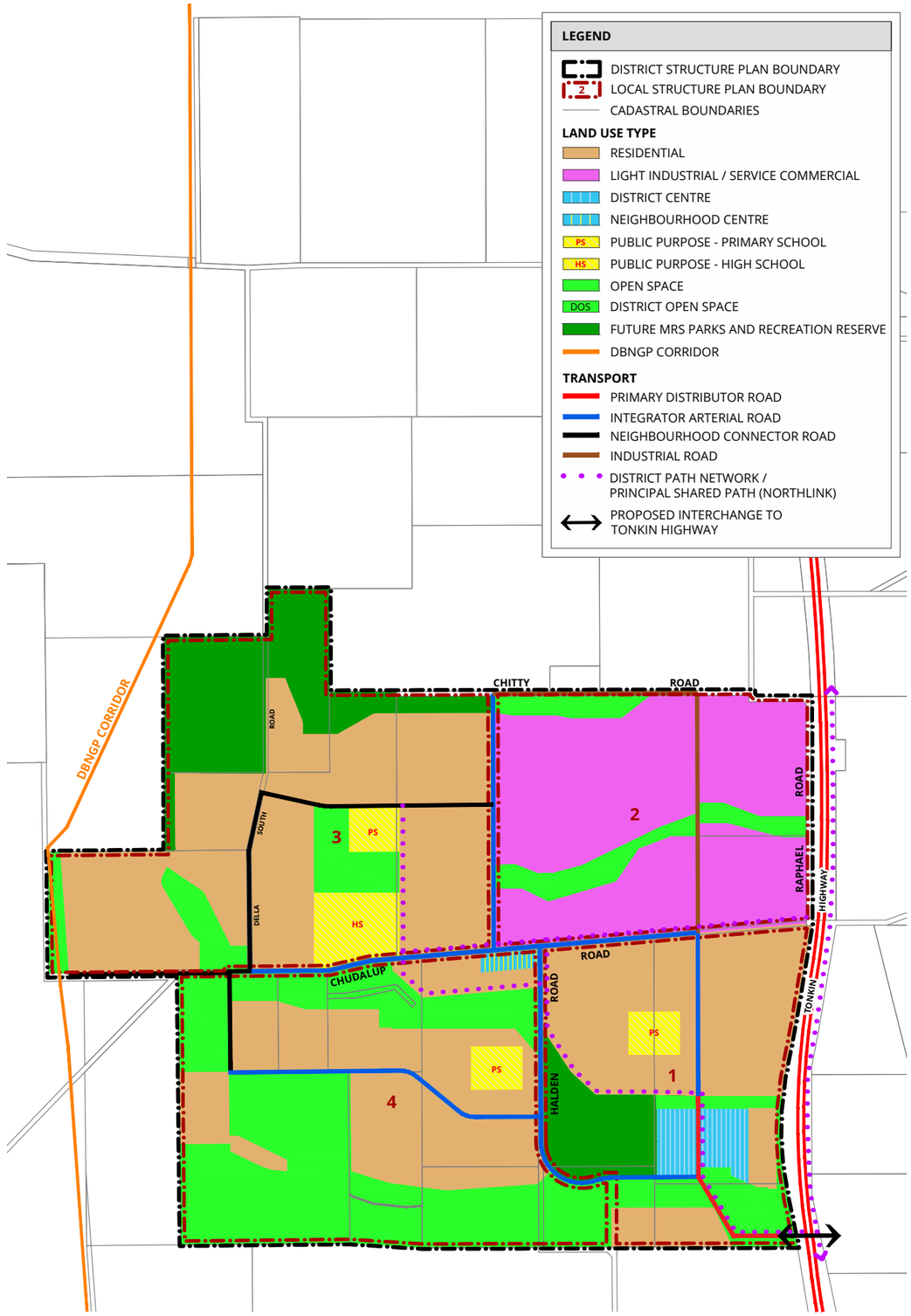
LAND USE AND POPULATION YIELD	
Total area covered by the District Structure Plan	611 hectares
Area of each land use within District Structure Plan (gross) - Residential - Industrial - Commercial	 - 261 hectares - 106 hectares - 14 hectares
Estimated residential lot yield*	4,000 – 4,500 lots
Estimated population yield	12,000 – 13,500 people
Number of high schools	1
Number of primary schools	3
Estimated commercial floor space	36,500m² NLA
Employed Labour Force	10,800 construction jobs 1,300 ongoing jobs
Reserves and Open Space (including new parks and recreation reserves, district open space, other open space)	206 hectares

*Note: The estimated residential lot yield range has been calculated based on applying the dwelling per site area calculations stipulated under the Sub-Regional Framework and Liveable Neighbourhoods respectively, as follows:

- *15 dwellings per gross urban hectare:*
  - *Gross Urban Area: 261 hectares*
  - *Dwelling Yield: 3915 dwellings*
- *22 dwellings per gross site hectare:*
  - *Gross Site Area (subject to detailed design): 217.9 hectares*
  - *Dwelling Yield: 4,795 dwellings*

Table 9: Land Use Summary Table.

Refer to **Figure 20 – District Structure Plan.**



20. PLAN 1 – DISTRICT STRUCTURE PLAN

4.2 RESIDENTIAL

The DSP identifies 261 hectares of land for urban residential purposes. Based on a gross urban density of 15 dwellings per hectare, the DSP has the potential to provide for 4,000 – 4,500 dwellings, accommodating a population increase of approximately 12,000 – 13,500 people (based on an average household size of 3). The extent of residential land will be further refined through subsequent local structure planning over each of the four (4) precinct areas.

Local structure plans will be required to provide further detail with regard to the distribution of density to ensure the density targets outlined in the WAPC's *Perth and Peel @ 3.5 Million* and Liveable Neighbourhoods can be achieved.

The DSP seeks to ensure a diversity of housing opportunities, particularly in areas located in proximity to the district / neighbourhood centres, and community facilities which will allow for a variety of housing typologies, including multiple dwellings, terrace homes and standard residential dwellings.

Suburban homesites will contribute towards the majority of housing typologies to the area which will facilitate the construction of project homes. Areas on the periphery of the development area will allow for larger, low density lots which respond to the rural interface on the southern, western and northern (in-part) boundaries. The allocation of larger residential densities to address the interface to the State Forest to the west of the DSP area should be considered at the local structure planning stage. The allocation of larger residential densities will provide opportunity for greater setbacks between the proposed urban development and the adjacent DBCA managed Gnangara-Moore River State Forest.

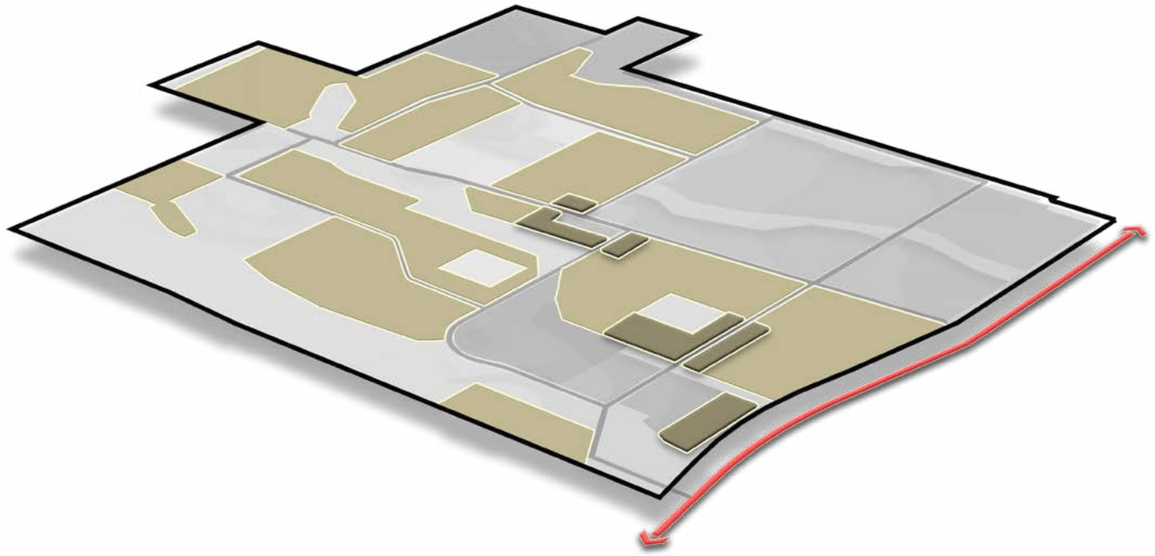
Part 1 of the DSP encourages higher density residential development around the district and neighbourhood centres in accordance with *State Planning Policy 4.2 – Activity Centres for Perth and Peel*. Opportunities for higher density development will provide housing choice and affordability, whilst supporting the future economic growth of the commercial centres. The requirement for a Precinct Structure Plan over the area comprising the district centre and its immediate catchment (being land within 400m of the centre) will be considered at the local structure planning stage. Areas of high density such as R80 – R160 and / or R-AC0 – R-AC3 may be appropriate around the district centre, with densities up to R-AC4 recommended for the land comprising the neighbourhood centre.

Dwelling targets for each of the precinct are identified in **Table 10** below.

ZONING	DENSITY TARGET (DWELLINGS PER GROSS URBAN HECTARE)	DENSITY
District Centre (400m)	30	High
Neighbourhood Centre (200m)	25	Medium to High
Residential	15	Low to Medium

Table 10: Density Targets.

Refer **Figure 21 – Residential Density.**



21. RESIDENTIAL DENSITY

4.3 PUBLIC OPEN SPACE

The DSP provides for an open space network comprising the following (refer **Figure 22 - Public Open Space**):

- Proposed areas to be reserved for Parks and Recreation under the MRS (including Bush Forever site);
- Conservation Category Wetlands;
- Aboriginal Heritage Sites;
- Protected vegetation (areas containing Banskia woodland); and
- District Playing Fields.

Open space has generally been located to serve a range of functions, which respond to the site's natural landscape. Areas identified as environmentally significant, but do not warrant reservation under the MRS, have been incorporated within the open space network to ensure ongoing protection. This includes natural features such as watercourses, wetlands and areas of vegetation. These features create 'green spines' or riparian corridors across the structure plan precincts, enhancing the natural environment and residential amenity, whilst promoting connectivity between the residential, commercial and school sites.

Detailed assessments, and surveys in relation to Threatened Ecological Communities and Threatened Flora should be undertaken prior to amendments to the MRS and LPS 17 being progressed. The results of the surveys should also inform the future allocation of public open space across the site which is to be refined at the local structure planning stage.

In accordance with current environmental approvals under the EPBC Act, two (2) of 'Parks and Recreation' reserves are proposed to protect the environmental values of the land in perpetuity as discussed further at Section **3.2.1.**

Additional areas of local open space will be provided for at the local structure planning stage comprising a mix of restricted and unrestricted open space. Areas of open space will also be required for stormwater drainage purposes, generally in accordance with the location specified under the District Water Management Strategy, which should be refined at the local structure planning stage.

4.3.1 DISTRICT OPEN SPACE

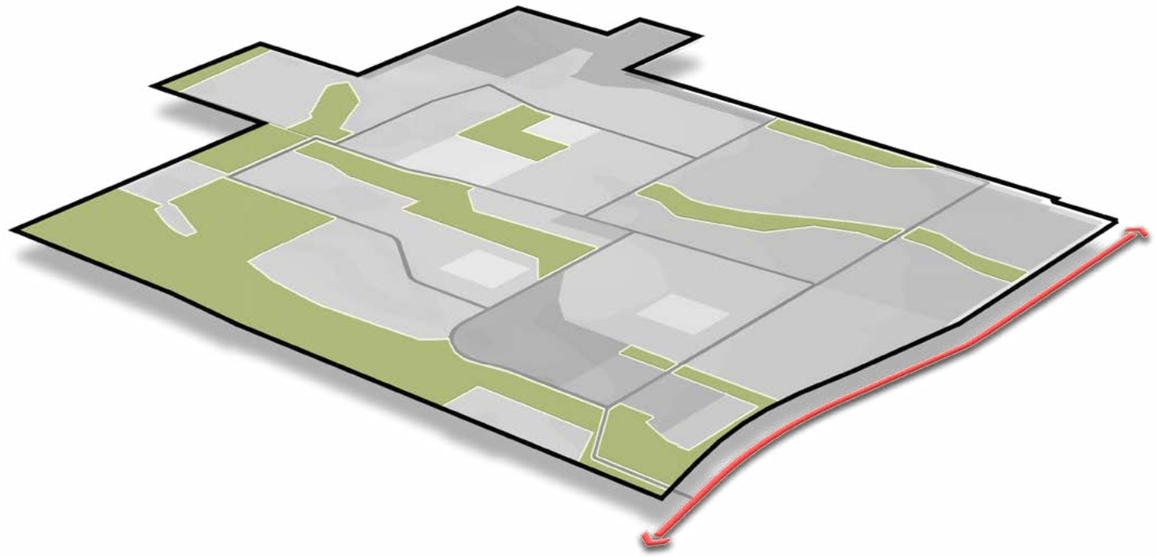
The DSP identifies an area of District Open Space (DOS) within LSP Area 3 to service the active sporting and recreational needs of the community. The DOS is collocated within a combined high school site to allow for joint use of the open space and playing fields.

The DOS is intended to provide for organised and formal sporting activities for the entire DSP area. Whilst the DOS is notionally shown at 9 ha, the exact size and configuration will need to be confirmed at the local structure plan stage in collaboration with the City of Swan. The final size and configuration of the reserve could range from a minimum of 7.0 hectares, up to a maximum of 10 hectares (which would typically accommodate 2 – 3 district sports spaces of 2 or 3 playing fields each). This should be refined at subsequent stages of planning through the preparation of a community needs assessment.

4.3.2 LOCAL PUBLIC OPEN SPACE

In accordance with *Liveable Neighbourhoods*, 10 per cent of the gross subdivisible area of residential neighbourhoods is to be given up for local public open space. Future local structure planning for each precinct will be required to provide a minimum of 10 per cent of the gross subdivisible area as public open space which excludes land identified for government schools, integrator arterials, public utility sites and other non-residential land uses.

Local structure planning will also identify additional areas of remnant vegetation and recommend appropriate conservation mechanisms as part of the future urbanisation of the land, which may include retaining trees and / or vegetation within local parks, road reserves, or within lots where detailed design allows for the retention of such features.



22. PUBLIC OPEN SPACE

4.3.3 PROPOSED PARKS AND RECREATION RESERVES

The DSP identifies two proposed MRS Parks and Recreation reserves (refer **Figure 23 – Parks and Recreation Reserves**). These reflect current EPBC Act approvals within the DSP area. The proposed reserves are protected by conservation covenants and are to be revegetated and rehabilitated in accordance with approvals requirements.

The proposed reservation areas are detailed in **Table 11**.

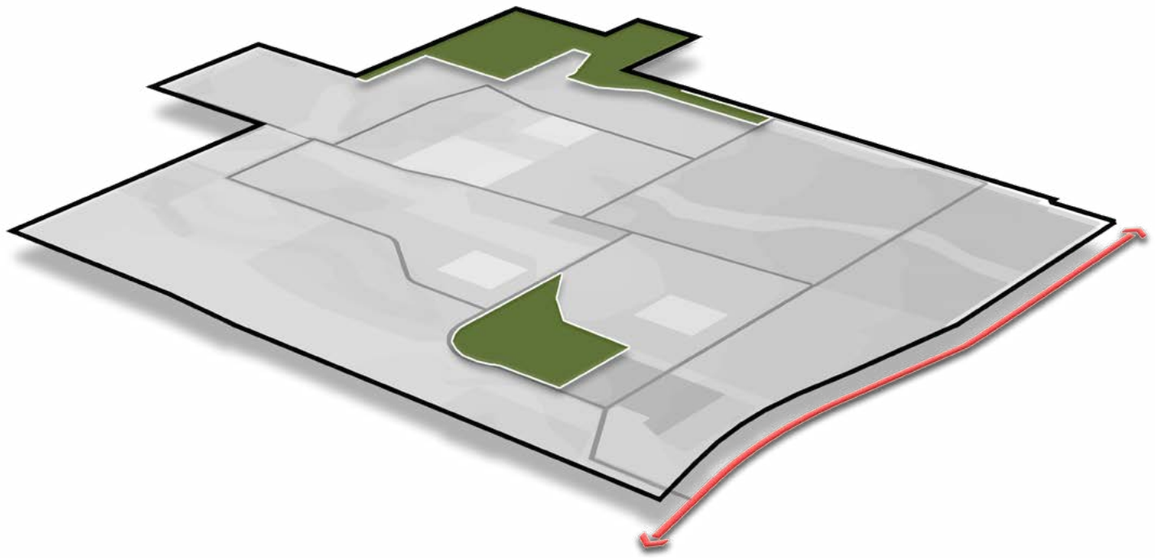
NO.	NAME	DESCRIPTION
1	Della South Road Conservation Bushland	The Della South Road Conservation Bushland contains Bush Forever Site 298 and a portion of Bush Forever Site 399, as well as two Conservation Category Wetlands. This area of open space contains Black Cockatoo foraging and potential breeding habitat and areas of 'Inferred Banksia Woodland SCP TEC'. The DSP proposes to reserve the land, inclusive of its immediate surrounds which will ensure the protection and management of the vegetation in perpetuity.
2	Halden Road Conservation Bushland	The Halden Road Conservation Bushland area contains Black Cockatoo foraging and potential breeding habitat and areas of 'Inferred Banksia Woodland SCP TEC'. The DSP proposes to reserve the land the subject of the Conservation Covenant and EPBC Act approval area which will ensure the protection and management of the vegetation in perpetuity.

Table 11: Proposed Parks and Recreation Reserves

4.3.4 WETLANDS

The DSP proposes the retention of all Conservation Category Wetlands ('CCWs') within open space and including a generic buffer of 50m as restricted public open space (in accordance with current EPA guidelines). The exact wetland definition and buffers will be determined during the local structure planning process.

The southernmost open space area contains Resource Enhancement Wetland ('REW') UFI 13387 which, as outlined in **Section 2.3.3**, is degraded due to historical clearing and grazing activities which have occurred within this location. The REW may form part of the future public open space contribution for Precinct 4, however, as much of the REW is mapped as being in 'Degraded' and 'Completely Degraded' condition, subsequent planning provides an opportunity for the wetland classification to be reviewed and potentially downgraded. Should a wetland reclassification support the downgrading of the REW, the extent of open space shown along the southern boundary of the DSP may be reduced. In the event that the REW classification is downgraded and therefore the extent of public open space is reduced, consideration should be given to providing some form of open space along the southern boundary of the site to act as a separation to the nearby sand quarry and, for drainage purposes given the low lying nature of this portion of the site.



23. PARKS AND RECREATION RESERVES

4.4 MOVEMENT NETWORK

The following provides a summary of the existing, planned and proposed movement network for the DSP area. For further information, refer to the Transport Impact Assessment included at **Appendix 7**.

Refer **Appendix 7 - Transport Impact Assessment.**

4.4.1 EXISTING ROAD NETWORK

The DSP area currently has access to the wider road network via Cooper Road to the north (via Raphael Road). All other east-west roads east of the area have been terminated by the construction of the Tonkin Highway. Raphael Road and Halden Road provide the main north-south routes through the site. Existing east-west links provided via Maralla Road (east of Halden Road and west of Sawpit Road) and Warbrook Road were among those permanently severed in early 2019 with the construction of the Tonkin Highway.

Chudalup Road west of the Tonkin Highway is unpaved beyond the DSP area and provides a link into the semi-rural properties in the vicinity of the Lakelands Country Club in Wanneroo.

Crossing over the Tonkin Highway is achieved at Stock Road West north of the site, via Raphael Road. Stock Road West links to Railway Parade providing access to Bullsbrook in the north and south via Rutland Road and Warbrook Road.

All roads within the subject site are classified as Access Roads under the Main Roads WA Road Hierarchy.

Refer **Figure 24 – Movement Network – Existing.**

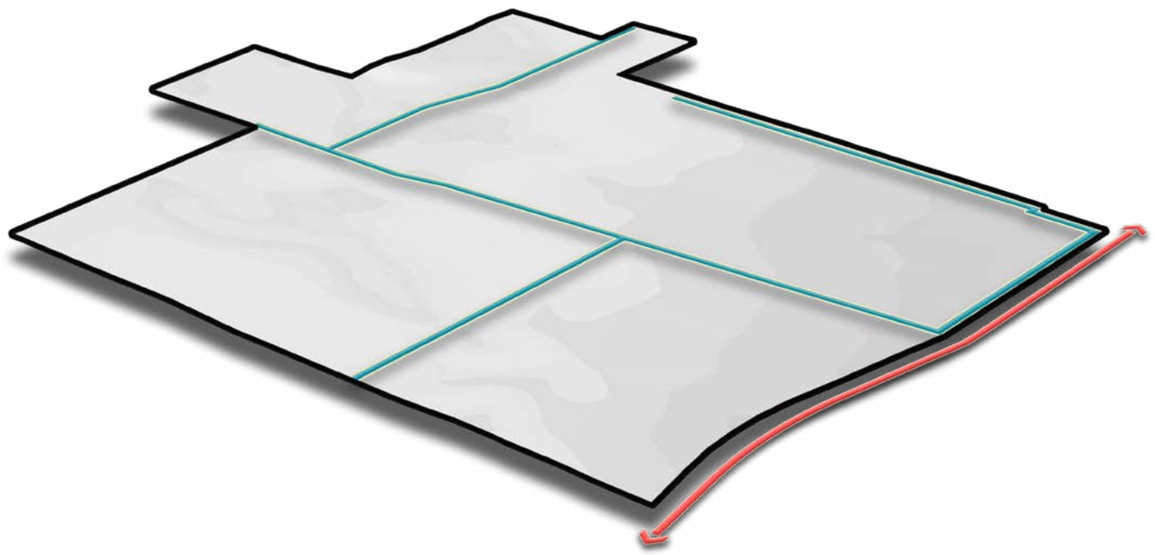
4.4.2 TONKIN HIGHWAY EXTENSION

The Perth to Darwin National Highway (Tonkin Highway Extension) has been constructed as far north as Muchea as part of the State Government's NorthLink Project. It has been constructed to a freeway standard, with grade separated interchanges at Stock Road West in the north, and Drumpellier Drive to the south at Ellenbrook. A Principal Shared Path ('PSP') has also been constructed on the eastern side of the Perth to Darwin National Highway as part of the project.

The existing road crossing at Maralla Road is to serve as a fauna bridge only.

Long term forecasts from Main Roads WA for 2031 indicate that the Perth to Darwin National Highway will carry about 23,600 vehicles per day ('vpd') between Stock Road and Drumpellier Drive. This forecast assumes there is no additional connection to the highway servicing the North Ellenbrook East and West precinct and for the purpose of the previous modelling exercise, it was assumed that the predominant land use on both sides of the highway was for rural purposes.

Longer term road network planning, as outlined by the Department of Transport as part of the *Perth @ Peel @ 3.5 Million* document shows the construction of Stock Road east as an integrator arterial connecting the Perth to Darwin National Highway to the Great Northern Highway. Further north, the longer-term planning shows Neaves Road as a 'Primary Distributor Road' at this time.



24. MOVEMENT NETWORK – EXISTING

4.4.3 PROPOSED ROAD NETWORK

The proposed main arterial road network is shown in **Figure 25**. External access to the site is proposed via a grade-separated intersection with the Tonkin Highway.

To the north of the site, there are likely to be road connections at Della South Road, and a number of additional new north-south roads which run parallel to the Tonkin Highway. Demand for traffic travelling north from the DSP area is expected to be low, with the majority of traffic to utilise the grade separated interchange in the south-east corner of the DSP to access the Tonkin Highway (refer **Section 4.4.2.1**).

Access to the west and south of the site are restricted by environmental barriers such as State Forest, Bush Forever sites and wetlands. It has therefore been assumed that there will not be any future new access to the south or west of the site as part of this DSP. In addition, the new Tonkin Highway provides an excellent connection to work and other attractions in the Perth metropolitan area, as well as providing good access to the Metronet station planned for Ellenbrook.

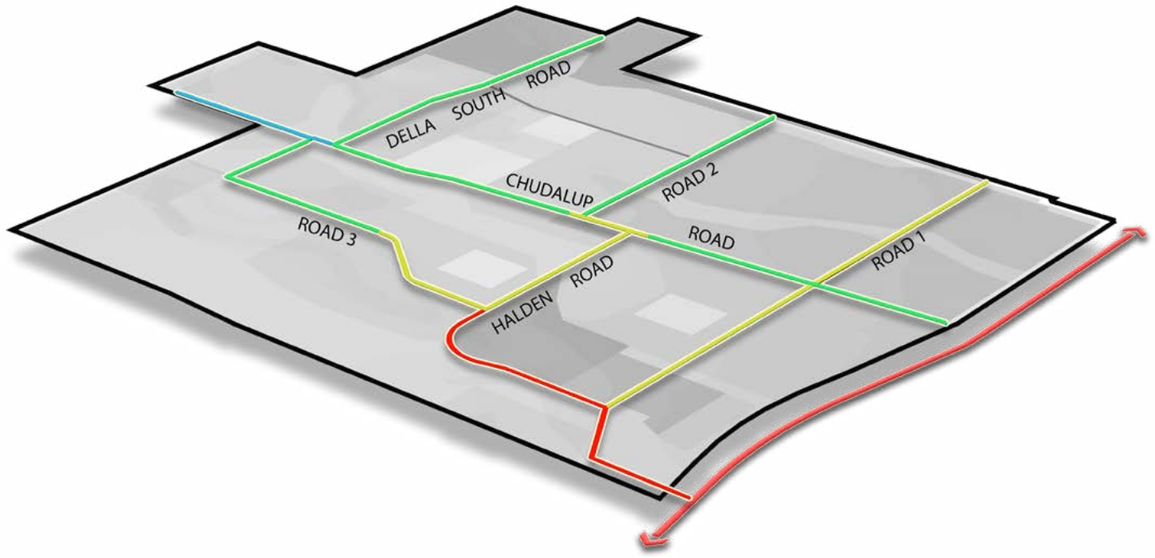
The internal road network at this level of planning comprises a simple spine network, connecting the main neighbourhood residential zones, the Industrial / Service Commercial zone, and the two main 'Commercial' zones comprising the 'District' and 'Neighbourhood' centres. Chudalup Road will remain and serve as the main east-west link through the site. Halden Road links Chudalup Road to the proposed interchange to the Tonkin Highway.

Road 1 provides additional north-south access through the site, which runs parallel to the Tonkin Highway from Halden Road to Chudalup Road and then further north to the proposed Bullsbrook industrial areas.

Road 2 runs north-south from the central neighbourhood centre area and is located north of Chudalup Road to Chitty Road, with the potential to extend into the Bullsbrook Industrial Area (subject to further details planning and pending the outcomes of the *BFILUPS*).

A new Road 3 generally provides east-west access through Precinct 3 and links the south-western residential cells to Halden Road.

Neighbourhood connectors will be complemented by the local road network will further refine each neighbourhood precinct and be subject to review at the local structure planning stage as detailed design progresses for each precinct area.



25. MOVEMENT NETWORK - PROPOSED

4.4.3.1 TONKIN HIGHWAY INTERCHANGE

External access to the site is proposed via a new, grade-separated interchange with the Tonkin Highway, approximately 1.2km south of Chudalup Road. Given the DSP's role as a high level, strategic planning document, the DSP identifies a preferred interchange location based on the investigations undertaken to date and the outcomes of the DSP process, involving key stakeholders including MRWA and DBCA.

The final location of the interchange and the extent of the land required for the Primary Regional Roads reservation will be the subject of an MRS amendment to secure the land required as 'Primary Regional Road' reservation which will subsequently inform local scheme amendment and structure planning processes.

Timing for the Interchange

Timing to deliver the interchange will be guided by MRWA in its capacity as the State Government agency responsible for designing and constructing the interchange. It is planned for the interchange to be operational either prior to, or to coincide with the issuing of titles for first stage lots. Subsequent planning processes such as local scheme amendments, local structure planning and subdivision approvals are therefore planned to occur concurrent to the construction of the interchange so that the opening will coincide with the establishment of first residents.

Funding of the Interchange

As part of its 2022-23 Federal Budget, the Australian Government committed $50 million towards the delivery of the interchange. As part of the 2022-23 State Budget, the State Government allocated $25 million towards the delivery of the interchange. The cumulative $75 million of Government funding is expected to cover the majority of the infrastructure costs associated with delivering the interchange.

MRWA's current estimated cost to develop the interchange is $100 million. The funding gap will be covered by landowners within both eastern and western DSP's who have agreed to contribute a proportionate share of the $25 million balance (25%). Further arrangements between the landowners will be required in order to formalise an agreement on the contribution structure for the $25 million funding gap. The proportion of funding from each landowner will be determined based on 'need and nexus' and the principles established by State Planning Policy 3.6 – Infrastructure Contributions.

4.4.3.2 HALDEN ROAD

West of the Tonkin Highway

Halden Road provides the main road connection to the external road network and will carry about 26,000 vehicles per day on the approach to the Tonkin Highway. Under the Liveable Neighbourhoods guidelines, this volume of traffic requires an 'Integrator Arterial A' road with a road reserve width of approximately 35m. This will accommodate 2 lanes of traffic and an on-street cycle lane in each direction, with a 6.0-metre-wide median strip and approximately 5.0 metre wide verges. Service and parking lanes are not required in this location.

West of Road 1 to Road 3

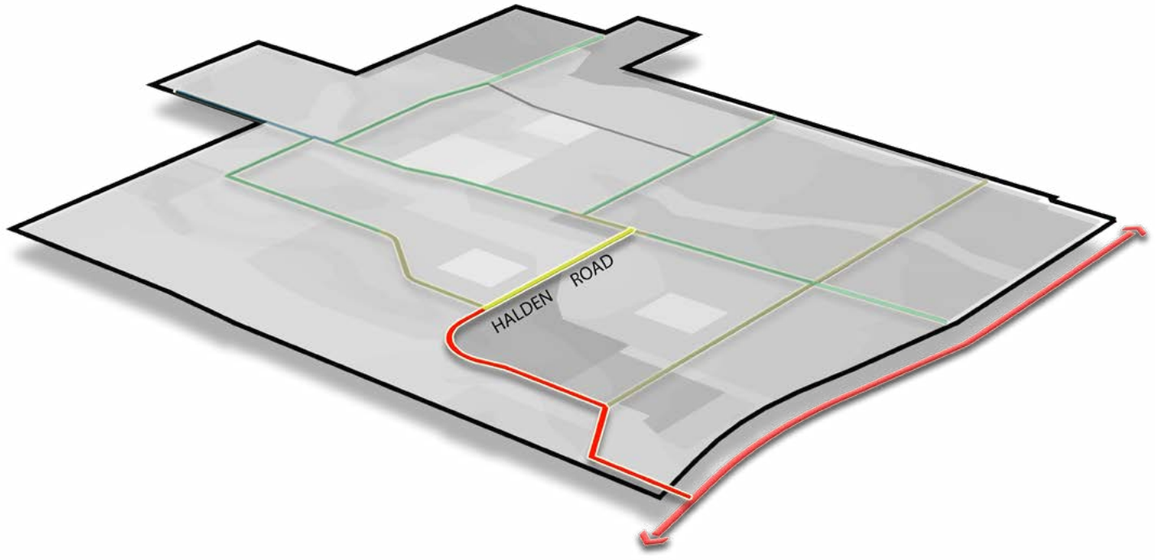
Halden Road to the west of the Road 1 intersection will carry approximately 25,000vpd. Except where adjacent to the commercial area at Road 1 and at the residential area south of Road 3, there will be no properties directly fronting this portion of road. A road cross-section of 35m in width comprising 2 lanes and a cycle lane in each direction (consistent with the of the section of Halden Road further west) is therefore recommended.

Adjacent to the commercial area (north of Halden Road) and the residential section (west of Halden Road), an additional 10m is recommended to accommodate parking or service lane access.

North-South Section Road 3 to Chudalup Road

North of Road 3, forecast traffic volumes for Halden Road are anticipated to be in the order of 19,000vpd. Halden Road in this location will also have properties directly fronting the road. In this regard, this section of Halden Road to Chudalup Road is recommended to be designed to an Integrator Arterial B standard with a 30m road reserve to accommodate standard verges, a parking lane, a cycle land and traffic land in each direction, with a 6.0 metre wide median island. Sections of the road reserve adjacent to parkland or public open space may be reduced in width where a lane for on-street car parking is not required.

Refer **Figure 27 – Movement Network – Halden Road.**



27. MOVEMENT NETWORK – HALDEN ROAD

4.4.3.3 CHUDALUP ROAD

Chudalup Road (formerly Warbrook Road) is to function as the main east-west connector road which links the residential areas and the industrial / service commercial zone, as well as connecting residential traffic to Halden Road and the Perth to Darwin National Highway. Forecast traffic volumes vary along the length of Chudalup Road from 6,000vpd at the eastern end, to 12,500vpd adjacent to the commercial centre and 6,500vpd towards the western end.

For the section of Chudalup Road from Road 1 to Halden Road, *Liveable Neighbourhoods* suggests a road reserve width of approximately 25m, consistent with that of a 'Neighbourhood Connector A' standard.

Through the neighbourhood centre, *Liveable Neighbourhoods* typically suggests an Integrator Arterial B road with a road reserve width of 25.2m to carry a forecast traffic volume of 12,500vpd. The width of this portion of the Chudalup Road reserve may, however, need to be widened to accommodate potential access, landscaping, intersection and pedestrian treatments through the centre which would be subject to further review at the local structure planning stage.

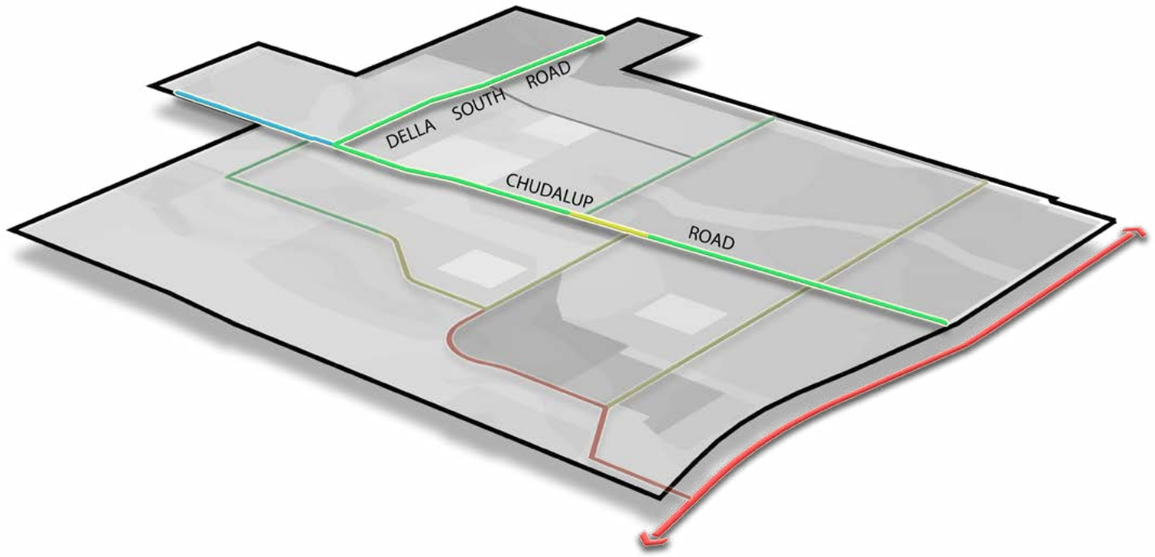
The section of Chudalup Road between the neighbourhood centre and Della South Road is expected to carry approximately 6,500vpd and therefore, a 'Neighbourhood Connector A' road classification is considered appropriate. This section of Chudalup Road may be reduced in width due to being bordered on one side by public open space and therefore, on-street car parking may not be required.

The portion of Chudalup Road to the west of Della South Road is forecast to carry approximately 2,000vpd and would therefore fall under the classification of a 'Neighbourhood Connector B' with a road reserve width of 20m.

4.4.3.4 DELLA SOUTH ROAD

Della South Road is forecast to carry approximately 5,000vpd at its southern end which reduces to about 1,000vpd at the northern end. A Neighbourhood Connector A road classification is recommended adjacent to the residential areas. This will have a nominal 25m road reserve width containing standard verges, a parking, cycle and traffic lane in each direction and a 2.0-metre-wide median strip.

Refer **Figure 28 – Movement Network – Chudalup Road and Della South Road.**



28. MOVEMENT NETWORK – CHUDALUP ROAD AND DELLA SOUTH ROAD

4.4.3.5 ROAD 1

Road 1 is anticipated to accommodate traffic volumes in the order of 14,500vpd – 18,000vpd. In accordance with the provisions of *Liveable Neighbourhoods*, an 'Integrator Arterial B' road classification (comprising a 30m road reserve with parking, cycle and traffic lane in each direction, standard verges and a 6.0 metre wide median) would therefore be suitable.

Notwithstanding, Road 1 will cater for an elevated volume of heavy vehicle traffic to the industrial / service commercial zone, traversing through areas identified for residential development. In this regard, a more detailed review of the current / forecast planning for Precinct 3 should be undertaken at subsequent stages of planning to ascertain the appropriate road reservation for Road 1 in the south-eastern portion of the site. It is considered prudent to consider a widened road cross-section in this location to remove any potential conflict between through traffic and local residential frontage traffic. As such, a widened road reserve width up to a maximum of 45 metres may be appropriate which would contain a service/parking lane, standard verges, a cycle lane and vehicle lane in each direction, with a 6.0 metre wide median to provide for an appropriate buffer to residential lots with direct frontage to Road 1.

4.4.3.6 ROAD 2

Roads 2 will carry approximately 4,500vpd and would therefore be classified as 'Neighbourhood Connector A' road reserve under *Liveable Neighbourhoods*, with a total road reserve width of approximately 25m.

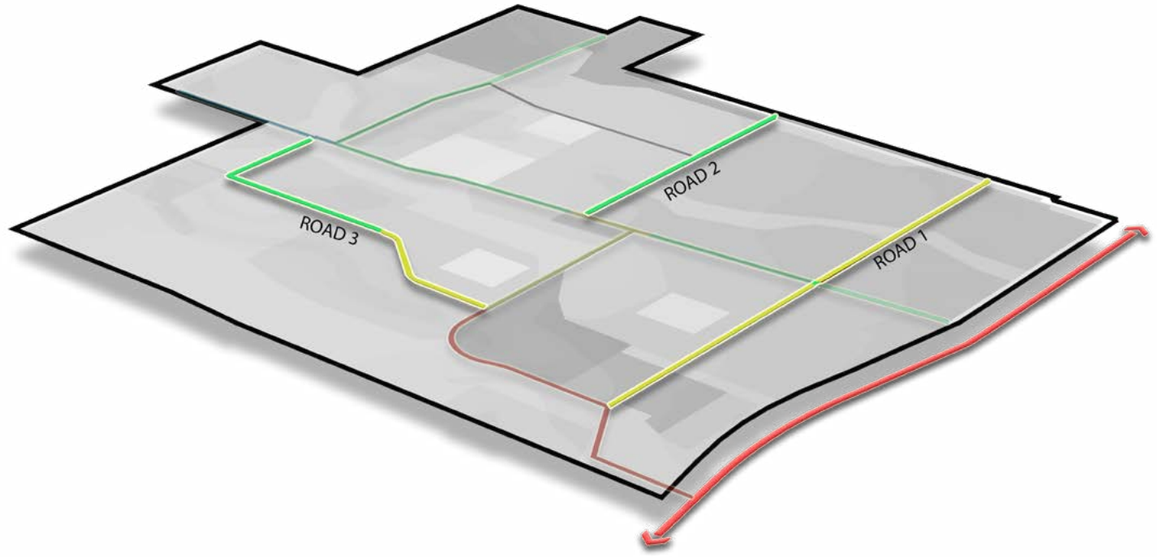
Appropriate provision for on-street car parking, bicycle lanes and two-way traffic with a central divided median of approximately 2.0m in width is anticipated.

4.4.3.7 ROAD 3

Road 3 services the southwestern portion of the DSP area. As much of the traffic from this zone will exit via Road 3 onto Halden Road to the east, it is expected to carry up to 10,000vpd at the eastern end. Road 3 is likely to have dwellings fronting it and therefore the eastern section of the road reserve should be classified as an Integrator Arterial B road with a 30m road reserve. The road cross-section would comprise standard verges, a parking, cycle and traffic lane in each direction and a 6.0-metre-wide median strip.

Towards the western end of Road 3, traffic volumes will reduce to around 3,500vpd and as such, a 'Neighbourhood Connector A' road classification of 25m with a similar lane configuration to that of the eastern section would be appropriate, albeit with a reduced median width.

Refer **Figure 29 – Movement Network – Proposed Roads.**



29. MOVEMENT NETWORK – PROPOSED ROADS

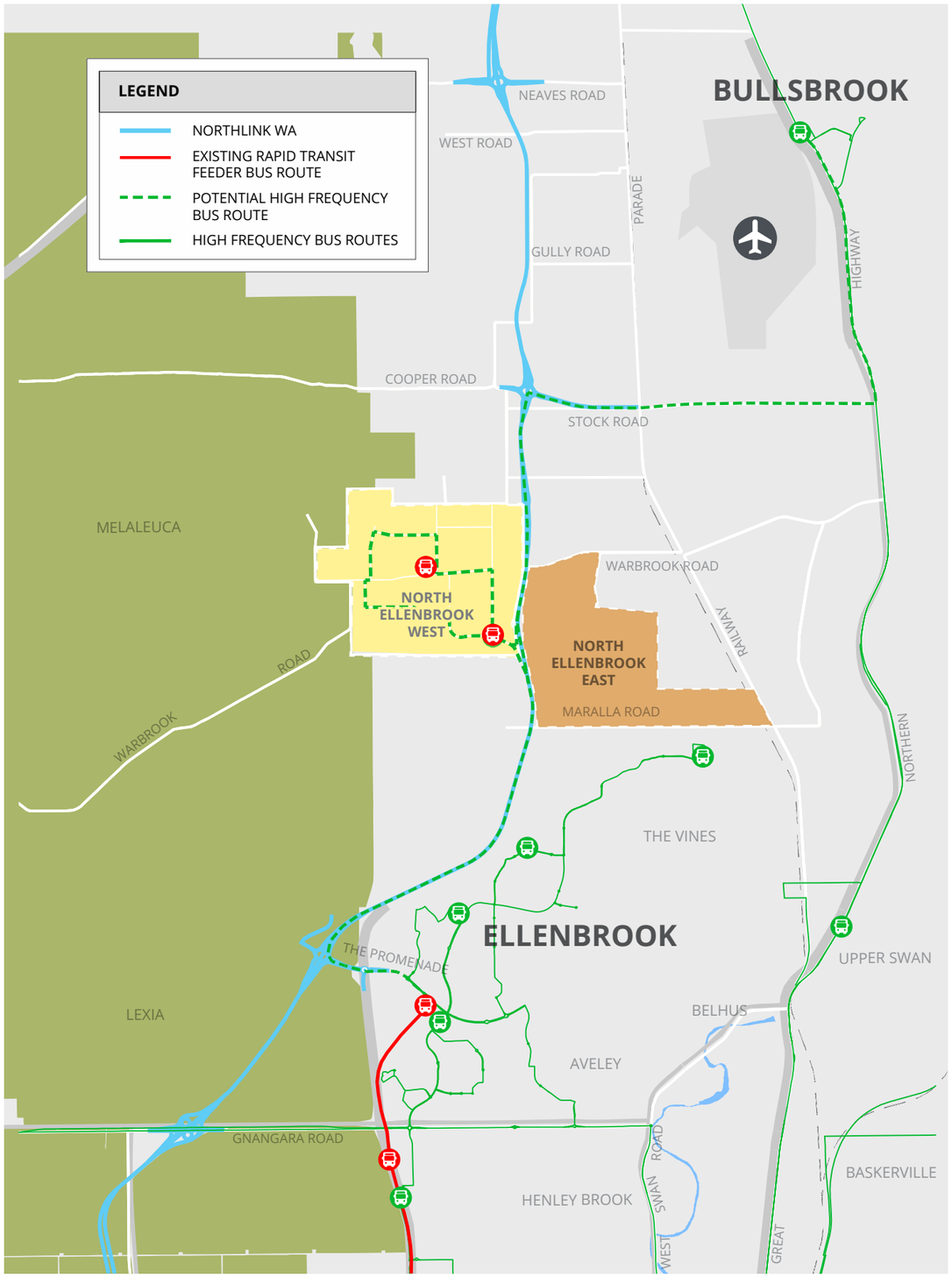
4.4.4 PUBLIC TRANSPORT AND METRONET

The State Government's *Metronet* project will add approximately 21km as a spur line from the existing Midland Line east of the Bayswater Station to connect the areas of Morley, Noranda and beyond to Ellenbrook. Due to be completed in 2024, Ellenbrook Station will be the northern terminus and include a Bus interchange and associated parking area. The journey time to the Perth CBD from Ellenbrook station is expected to be 30 minutes.

While planning for the Morley-Ellenbrook line, and the Ellenbrook Station catchment in particular, has taken into account the future population of North Ellenbrook, the DSP identifies a potential public transport link to the Ellenbrook Station via a high-frequency or similar bus service. The concept of a bus service to the Ellenbrook Station has been acknowledged by the transport agencies, including PTA and MRWA as having merit to connect with the Ellenbrook Town Centre. Future bus route planning will ultimately be undertaken by the PTA and DoT as planning for North Ellenbrook progresses.

PTA and MRWA have indicated that a transfer node north-east of the proposed interchange is a matter for further investigation, which will be reviewed at subsequent stages of planning.

Refer **Figure 30 – Potential Bus Route**.



30. METRONET OPPORTUNITY – RAPID TRANSIT BUS SERVICE EXTENSION

4.4.5 PEDESTRIANS AND CYCLISTS

The DSP identifies an indicative district level pedestrian / cycle network which is to be reviewed at the local structure planning stage. The district level network is based on DoT's indicative Long Term Cycle Network.

Key considerations for pedestrian and cycling facilities at subsequent stages of planning, include:

- District level pedestrian / cycle network aligned with integrator roads as depicted on the DSP Map, connecting with the existing path network along Tonkin Highway.
- Appropriate connections to local activity centres, including the Industrial / Service Commercial area, schools and the district / neighbourhood centres.
- A connection to the existing shared path located adjacent to the Tonkin Highway, which will provide access to local employment activities further south as well as to the planned Metronet station in Ellenbrook.
- Construction of an additional cycle and pedestrian crossing of the Tonkin Highway at Warbrook Road which would provide enhanced access for users of the shared path on the eastern side of the Tonkin Highway. An additional crossing in this location would also reduce the conflict of cars and bicycles at the proposed Halden Road interchange, although it can be assumed that this would have a cycle friendly design.
- Provision of safe, active streets to cater for less experienced cyclists, including school children and recreational cyclists should be considered as part of future, detailed site planning for the respective precinct areas.

4.5 WATER MANAGEMENT

4.5.1 DISTRICT WATER MANAGEMENT STRATEGY

A District Water Management Strategy ('DWMS') has been prepared by JDA Consulting in support of the DSP (refer **Appendix 8 - District Water Management Strategy**).

The aims of the DWMS are to:

- Identify the key water management elements of the DSP area.
- Describe post-development conditions of the DSP area and its water resource management characteristics.
- Define land area requirements for conveyance of flood flows and protection of future urban development from peak flow events.
- Recommend management strategies for groundwater and drainage appropriate for local conditions that incorporates best practice water sensitive urban design ('WSUD') measures.
- Present guiding principles and strategies for post development management of the water resources as recommended in the North-East Corridor: Urban Water Management Strategy.
- Recommend requirements and commitments for future actions including monitoring programs for water quantity and water quality pre-, during and post-development.

Refer **Appendix 8 - District Water Management Strategy.**

4.5.1.1 STORMWATER MANAGEMENT

The DSP area is located within the Ellen Brook Catchment which is a natural ephemeral waterway. The Ellenbrook Catchment has the largest catchment area of all the sub-catchments on the Swan Coastal Plain and discharges into the upper reaches of the Swan River. The 1% AEP floodplain mapping of the Ellen Brook does not encroach into the DSP area.

Preliminary earthwork design indicates the DSP area can be divided into 21 surface drainage catchments. Drainage from all catchments discharge to a low point into a nearby waterway that discharges under the Tonkin Highway.

Stormwater system design should adopt the following design criteria:

- Pre-development flows entering and leaving the DSP area are to be maintained. Stormwater management system designed for the safe conveyance of runoff of peak flows for the Small (15mm), Minor (20% AEP) and Major (1% AEP) rainfall events, consistent with flow rates presented in Tables 5 and 6 of the DWMS.
- Small event runoff managed by a combination of infiltration structures (swales, underground cells, tree pits, permeable pavers, etc) in upper catchment and a bio-retention area prior to discharge.
- Minor and Major event runoff managed with online detention areas integrated into existing waterways using road and pedestrian crossing as stormwater attenuation points to create living streams. Additional stormwater management areas can be located throughout the upper catchment as required. These are to either infiltrate or discharge into the living streams as offline systems.
- Post-development flows attenuated to pre-development flow rates by detention of runoff in stormwater management areas. These can be located in landscaped public open space, linear multiple use corridors or drainage reserve areas.
- A stormwater management area must be located at each catchment outlet to ensure post development flow is attenuated prior to leaving the site.
- Finished floor levels to have a clearance from the 1% AEP water level in adjacent watercourse of 0.5m and should be at least 0.3m above the 1% AEP overland flow flood level.

Refinement of catchments and detailed modelling will be required in subsequent Local Water Management Strategies for pre- and post-development to determine outflow with consideration to existing constraints identified in the DWMS.

Stormwater quality is to be managed through implementation of best management practices in a treatment train approach to achieve water sensitive urban design. These include structural and non-structural measures to assist in reducing applied nutrient loads such as:

- Use of soakwells and rainwater tanks on lots to retain the small event (15mm) at source, where groundwater separation and geotechnical conditions permit.
- Industrial and commercial lots to include oil & grease separators to treat stormwater runoff prior to discharge into local stormwater drainage system.
- Gross pollutant trap to be installed on catchment stormwater system pipe outlets to remove pollutants including sediment and hydrocarbons prior to discharge.
- Bio-retention areas / rain gardens used to treat road catchment stormwater runoff from the small rainfall event (15 mm) prior to infiltration or discharge to downstream environment.
- Living streams and conveyance swales planted with vegetation to increase roughness and reduce peak stormwater flows to remove sediment and increase nutrient uptake.

Implementation and appropriate design suitability of these measures will be further investigated during the preparation of Local Water Management Strategies.

4.5.1.2 GROUNDWATER MANAGEMENT

The key objectives for groundwater management for the DSP area, as outlined in the *North-East Corridor: Urban Water Management Strategy*, are:

- Protection of infrastructure and assets from flooding and inundation by high seasonal groundwater levels, perching and/or soil moisture.
- Protection of groundwater dependent ecosystems from the impacts of urban runoff.
- Managing and minimising changes in groundwater levels and quality following urban development.
- Maintain or improve existing groundwater quality.

A large proportion of the DSP area has pre-development AAMGL at or within 1.5m of the existing natural surface, together with perched water tables. These areas will require some form of groundwater management, such as importation of clean sand fill to ensure adequate separation of building floor level to groundwater and/or the provision of subsoil drainage to control post development groundwater rise.

Specific details on the local scale of application, and responsibilities for individual best management practices will be appropriately addressed during later stages of planning, in accordance with the WAPC's *Better Urban Water Management.*

4.5.1.3 IRRIGATION WATER

Water required for irrigation of public open space areas is generally by groundwater abstraction from the superficial aquifer under licence by DWER. The portion of the DSP area requiring irrigation can be broadly determined by assuming 10% of the DSP as public open space (equating to approximately 61 ha) and of that 35% will require long term irrigation (equating to approximately 21.45 ha). Applying DWER's standard irrigation rate of 6,750kL/ha/yr for public open space results in an estimated irrigation requirement of 145,000kL/yr.

Existing groundwater licences within the DSP area total 75,750kL (refer **Section 2.3.1**), less than estimated requirement. Additional water source will be required to be obtained if the actual irrigation area is similar to that estimated. It is noted there are two existing licences totalling ~60,000kL in two external lots adjacent to the northern boundary, which if purchased could almost meet the estimated water requirement.

The DWMS outlines a series of other water source options which may also be investigated should additional groundwater licences not be acquired.

In accordance with the City of Swan's guidelines for water irrigation requirements, the following irrigation benchmarks are to be targeted at the local structure plan stages:

- 60% of public open space areas to be irrigated at an average of 6,750kL/ha/yr.
- 80-90% of the district open space to be irrigated at 10,000kL/ha/yr.
- 20% of school sites to be irrigated at 6,750kL/ha/yr.

4.5.2 LOCAL WATER MANAGEMENT STRATEGY

The water management planning requirements for the various stages of land use planning are set out in the WAPC's *Better Urban Water Management* and include a Local Water Management Strategy ('LWMS') in support of the Local Structure Plan and an Urban Water Management Plan ('UWMP') as a condition of subdivision approval. The design objectives outlined in the DWMS form the basis for design criteria to be developed and reported in the LWMS. The design criteria of the LWMS are implemented through the final design concept presented in the UWMP.

Specific issues raised in the DWMS that need to be further investigated as part of the LWMS include:

- Hydrological management of the wetlands and protection of environmental assets.
- Retention of existing flow paths and natural drainage systems located throughout the DSP area.
- An ASS Investigation and Management Plan will be undertaken at the appropriate development phase identify the exact extent and depth and whether it will impact future proposed development.
- Irrigation supply and water efficiency measures for irrigation of POS.
- Detailed site geotechnical investigation.
- Detailed earthwork and fill strategy.
- Refine drainage catchment areas, location of drainage infrastructure, flood storage volumes, levels and areas and discharge rates to maintain pre-development flows entering and leaving the site. Assess opportunities to implement further water sensitive urban design.
- Refine living stream concept with cross section on levels and areas with online flood management.
- Refine groundwater levels, AAMGL contours and provide further detail on groundwater management strategy including subsoil drainage design.
- Refine Post Development Monitoring Program.

4.6 EDUCATION AND COMMUNITY FACILITIES

4.6.1 HIGH SCHOOLS

One government high school is required to cater for the anticipated population within North Ellenbrook West. The DSP proposes to locate the high school site centrally within the residential catchment, along Chudalup Road with strong east-west and north-south linkages to maximise accessibility for all future residents. High school sites are generally to be located on level sites (particularly where co-located with district playing fields). The DSP has responded by locating the high school site within an area which currently comprises flat, cleared pastures and will require minimal site works to facilitate construction.

The exact size and location of the high school site is to be defined further in consultation with the Department of Education, to enable land requirements to be reserved under the MRS, however, should generally be in accordance with the location shown on the DSP. In accordance with Draft Operational Policy 2.4 – Planning for School Sites, it is the Department of Education's preferred position that the high school is not co-located with a primary school site.

4.6.2 PRIMARY SCHOOLS

A total of three government primary school sites are required to support the forecast DSP population.

The final location, configuration and size of primary school sites will be determined at the local structure plan stage for each precinct in accordance with Liveable Neighbourhoods, the WAPC's Development Control Policy 2.4 – School Sites and Draft Operational Policy 2.4 – Planning for School Sites in consultation with the Department of Education. Each precinct is to provide one primary school site (with the exception of LSP Area 2). Primary schools are generally to be located along neighbourhood connectors where possible, to maintain strong vehicular connectivity to the residential and commercial areas.

Primary schools are encouraged to be located adjacent to, or in close proximity to local centres to maximise walkability for pedestrians within the respective precincts and across the site as a whole.

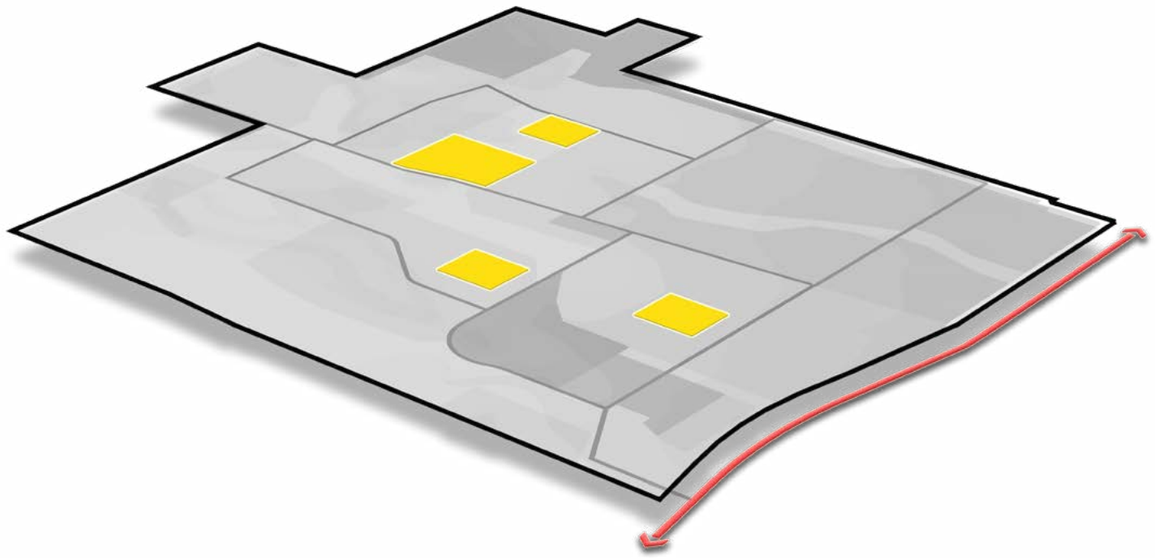
Refer **Figure 31 – Education Facilities.**

4.6.3 COMMUNITY FACILITIES

A North Ellenbrook West Community Infrastructure Plan (CIP) will be developed in conjunction with the City of Swan to provide guidance on future planning including the location, funding and development triggers for facility requirements.

Given the longer lead time for this DSP, with an anticipated development commencement in 2028, the NEWCIP will be undertaken in due course following the DSP's progression and with expected guidance from the City of Swan. Where necessary this will help to inform the need for community infrastructure inclusion in the District Development Contribution Plan and, for example, the prospect of District Open Space and associated facilities.

Local facilities will be planned for in conjunction with the identified four local structure plan areas within the DSP and will have regard for identified primary school locations together with requirements for Neighbourhood Open Space, Neighbourhood Community Facilities and local open space needs. The NEWCIP will further consider the required open space hierarchy and functions for the DSP area, having regard to the City's facility planning process and the endorsed DSP. SPP3.6 will ultimately guide both District and Local development contributions as appropriate.



31. EDUCATION FACILITIES

4.7 ACTIVITY CENTRES AND EMPLOYMENT

An Activity Centres and Employment Strategy has been prepared by Urbis (refer **Appendix 9**) in support of the DSP and provides recommendations regarding the provision of activity centres. The proposed activity centres are expected to support the delivery of local services and employment opportunities whilst complementing the existing and planned centres in the North-East corridor.

- **Ellenbrook Secondary Centre:**

  Ellenbrook is an emerging Secondary Centre which is anchored by Ellenbrook Central. This centre is expected to continue to expand in response to infill development within and surrounding the town centre and broader greenfield development in the corridor.

- **The Broadway District Centre (Future):**

  A future district centre is identified for the site on the corner of The Broadway and Bordeaux Lane in Ellenbrook. The service commercial site is partially developed and the retail site is vacant.

- **Central Bullsbrook District Centre (Future):**

  A district centre is planned as part of the Kingsford estate in Bullsbrook.

The close proximity of the Ellenbrook Secondary Centre limits the need for a high order secondary centre within the DSP area and as such, the highest order centre proposed within the site is of a 'district' scale. The Activity Centres and Employment Strategy assessed the sustainability of the hierarchy in the wider area and confirmed that the proposed centre hierarchy does not undermine the existing centre hierarchy in the context of the balance of demand available to other activity centres in the region.

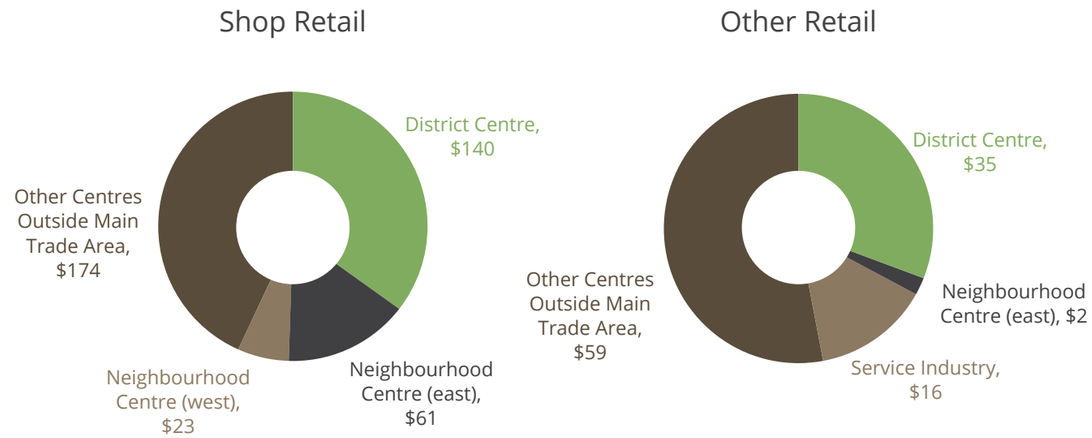
The retail assessment component of the Activity Centres and Employment Strategy identified the following key findings:

- The proposed centres in the main trade area are estimated to capture less than 60% of retail spending generated by main trade area residents. As such, the equivalent to $233 million of retail spending generated by main trade area residents is expected to be captured by existing and planned centres outside the main trade area (refer **Figure 32 – Allocation of Retail Spending by Centre**).

- The proposed centres are assumed to only capture a moderate proportion of non-retail floorspace demand as higher order centres are expected to cater for these needs.

- The future population in the main trade area is expected to support the viability of existing and planned centres outside the main trade area, supporting the earlier provision of floorspace within future district centres.

Based on the estimated floorspace needs generated by forecast residents within North Ellenbrook West and the main trade area, a range of activity centres and commercial areas are proposed. There will, however, be an opportunity to review floorspace requirements further during the activity centre and local structure planning stages.



32. ALLOCATION OF RETAIL SPENDING BY CENTRE

The Activity Centres and Employment Strategy also provides guidance on the potential capacity for 'non-retail' uses within North Ellenbrook West, detailed in **Table 12**.

NON-RETAIL USE	BENCHMARK	ESTIMATED CAPACITY WITHIN SUBJECT SITE
Medical and Allied Health Services	150-200m² per 1,000 persons	3,300m²
Child Care Centres	150-200m² per 1,000 persons	1,900m²
Primary Schools	One per 1,500 dwellings	3
Secondary Schools	One per 6,500 – 7,000 dwellings	1
Suburban Offices	150-200m² per 1,000 persons	950m²
Private Entertainment and Recreation Uses	150-200m² per 1,000 persons	2,800m²
Service Industry	150-200m² per 1,000 persons	12,000m²
Multi-Purpose Community Centre	One per 25,000 persons	1
Sub-District Recreation Facilities	One per 25,000 – 50,000 persons	1

Table 12: Non-Retail Uses

Refer **Appendix 9 – Activity Centre and Employment Strategy.**

4.7.1 DISTRICT CENTRE

The DSP provides for a district centre of approximately 32,000m² net lettable area ('NLA') (in line with the recommendations of the Activity Centres and Employment Strategy report) at the south-eastern corner of the site. The centre is located at the intersection of two major arterial roads, providing ease of access to residents within the main trade area. The location of the district centre maximises the extent of the centres' catchment and provides proximate amenities and services for North Ellenbrook residents. The district centre will also benefit from the proximity to the Tonkin Highway, providing opportunities for businesses to maximise exposure to a Primary Regional Road.

The exact extent, location and design of the district centre will be further reviewed at the local structure planning stage once the design and location of the interchange is known. This will occur in conjunction with a review of the land required (including impact testing) for the District Centre. If deemed necessary as part of future structure planning for the precinct, a Precinct Structure Plan may be prepared for the land comprising (and within the immediate catchment of) the district centre.

Modifications to the local road network are to be reviewed at the Local (or Precinct) Structure Plan stage regarding the need for traffic calming measures from the proposed interchange to the proposed industrial / service commercial area to the north of Chudalup Road. Measures to be explored are details as follows:

- Inclusion of a roundabout at the entrance (southern) and exit (northern) points of the centre, which may be designed in a manner to discourage industrial through traffic.
- Design treatments for the 'Main Street' to promote a pedestrian friendly environment and discourage heavy vehicle movements through the centre.
- Consideration of RAV Network restrictions to the proposed interchange and the use of highway signage to alert drivers to use the Stock Road Interchange for designated vehicle sizes.

4.7.2 NEIGHBOURHOOD CENTRES

In additional to the district centre, the DSP proposes two smaller neighbourhood centre nodes, comprising 7,000m² NLA and 3,300m² NLA respectively.

The smaller of the proposed neighbourhood centre nodes is located centrally within the DSP area, generally at the intersection of Halden Road and Chudalup Road, providing strong exposure to passer-by traffic. The neighbourhood centre will complement the district centre offering and may comprise a range of commercial and residential land uses, forming a central town square with strong connections to the residential, precincts, schools and public open space network. An opportunity exists to integrate the neighbourhood centre with the linear public open space corridor to the south of Chudalup Road to create a strong 'green' connection with the town centre, increasing opportunities for place activation at subsequent stages of planning.

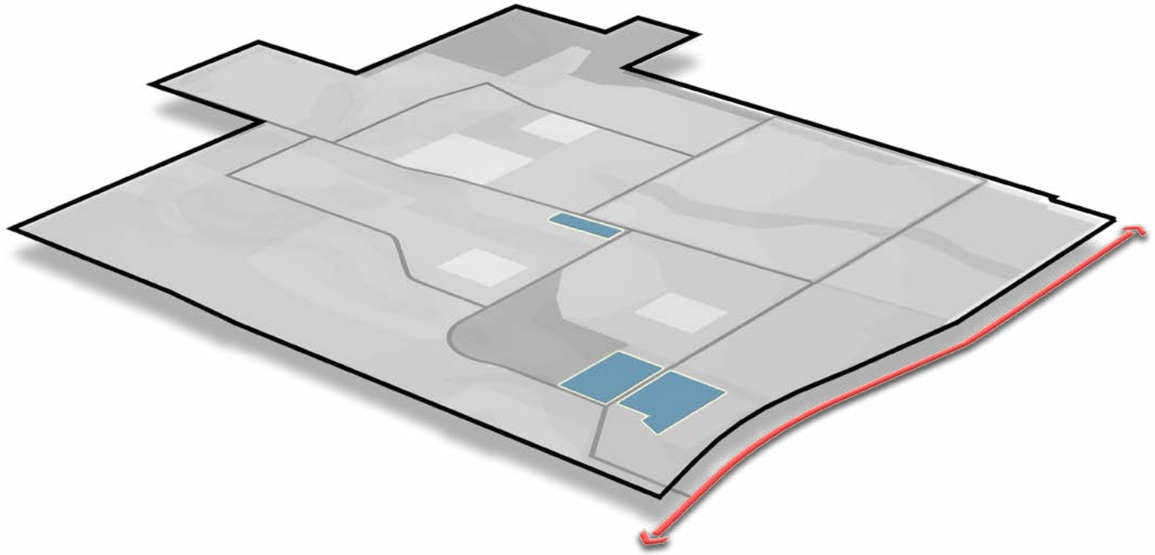
Urbis recommends that a larger neighbourhood centre be located within the central core of the North Ellenbrook East DSP area, along a north south corridor. The two neighbourhood centres will complement the district centre offering located within the DSP area and be serviceable via the proposed interchange over the Tonkin Highway. The commercial centres have been dispersed to provide appropriate service catchments to the proposed residential areas.

The DSP also provides for a small local node within Precinct 3, in close proximity to the proposed Primary School, which may include uses such as childcare, medical centre or similar such small-scale commercial services. These centres are flexible in their location within the DSP and may be revised at subsequent stages of planning.

Refer **Figure 33 – Commercial Centres.**

CENTRE HIERARCHY	FLOORSPACE (M² NLA)			TOTAL	INDICATIVE GROSS LAND AREA (HA)
	Shop Retail	Other Retail	Non-Retail		
District	15,000	10,000	7,000	32,000	10
Neighbourhood (East) (located in the North Ellenbrook East DSP)	6,000	500	500	7,000	3
Neighbourhood (West)	3,000	-	300	3,300	1
Local Nodes	-	-	1,200	1,200	2
Service Industry	-	4,500	12,000	16,500	6
Total Supportable Floorspace	24,000	15,000	21,000	60,000	23

Table 13: Centre Hierarchy



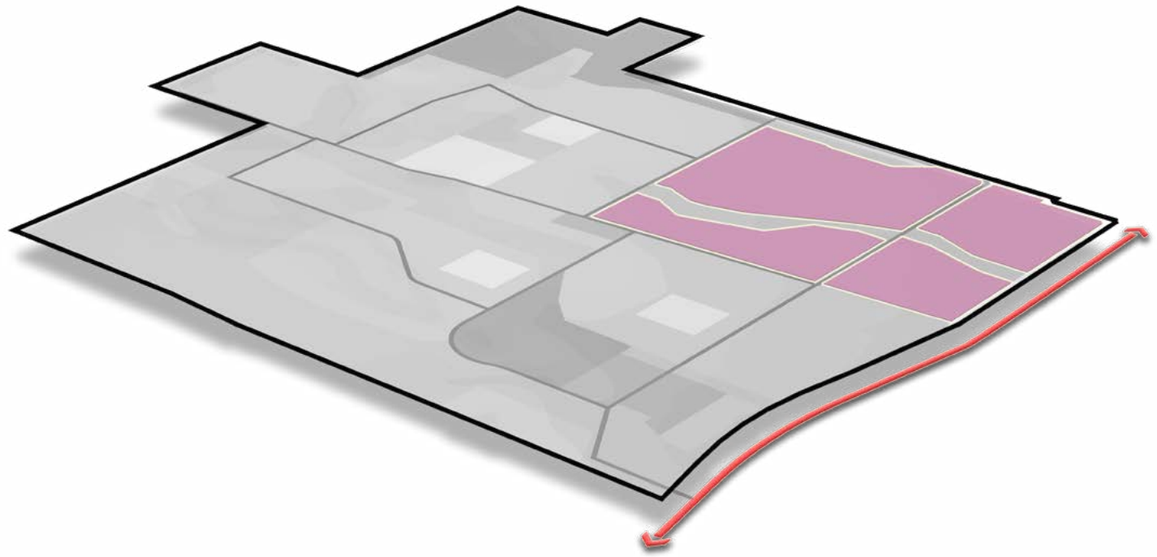
33. COMMERCIAL CENTRES

4.7.3 LIGHT INDUSTRIAL / SERVICE COMMERCIAL

The DSP proposes approximately 33 hectares of land for 'Light Industrial' / 'Service Commercial' purposes in response to the Industrial allocation of land within the Framework (as discussed in Section 1.4.2 of this report). The industrial zoned land is located in the north-east corner of the DSP area and provides for a transition to the large industrial area identified under the BFILUPS. The industrial zoned land is located such that a north-south connection to the northern industrial area (outside of the DSP area) can be provided via Raphael Road. Exposure to the Tonkin Highway is also maximised along the easternmost boundary of the DSP, to the north of Chudalup Road.

The Activity Centres and Employment Strategy notes that the industrial / service commercial precinct is expected to have limited potential given the proximity of the industrial area and existing and future competition in the Ellenbrook and Bullsbrook localities. Notwithstanding, due to a portion of the DSP area being identified for 'Industrial Expansion' under the Sub-Regional Planning Framework, an area of 'Light Industrial' / 'Service Commercial' has been shown on the structure plan. The DSP recommends that the extent of land required for industrial / service commercial purposes is reviewed at the LSP stage to ascertain whether there is a demonstrated need. It is intended that the land be rezoned to 'Urban Deferred' and then 'Urban' under the MRS. This allows for the use of the land for light industrial and service commercial type activities (to support the heavier industrial operations further north in Bullsbrook), whilst providing flexibility for the land to be zoned 'Residential' or for other such purposes at the time of LSP preparation, if required.

Refer **Figure 34 - Light Industrial / Service Commercial.**



34. LIGHT INDUSTRIAL / SERVICE COMMERCIAL

4.7.4 EMPLOYMENT

The construction phase of development within the DSP area is expected to deliver significant employment and economic opportunities for the local area. Overall, the construction phase is expected to directly and indirectly support approximately 10,800 employment opportunities (in terms of full-time equivalent job years) over the development period. The initial boost to the region's economy from construction is estimated to be approximately $2.0 billion, combined with flow on benefits, the construction phase of the project is expected to support overall economic output of approximately $5.0 billion.

The development of the DSP area will support ongoing employment opportunities locally and support existing and planned employment centres in the wider area (such as the planned and existing industrial areas to the north). Based on estimated non-residential uses and a moderate home-based worker estimate, the subject site is expected to accommodate approximately 1,300 jobs.

The employment strategy and associated action plan supports the achievement of the following objectives:

- Maximise access to local employment opportunities within the north-east corridor.
- Deliver required infrastructure and services in a timely manner to catalyse private sector investment and support liveability.
- Attract private sector investment in urban and business development projects.
- Deliver a diversity of housing options that meet the needs of residents with different lifestyles and life stages.

An action plan guides the achievement of the above objectives and the implementation of the Employment Strategy as detailed within the Activity Centres and Employment Strategy.

	ECONOMIC OUTPUT ($M)	GROSS VALUE ADD ($M)	EMPLOYMENT (FTE JOB YEARS)
Direct Impact	2,000	536	3,240
Indirect Impact	3,000	1,304	7,560
Total Impact	5,000	1,840	10,800

Table 14: Economic Benefits for Construction Phase (North Ellenbrook West)

Source: REMPLAN; Urbis

	Shop Retail	Other Retail	Non-Retail	Total
District Centre	517	125	140	782
Neighbourhood Centre (west)	207	6	10	223
Local Node/s (West)	-	-	24	24
Service Industry	-	56	240	296
Schools & Public Recreation / Community Facilities	-	-	310	310
Home-Based Workers (@ 5%)	-	-	471	471
Total Supportable Jobs				**1,326**

Table 15: Employment Estimates at Build Out (North Ellenbrook West)

Source: DPLH Land Use and Employment Survey; Urbis

4.8 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

The following provides a summary of the existing and proposed servicing and infrastructure considerations for the subject site. A Civil Engineering Servicing Report has been prepared by Prichard Francis engineers and is included as **Appendix 10.**

Refer **Appendix 10 –Servicing Report.**

4.8.1 TOPOGRAPHY & EARTHWORKS

The DSP area is moderately undulating with steeper areas on the western side. Ground levels are at approximately RL 60m at peak and gradually reduce to RL 50m in the centre of the development area and flatten to RL 43m on the eastern edge. Grades across the site are suitable for development with minimal retaining required.

The DSP area is expected to require groundwater management, such as cut to fill to ensure adequate separation and / or alternatively the provision of subsoil drainage to manage post development groundwater. Opportunities for cut to fill have been investigated at a preliminary level to reduce the demand for imported sand fill which are to be further reviewed at the local structure planning and subdivision stages.

4.8.2 DRAINAGE

As outlined in Section 3.5, JDA Consulting Hydrologists have completed a DWMS in support of the DSP. A large proportion of the DWMS area has a pre-development AAMGL at or within 1.5m of the existing natural surface.

The drainage philosophy for the site includes the treatment of minor flows at source where possible and in public open space nearest to source thereafter. Drainage will ultimately make its way to existing tributaries which will attenuate major event runoff.

4.8.3 SEWER

The DSP area is currently outside the Water Corporations service area, however, future planning has commenced to provide a servicing strategy for waste water.

The Water Corporation has recently undertaken conceptual wastewater planning for North Ellenbrook and the wider West Bullsbrook Industrial area which identifies the DSP within the Bullsbrook Sewer District. This wastewater planning allows for wastewater from both the east and west DSPs to be pumped from North Ellenbrook southwards into the Ellenbrook (Barrabmbie Way) Main transfer Waste Water Pump Station ('WWPS'). This solution will require the construction of a 900mm diameter gravity sewer from the Barrambie Way WWPS northwards to a suitable high point to accept pumped flows from future station within North Ellenbrook. Capital funding for the sewer extension is currently not on the Water Corporation's 5-year capital program. Should development proceed ahead of Water Corporation funding being allocated for the works, the proponent may elect to fully fund the extension of the necessary headworks infrastructure and WWPSs.

4.8.4 WATER

There is a significant existing water supply infrastructure system that services the Ellenbrook townsite. This includes a Water Corporation overhead tank that is located 2.7km west of Ellenbrook and 3.8km south of the proposed DSP area. There are diameter 1200mm and 900mm trunk mains that cross the Tonkin Highway that feed smaller reticulation mains for distribution. Whilst there is currently no potable water supply servicing the DSP area, (or agreement between the Water Corporation as service provider and the proponents with regard to development and financing of these essential services), it is anticipated that reticulation extensions will come from this supply with alignment in future road reserves heading north to the structure plan area.

Capital funding for the new reservoir outlet and associated distribution mains is currently not on the Water Corporations capital investment program. In liaison with the Water Corporation, the proponents will need to further investigate the infrastructure alignment and resolve funding of any water headworks to enable development of the land prior to the 'lifting of Urban Deferment' process.

4.8.5 POWER

4.8.5.1 PROPOSED DEVELOPMENT / LOAD

Based on the size of the DSP area, a new zone substation is required. Western Power would require a 1 ha site for the zone substation. Once an additional demand is requested, Western Power will investigate the requirement for the zone substation. The installation of these substations is standard for developments of this type and Western Power are familiar and cater for development expansion on a regular basis.

4.8.5.2 EXISTING NETWORK

The DSP area is currently serviced by the Muchea Zone Substation, which has spare capacity of just over 25MVA, and is located about 17km north of the site. The Network Planning Tool indicates limited expected load demand growth off that zone substation over the following few years and therefore, no upgrades are planned. When development of the area proceeds, a review of the substation would be initiated and planning to service the development area would proceed.

To the south of this area, around Aveley / Ellenbrook the area is serviced by the Henley Brook Zone Substation off Gnangara Road, which is reaching the limit of its supply capacity. Some zone substation upgrade works are required at Henley Brook in order to be able to balance servicing in the area. If any of the land was to be serviced from this substation, Wanneroo Zone substation to the west may be able to provide some power and is about 20 km away from the site.

Muchea Zone substation feeds the area through a 22kV HV aerial network up to the site. Based on the load that is to be connected to the overall network, a network upgrade will need to be considered and funded as part of this development.

As a standard, network upgrades would be addressed through the HV pool of funds.

4.8.6 GAS

There is no existing gas supply within the DSP area and until development is proposed, a gas supply will not be investigated or planned. It is expected that an extension of the gas mains from Ellenbrook can and will be required to service the proposed development. Extension of these mains will be carried out as development progressed.

4.8.7 TELECOMMUNICATIONS

4.8.7.1 EXISTING TELSTRA NETWORK

The DSP area falls within the Telstra Bullsbrook East Exchange catchment, which is understood to parent on the Midland exchange. Telstra network throughout the area largely consists of direct buried cable with the occasional route incorporating P50 pipe. Direct buried cable pair counts on most routes typically total less than 50 pair, however a Telstra 24 Single Mode Optical Fibre ('SMOF') does route adjacent to the Railway Reserve. This cable, however, is likely dedicated to Telstra's interexchange network and would most likely not be released for direct customer use.

Telstra's 4GX mobile network provides indoor coverage over the new development area and could deliver reasonable download speeds with the current population density but would need significant upgrade to provide for the expected demand. The Optus mobile network provides 4G outdoor coverage.

4.8.7.2 EXISTING NEXTGEN NETWORK

Nextgen own a 96 direct buried SMOF on or near the rail reserve, which is dedicated to inter-capital use and would most likely not be allocated to customer use.

4.8.7.3 EXISTING NBN CO NETWORK

NBN Co have already provided Fixed Wireless to over half of the DSP area, however, it currently falls outside the NBN Co's Fixed Line Footprint. It is understood that there is no NBN Co fixed line infrastructure within the development.

4.8.7.4 PROPOSED TELSTRA NETWORK

Telstra are effectively ruled out of providing voice and broadband infrastructure by Federal Ministerial policy, for a new development of this size, within the Fixed Line Footprint, but would be able to compete with NBN Co and other niche providers for point to point fibre bases services.

4.8.7.5 PROPOSED NBN CO NETWORK

The nearest portion of the Fixed Line Footprint is Bullsbrook town site to the north east and the Vines to the south of Maralla Road. Whilst the new development is currently regarded as a country area, where Telstra is the Infrastructure Providers of Last Resort ('IPoLR') for voice and NBN Co for broadband, NBN Co would most likely reclassify this area to fall within their Fixed Line Footprint, in which case NBN Co would be IPoLR for both voice and broadband infrastructure. Given the possible yield of the development, NBN Co must accept IPoLR responsibility, should the Developer wish to engage them. If engaged, NBN Co would most likely service the development with Fibre to the Premises ('FTTP') technology.

NBN Co charge for telecommunications infrastructure on a partial cost recovery basis, which normally works out at a reasonable cost to Developers, when compared to other alternatives. There is no reason as to why the Developer should not engage NBN Co for telecommunications infrastructure and recommend such engagement. NBN Co levy two infrastructure charges, a Deployment Charge of $600/premise for single residential services or $400/premise for Multi Dwelling Units and a Backhaul Charge, where there is insufficient infrastructure.

The first development within this precinct will need to negotiate with NBN Co charges for Backhaul if any at all.

4.8.8 STAGING AND IMPLEMENTATION

Given the size and scale of the DSP area, development will occur over multiple stages as demand for residential land within the north-east corridor evolves. The DSP area is expected to be initially rezoned to 'Urban Deferred' under the MRS. Development staging will likely commence in the south eastern portion of the site, with primary access provided via the Tonkin Highway interchange and generally progress north to Chudalup Road.

Final staging will be informed by infrastructure planning, landowner intentions and the need to provide orderly sequencing of development for bushfire risk mitigation. The availability of services and residential land demand will also help inform the lifting of urban deferment.

Staging of the development of the DSP area will be linked to the interchange, with the interchange required to be constructed and operational prior to the first stage of development. As such, the first stage of development is to occur with LSP Area 1 which is likely to comprise the residential area to the north of the District Centre, with the District Centre to be developed once an appropriate critical mass to sustain the viability of the centre has been established. Development is likely to extend northward towards Chudalup Road, being heading west to LSP Area 3 and subsequently LSP area 4.

4.9 DEVELOPER CONTRIBUTION ARRANGEMENTS

A Development Contribution Plan will likely be required to fund local development and community infrastructure. The need for any future Development Contribution Plan will be confirmed at the local structure plan stage once the appropriate level of detail can be confirmed. Development Contribution Plans will be established through amendments to LPS 17, consistent with *State Planning Policy 3.6 – Infrastructure Contributions*.

The new interchange to the Tonkin Highway is not to be included within any local Development Contribution Plan to be managed by the City of Swan. The current estimated cost to develop the interchange is $100 million. As part of it's 2022-23 Federal Budget, the Australian Government committed $50 million towards the delivery of the interchange. As part of the 2022-23 State Budget, the State Government allocated $25 million towards the delivery of the interchange. The cumulative $75 million of Government funding is expected to cover the majority of the infrastructure costs associated with delivering the interchange.

The funding gap will be covered by landowners within both eastern and western DSP's who have agreed to contribute a proportionate share of the $25 million balance (25%). Further arrangements between the landowners will be required in order to formalise an agreement on the contribution structure for the $25 million funding gap. The proportion of funding from each landowner will be determined based on 'need and nexus' and the principles established by *State Planning Policy 3.6 – Infrastructure Contributions*.

Roads and Intersections

Any shared funding and associated cost apportionment methodology that may be required to upgrade and establish roads and intersection will be informed by future traffic modelling at the local structure plan stage. Informing this modelling will be the broader mesoscopic model currently under preparation by MRWA in conjunction with the DPLH and the City Swan. Cost apportionment will be determined at subsequent stages of planning in accordance with State Planning Policy 3.6 – Infrastructure Contributions.

District Open Space

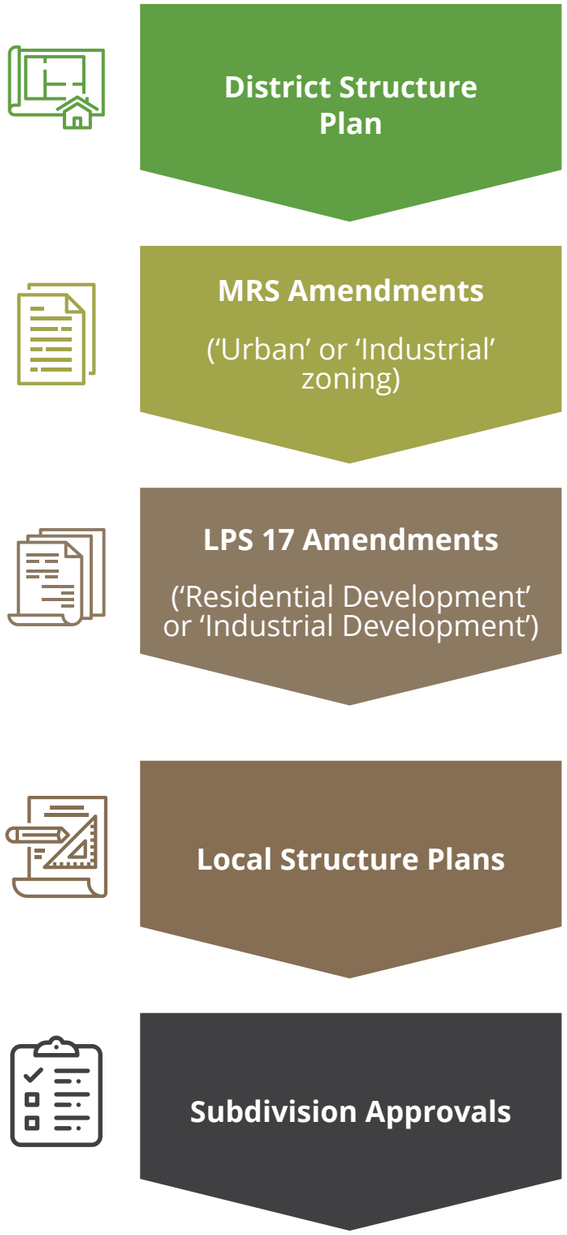
As a district-level community infrastructure item, there is the need for shared funding of the DOS through a future DCP. Whilst the land component of the DOS may be provided by a landowner (current or future) towards satisfying their 10% POS requirement, development of the DOS its ultimate and intended standard will be funded through a DCP.

Neighbourhood and Local Parks

Depending on the ownership structure at the local structure planning stages and the calculation of POS credits in accordance with Liveable Neighbourhoods, a DCP may be required for funding neighbourhood and local POS where it is clear that one or more landowners are disproportionately contributing to the 10% POS requirement. Any necessary DCPs at the local level will be prepared in accordance with State Planning Policy 3.6 – Infrastructure Contributions.

4.10 OTHER REQUIREMENTS

There are several changes to the existing planning framework that need to be implemented prior to the DSP area being subdivided and developed. The implementation framework is outlined below and illustrates required modifications to the MRS and LPS 17, as well as preparation of local structure plans, prior to subdivision approval being sought.



4.10.1 METROPOLITAN REGION SCHEME AMENDMENTS

For the DSP to be realised, the MRS will need to be amended. All areas which are currently zoned 'Rural' under the MRS and identified for future development, are proposed to be rezoned to 'Urban' prior to progressing local structure planning, subdivision and development.

The DSP is the subject of an existing MRS Amendment request seeking to rezone the DSP area from 'Rural' to 'Urban Deferred', rather than directly to 'Urban'. While the DSP establishes a clear framework for urban development of the land, the likely timing for development and completion of infrastructure planning warrants interim rezoning to 'Urban Deferred', with amendments to the MRS to proceed on this basis.

A request for the 'lifting' of urban deferment will only be considered by the WAPC upon resolution of the following matters.

1. A mesoscopic transport model and subsequent transport assessment to be prepared and undertaken by Main Roads WA in collaboration with the Department of Planning, Lands and Heritage and the City of Swan. Once completed, the Traffic Impact Assessment that accompanies the DSP is to be updated to reflect the outcomes of the State Government transport assessment. The updated DSP TIA will then inform subsequent stages of planning specifically, Transport Impact Assessments prepared to accompany local structure plans; and

2. Agreement with the Water Corporation in relation to the funding of water and wastewater headworks necessary to service the DSP with sewer and water.

Should the abovementioned matters (State-led transport assessment and funding of water / wastewater headworks) be resolved prior to an MRS amendment being initiated, then rezoning to 'Urban' may be considered. Based on current timeframes, it is expected that the rezoning to 'Urban Deferred' will be progressed ahead of the outstanding matters being fully resolved, allowing for a 'lifting of Urban Deferment' to take place once the outstanding matters are addressed.

In addition to the above, the WAPC's Lifting of Urban Deferment Guidelines set out the information requirements necessary to support a request for the lifting of urban deferment. These include requirements for a conceptual layout of the land being 'lifted'; demonstration that essential urban services (including reticulated water and wastewater) can be provided; and demonstration of landowner support.

The lifting of urban deferment is expected to occur generally on a local structure plan area basis to ensure the orderly zoning and implementation of the DSP.

4.10.2 LOCAL PLANNING FRAMEWORK

4.10.2.1 AMENDMENTS

As part of the lifting of the Urban Deferred zone, the WAPC may concurrently rezone land under LPS 17, to a development zone pursuant to Section 126(3) of the Planning and Development Act 2005, to facilitate the preparation of a local structure plan. It is expected that this will be the preferred mechanism for amending LPS 17.

4.10.2.2 LOCAL STRUCTURE PLANS

Local structure plans are required to be prepared for each area identified on the **Plan 1 - District Structure Plan Map**. The DSP Map identifies four (4) Local Structure Plan areas, together with a District Centre that may require an Precinct Structure Plan (PSP). The final need for an PSP will be determined at the Local Structure Plan stage for LSP Area 1 when the final scale and demand for the centre is confirmed. The LSP areas on Plan 1 are indicative and subject to refinement as detailed local planning occurs.

The transition of rural to urban land use within the DSP area is expected to occur on a local structure plan basis where the separation of potential land use conflicts will be considered in detail.

The formal process to prepare a local structure plan is detailed under Part 4 Section 15 of the *Planning and Development (Local Planning Schemes) Regulations* and may commence concurrently with lodgement of a Local Planning Scheme Amendment under LPS 17. Once Local Structure Plans have been approved by the WAPC, development may proceed.

4.10.3 LOCAL STRUCTURE PLAN AREA 1 – GATEWAY (SOUTH-EAST)

Precinct Description

Local Structure Plan Area 1 - 'Gateway (South-East)' incorporates Lots 112, 114, 1808 and 2946 comprising approximately 120 hectares in area. The LSP area is logically defined, being bound by Chudalup Road to the north, Halden Road to the west and south, and the Tonkin Highway to the east.

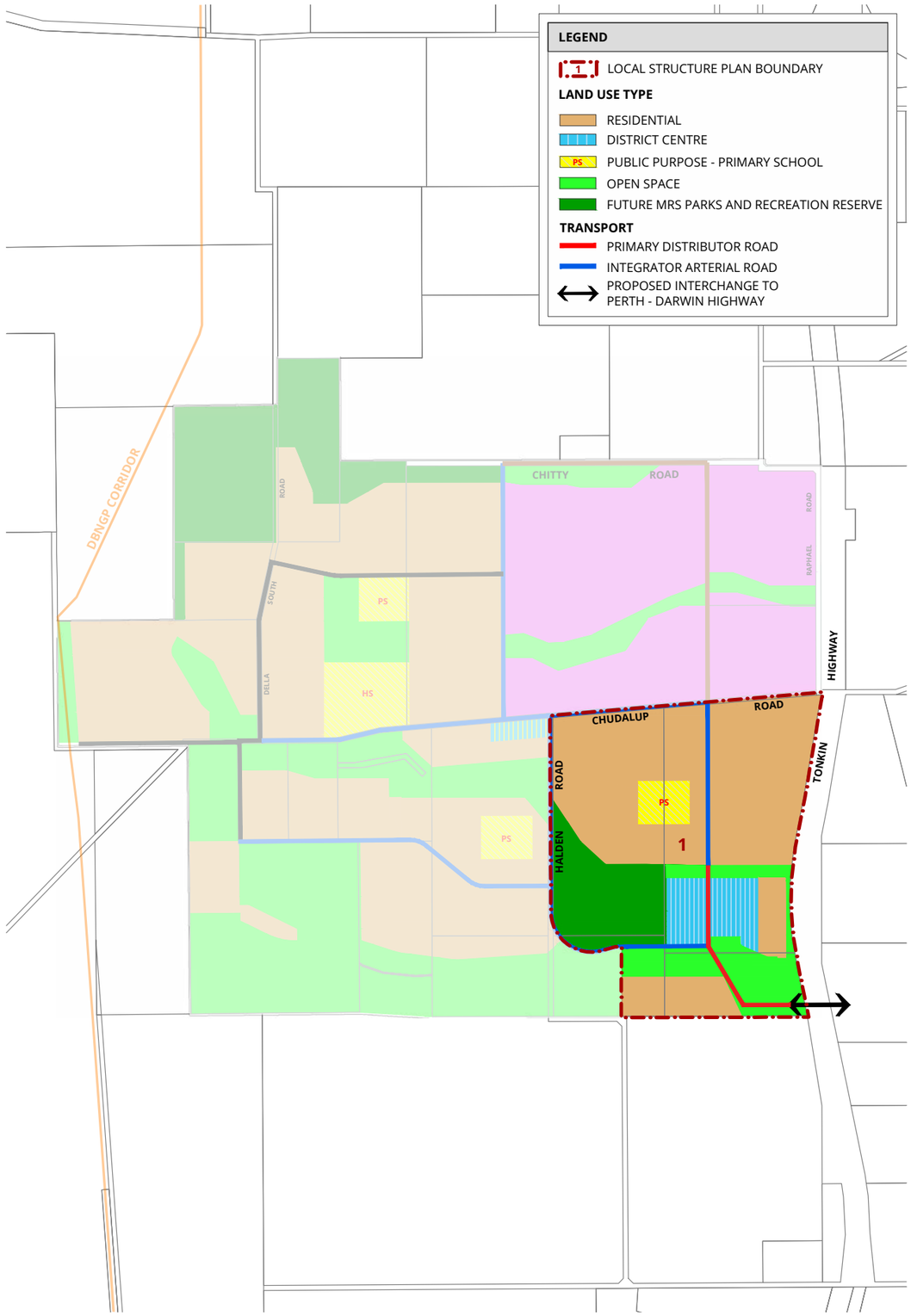
Character Statement

The Gateway (South-East) LSP is to be characterised by a mix of medium to high residential density residential development adjacent to the future district centre and primary school. The north-south orientated boulevard through the district centre provides for the opportunity to create a strong main street, framed with retail and commercial tenancies, with opportunities for residential development to be located at the upper levels of development. The Gateway (South-East) LSP should maintain a strong relationship to the environmentally sensitive areas, whilst ensuring access is managed to protect the rehabilitation and revegetation of the reserve.

Local Structure Plan Requirements

- Review and accommodate the land, interface (including noise mitigation) and access requirements for the Tonkin Highway interchange and highway corridor;
- Confirm the integrator road access concept design linking the District Centre and Highway interchange;
- Review the role, demand, land use mix and need for an Precinct Structure Plan to facilitate detailed planning of the District Centre. Impact Testing may be required in accordance with *State Planning Policy 4.2 – Activity Centres for Perth and Peel*;
- Review the role and design function of Halden and Chudalup Roads and the new North-South Neighbourhood Connector;
- Review the interface to private land south of the LSP area in regard to land use (including Lot 5892), connectivity to existing Halden Road and the need for bushfire safety mitigation;
- Accommodate and review the interface to the identified 'Future Parks and Recreation Reserve' land comprising approximately 18ha at Halden Road;
- Review and confirm the extent and treatment of open space / drainage corridors identified having regard to their drainage, vegetation retention and open space functions;
- Confirm the location and requirement for the Primary School site with Department of Education;
- Consider the interface to LSP Area 2 and land identified for Light Industry / Service Commercial;
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

Refer **Figure 35 – LSP Area 1.**



35. LSP AREA 1

4.10.4 LOCAL STRUCTURE PLAN AREA 2 – CHITTY ROAD (NORTH-EAST)

Precinct Description

Local Structure Plan Area 2 – 'Chitty Road (North East)' incorporates approximately 122 hectares across Lots 1767, 7 & 1 and is bound by Chitty Road to the north, the Tonkin Highway to the east, Chudalup Road to the south and the boundary of Lot 1767 to the west.

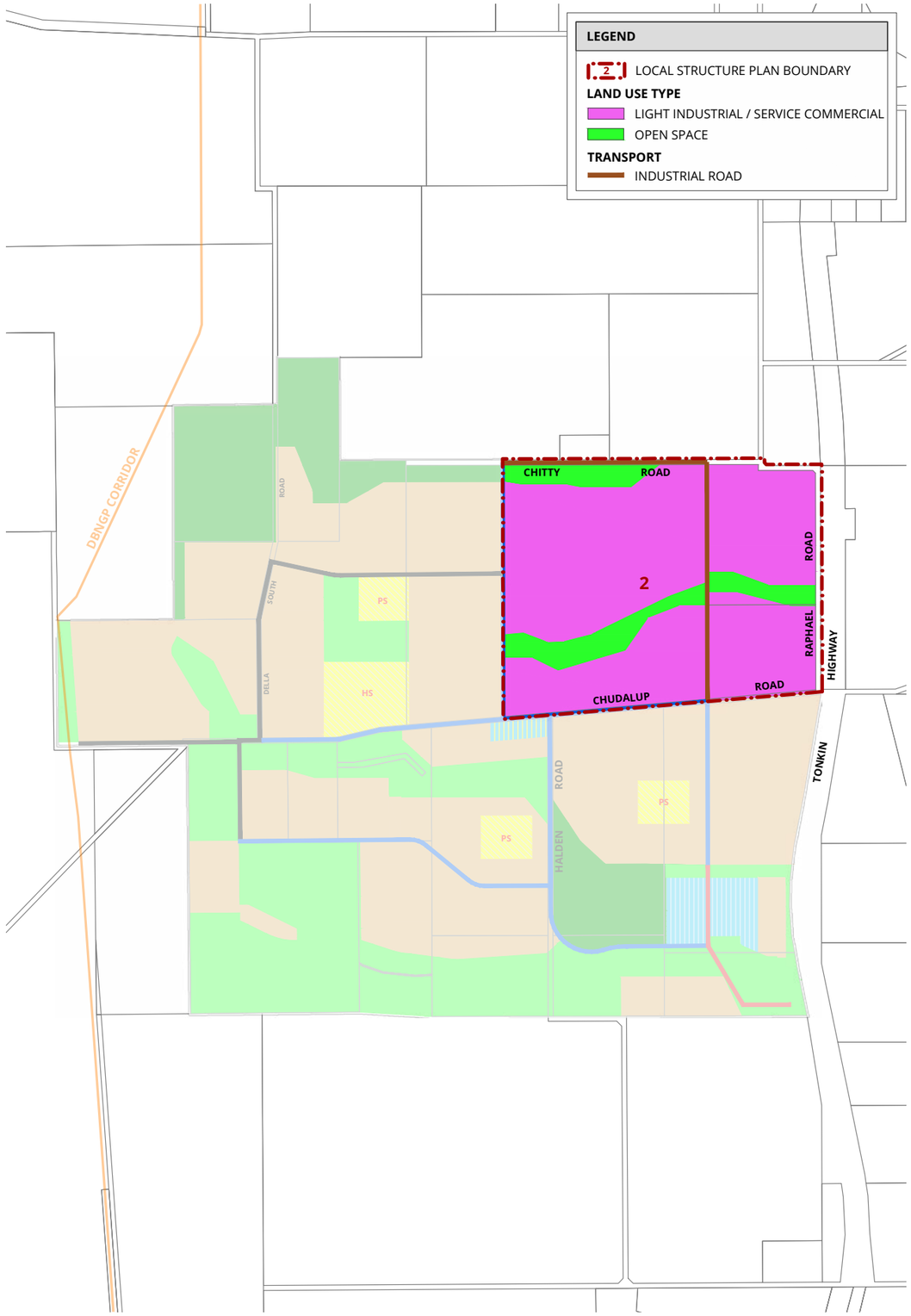
Character Statement

The Chitty Road North-East LSP is defined by a meandering central green spine which celebrates the Ellen Brook tributary which traverses the precinct in an east-west direction. The northern interface which Chitty Road retains the natural environmental separation to the north through the location of open space which forms an extension to the existing vegetation corridor in this location. Opportunities for medium to high density development around the neighbourhood centre node are encouraged, with development around the light industrial area to be designed and considered to mitigate impacts arising from industrial type operations to the residential area.

Local Structure Plan Requirements

- Review the role, demand and land use mix to facilitate detailed planning of the Neighbourhood Centre of approximately 3,300m2 nett lettable area across LSP Areas 2 and 4;
- Review the design interface and functionality of the linear east-west open space having regard to its heritage, drainage, vegetation retention and open space integration functions;
- Review the demand, land use mix, interface and overall potential for Light Industry / Service Commercial development having regard to the proximity of the wider Bullsbrook Freight and Industrial area and established development within Ellenbrook;
- Consider the interface and access north of Chitty Road to mitigate land use impact, protect the Chitty Road linear open space corridor and limit the prospect for commercial / industrial traffic movement through the urban residential area;
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

Refer **Figure 36 – LSP Area 2.**



36. LSP AREA 2

4.10.5 LOCAL STRUCTURE PLAN AREA 3 – DELLLA SOUTH ROAD (NORTH-WEST)

Precinct Description

Local Structure Plan Area 3 – 'Della South Road (North-West)' incorporates approximately 185 hectares across Lots 2294, 5889, 1474 and 1876 and is bound by State Forrest to the west, State Forrest and Chitty Road to the north, Chudalup Road to the south and the eastern lot boundary of Lot 1876 to the east.

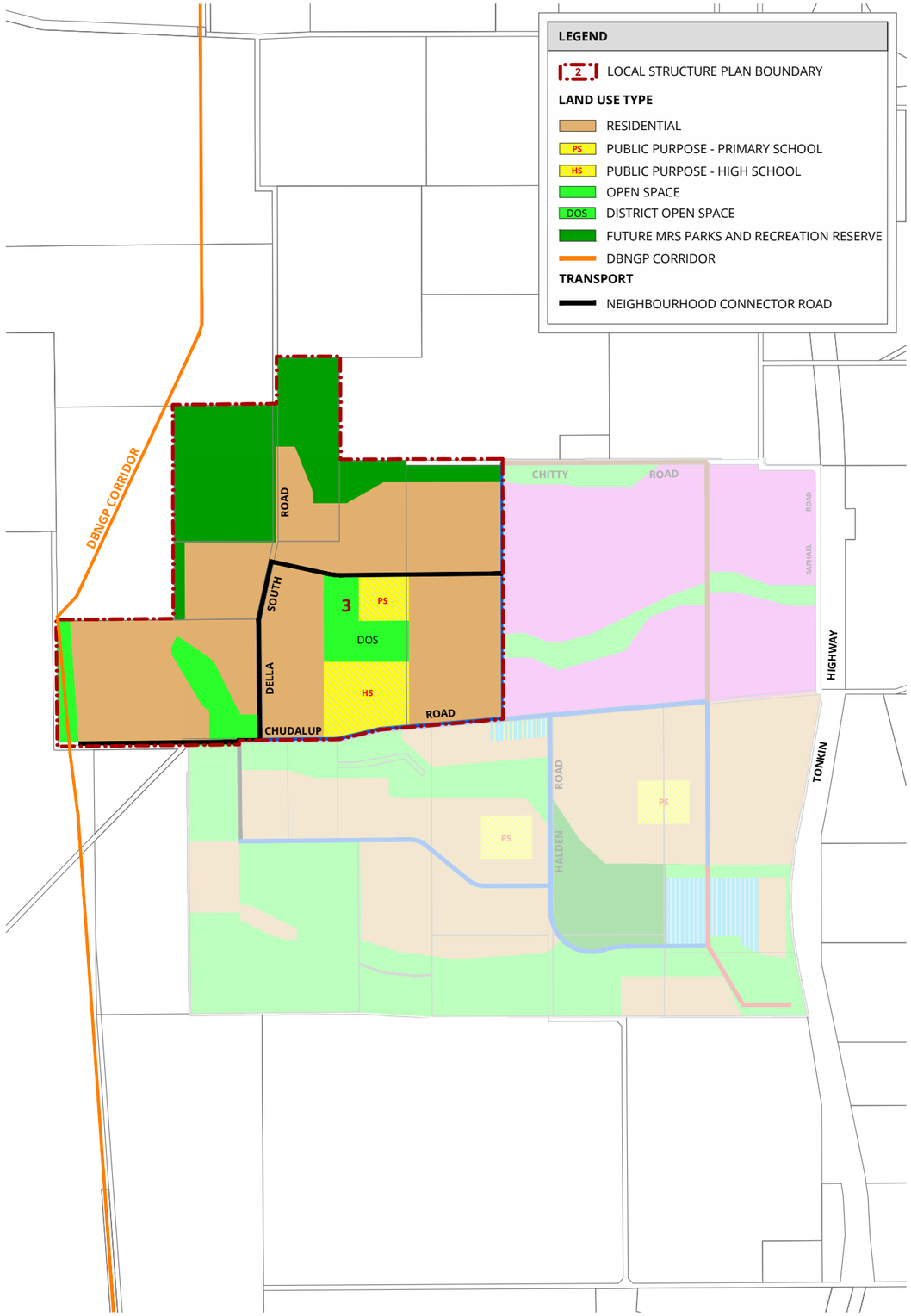
Character Statement

The Della South Road North-West LSP comprising a number of Bush Forever reserves and is also bound on its western boundary by State Forrest. The LSP area is characterised by a mix of urban and suburban dwelling types, with the potential for larger lots to be provided around the periphery of the precinct. A central heritage area is to be celebrated through the considered location of residential development around the boundaries of the LSP area.

Local Structure Plan Requirements

- Review the role, demand and land use mix to facilitate detailed planning of a potential Local Centre within the LSP area of approximately 1,200m2 nett lettable area;
- Review the interface to State Forrest and private land west of the LSP area in regard to land use, connectivity to existing access and the need for bushfire safety mitigation;
- Review the demand, area and use requirements for District Open Space (DOS) to accommodate the future active district recreation needs of the community.
- Accommodate and review the interface to the identified 'Future Parks and Recreation Reserve' land;
- Review access north of the LSP via Della South Road and along Chitty Road to mitigate impact on the 'Future Parks and Recreation Reserve' land, protect the Chitty Road linear open space corridor and limit the prospect for commercial / industrial traffic movement through urban residential area;
- Accommodate and review a concept design layout for a High School and confirm the location and requirement for the Primary School site with the Department of Education;
- Review the design, interface and functionality of the linear open space within Lot 1474 having regard to its heritage, drainage, vegetation retention and open space integration functions;
- Consider the land use within, and interface to, the gas pipeline and high voltage powerline corridors at the western edge of Lot 1474;
- Demonstrate compatibility with the P3 area of the Gnangara Underground Public Drinking Water Supply Areas ('PDWSA') (within Lot 1474);
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

Refer **Figure 37 – LSP Area 3.**



37. LSP AREA 3

4.10.6 LOCAL STRUCTURE PLAN AREA 4 – HALDEN ROAD (SOUTH-EAST)

Precinct Description

Local Structure Plan Area 4 – 'Halden Road (South-East)' incorporates approximately 160 hectares across ten (10) lots including a portion of Lot 5892 Halden Road located predominantly south of the LSP 4 area.

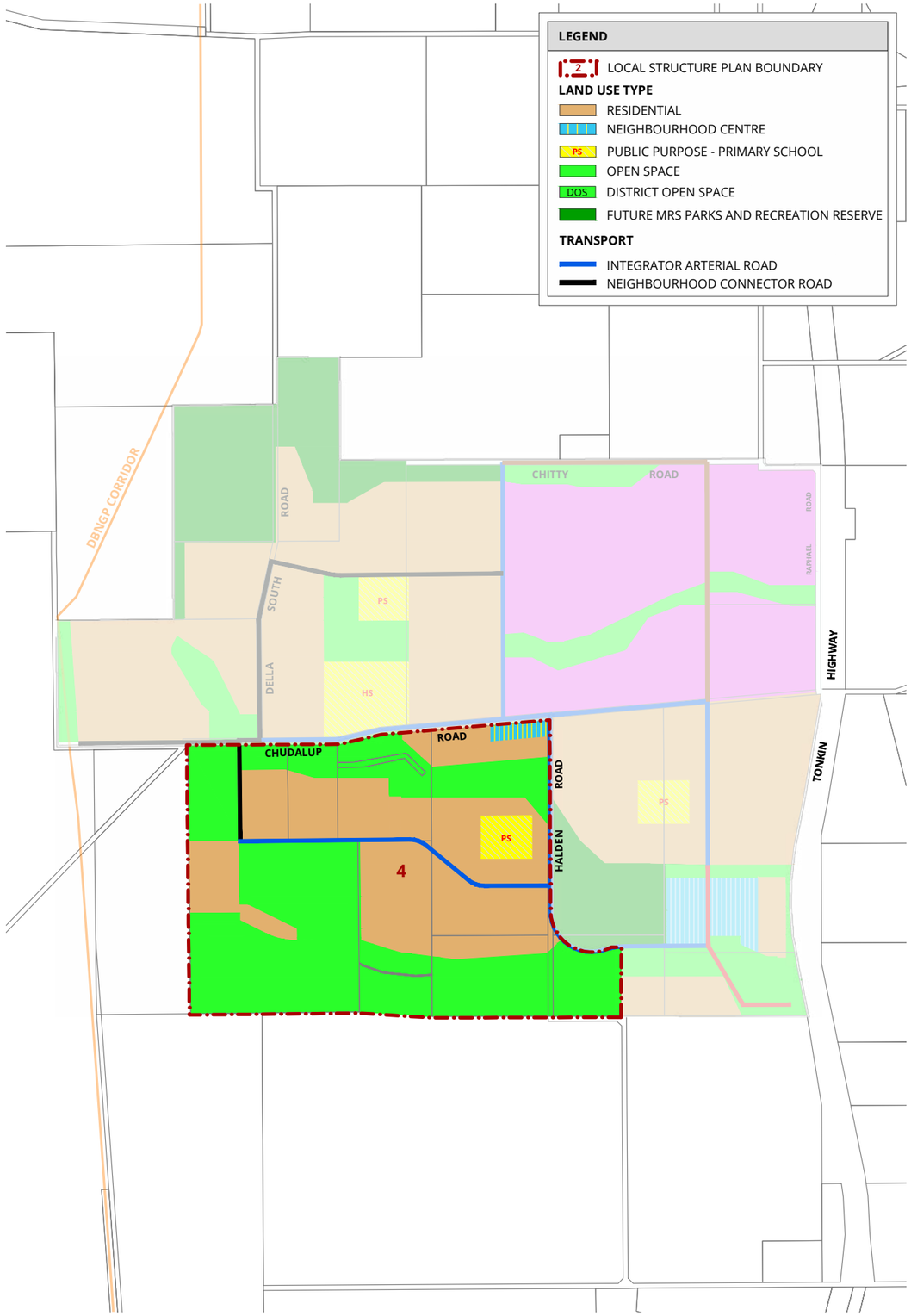
Character Statement

The Halden Road South-East LSP is characterised by the site's natural environmental features, comprising a meandering riparian corridor to the south of Chudalup Road, retained areas of open space containing Banksia Woodland and the Resource Enhancement Wetland along the LSP area's southern boundary. The LSP area is designed to maximise exposure to the public open space network, creating a series of vistas, with a central look out located at the site's natural high point providing a strong vista down to the Primary School located to the west of Halden Road.

Local Structure Plan Requirements

- Review the role, demand and land use mix to facilitate detailed planning of the Neighbourhood Centre of approximately 3,300m2 nett lettable area across LSP Areas 2 and 4;
- Review the design, interface and functionality of the east-west linear open space adjoining Chudalup Road having regard to its drainage, vegetation retention and open space integration functions;
- Undertake a more detailed review of the Resource Enhancement Wetland and surrounding Saw Pit Gully Creek line to determine the need for and extent of wetland and open space retention requirements;
- Review the interface to State Forrest and private land south of the LSP area in regard to land use transition, connectivity to existing access and the need for bushfire safety mitigation;
- Confirm the location and requirement for the Primary School site with Department of Education;
- Review the basic raw materials operations at Lot 2382 within and Lot 5892 to the south of the LSP 4 area in regard to operation staging and life expectancy, access and land use separation requirements in the context of urban development staging;
- Demonstrate compatibility with the P3 area of the Gnangara Underground Public Drinking Water Supply Areas (PDWSA) (within Lot 1572);
- Confirm the need for local development and community infrastructure coordination that would require funding through a Development Contribution Plan.
- Determine whether any specific fauna management (including kangaroo management) measures are required and if so, establish a framework and timing to prepare and implement a Fauna Management Plan.
- A Flora and Fauna Survey is to be prepared and submitted outlining appropriate management strategies, where required.

Refer **Figure 38 – LSP Area 4.**



38. LSP AREA 4

PART THREE
TECHNICAL APPENDICES

APPENDIX 1:
INDUSTRIAL LAND ASSESSMENT

APPENDIX 2:
BUSHFIRE MANAGEMENT PLAN

APPENDIX 3:
ENVIRONMENTAL ASSESSMENT REPORT

APPENDIX 4:
RESIDENTIAL NEEDS STUDY

APPENDIX 5:
ACOUSTIC ASSESSMENT

APPENDIX 6:
NORTH ELLENBROOK WEST – DISTRICT STRUCTURE PLAN: 3D VISIONING

APPENDIX 7:
TRANSPORT IMPACT ASSESSMENT

APPENDIX 8:
DISTRICT WATER MANAGEMENT STRATEGY

APPENDIX 9:
ACTIVITY CENTRES AND EMPLOYMENT STRATEGY

APPENDIX 10:
SERVICING REPORT

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