



# Bullsbrook Freight and Industrial Land Use Strategy

Department of Planning, Lands and Heritage

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Bullsbrook Freight Industrial Land Use Strategy | i

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# Executive summary

Located in the northeast fringe of the metropolitan area approximately 35 km from the Perth CBD, Bullsbrook consists of mainly rural and rural residential land. Significant growth is expected within the Bullsbrook Townsite within the next 15 to 20 years, with the population expected to more than triple from approximately 6,048 to 20,506 people. Additionally, a significant portion of land, north of Ellenbrook, has been identified for urban expansion over the next 30 years.

As the population continues to grow in the Perth and Peel regions, there will be corresponding demand for employment opportunities both within and across sub-regions. Highly efficient freight services will also be required to maintain the supply chains necessary to service this population. There is a need to identify existing and future freight corridors and strategic sites to avoid land use and transport conflicts and to manage the interface between communities, freight corridors and industrial development.

The North East Sub-Regional Planning Framework (NESRPF), identifies significant industrial expansion and investigation areas within the Bullsbrook locality and the need for an intermodal terminal (IMT) in the northeast sub-region. This is supported by the Westport Port and Environs Strategy 2020 which recognizes the importance of the establishment of logistics hubs in the outer metropolitan areas, including Bullsbrook, for the effective movement of freight. It is anticipated that approximately 1.2 million shipping containers will need to be distributed via rail and 2.6 million by road by 2068. This will require a network of IMTs able to process trains, trucks and containers efficiently.

Muccha located approximately 20 km north of the Bullsbrook freight and industrial area, is well positioned with strategic location factors very similar to Bullsbrook, including access to Great Northern Highway (GNH), the future Perth-Darwin National Highway (PDNH), freight rail, road linkages to the northwest sub-region as well as a sustainable employment base. Bullsbrook and Muccha industrial areas will ideally form an employment corridor.

The Bullsbrook freight and industrial area is well located to benefit from the anticipated population growth in surrounding urban expansion and investigation areas as identified in the NESRPF. The significant increase in residential population will provide the population driven demand and the workforce to support industrial development activity within the area, which will also provide an employment base for the adjoining northwest sub-region.

The development of the Bullsbrook freight and industrial area presents a number of unique challenges including several environmental/conservation constraints, overall low-lying conditions with high groundwater, high connectivity of surface water and groundwater, limited potable water supplies and insufficient capacity of existing reticulated sewerage services. Additionally, the timing of proposed upgrades to the movement network will need careful consideration to ensure coordinated delivery of access that supports safe and efficient movement for all users.

The Bullsbrook freight and industrial area Land Strategy (the Strategy) is a high-level strategic response to the opportunities, issues and constraints within the Bullsbrook freight and industrial area and provides an implementation framework to guide the preparation of the more detailed planning studies and structure plans that will inform future amendments to the Metropolitan Region Scheme and local planning scheme. In recognition of the identified constraints to industrial development, the Strategy aims to provide guidance to what considerations or further investigations are likely to be required, to achieve such development.

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- Appendix D - Bushfire Hazard Assessment
- Appendix E - Strategic Transport Strategy
- Appendix F - Service Infrastructure Study
- Appendix G - Industrial Demand and Market Analysis

# 1. Introduction

## 1.1 Background

The identification of significant industrial expansion and investigation areas within the Bullsbrook locality (NESRPF) and the demand for employment opportunities deriving from the predicted increase in population will necessitate an efficient freight service. Subsequently the need for a future IMT in the northeast sub-region was identified in the Western Australian Planning Commission's (WAPC) *Directions 2031 and Beyond*. The document acknowledged the need for an IMT in the north metropolitan area to achieve a better balance between intra-metropolitan road and rail freight.

Over the next few years, several studies were undertaken by the State Government to identify appropriate options for an IMT within the northeast sub-region, including a site assessment by Department of Transport (DoT) in June 2012 (prepared by Worley Parsons Consulting). A high-level study prepared by GHD in 2016, identified the preferred location for an IMT within the South Bullsbrook area, to the west of the narrow-gauge freight railway and north of Stock Road.

The study emphasised the preferred location's proximity to existing and proposed transport links including the Millendon-Narngulu narrow gauge freight line, GNH and the PDNH as a strategic opportunity. Under the advice of the Industrial Land Strategy Taskforce, the DoT submitted a report to the WAPC requesting the declaration of a Planning Control Area (PCA) over the preferred site. The WAPC declared a PCA (PCA 150) over the preferred site on 21 July 2015, to protect the site while further detailed investigations were undertaken. This PCA has recently been renewed to the year 2025.

The IMT will be a key facility serving the proposed Bullsbrook industrial area, as well as providing a transport hub for the distribution of commodities from Fremantle and Kwinana, and to concentrate commodities going to those ports.

The presence of an IMT within the Bullsbrook freight and industrial area contributes to the rationalisation of freight transport within the Perth metropolitan region, by using rail to transport goods and commodities to and from the ports at Fremantle and Kwinana. This would assist in managing many of the externalities and issues associated with the movement of containerised freight through Perth, particularly as the Fremantle inner-harbour and its major servicing roads approach their practical capacity limits. Perth's existing container movement routes pass through highly constrained residential areas, conflicting with increasing volumes of commuter and service vehicle traffic. This situation is highly undesirable for both industry and the broader public.

In establishing a new IMT, or inland port, it will be critical that the issues associated with existing freight corridors in Perth (such as close residential populations, poor design characteristics and co-location of freight and commuter traffic) are not repeated.

Ultimately, provision of an IMT at this location will support the government's desire to increase the use of rail rather than road as the preferred freight transport mode.

This is supported by the Westport Port and Environs Strategy Outcomes Report 2020 which identifies the Bullsbrook IMT in a ring of current and future IMTs located on the perimeter of the Perth metropolitan area that will provide critical supply chain linkages to the Fremantle and Kwinana ports.

The NESRPF, identifies significant land for industrial expansion and investigation adjacent to the proposed IMT location and anticipates that demand for industrial land in the northeast sub-region

will reach 2810 ha by 2050. Land supply to meet this demand will be distributed across several existing industrial areas, in addition to the Bullsbrook freight and industrial area. The Bullsbrook freight and industrial area has a long-term horizon to provide employment and industrial land beyond 2050.

In considering potential options for industrial development in this area, which is a relatively undeveloped “greenfields” location, there is considerable opportunity to strategically plan for new freight and industrial activity, and to identify and “future proof” the transport infrastructure that will be required for the successful operation of an industrial area.

The development of an industrial area at Bullsbrook is likely to serve as a major employment centre for Perth’s rapidly growing north-east sub-region and will likely attract workers from the north-west sub-region. It will also serve as a logistical hub for consumer products bound for Perth’s northern coastal sub-region. Consequently, excellent transport links will be required, not only within the area but also between Bullsbrook and a wide range of origins and destinations.

The Bullsbrook freight and industrial area is well located to benefit from the anticipated population growth in surrounding urban expansion and investigation areas as identified in the NESRPF. The significant increase in residential population will provide population driven industrial demand and the workforce to support industrial development activity within the area.

The introduction of residential populations within proximity to the Bullsbrook freight and industrial area does, however, introduce potential land use conflicts. This includes impacts associated with off-site emissions arising from industrial development (including noise, light, odour, visual amenity and dust) as well as the impact of increased residential and commuter activity on the future road network.

## 1.2 Role and purpose

This Strategy provides a vision for future development of the Bullsbrook freight and industrial area, including infrastructure and transport requirements to support the proposed intermodal terminal and to provide for long-term employment opportunities. Due to the high-level nature of the document, the Strategy is not intended to address detailed planning and design matters, rather it is intended to provide strategic context for appropriately addressing these matters as part of further planning and design. The key purposes of the Strategy are to:

- assess existing and likely demand for industrial land and the opportunities and constraints of industrial land use within the strategy area
- consider potential land use conflicts and the interface between communities, freight corridors and industrial development
- ensure successful integration of the proposed intermodal terminal site and surrounding industrial and employment lands with transport infrastructure, to support a safe and efficient strategic freight transport network
- identify broad land use precincts to guide further detailed structure planning for the area
- identify planning objectives and provide appropriate strategies and actions to resolve the key issues that influence these objectives
- provide a strategic framework for use by State, local government and other stakeholders to inform the next stages of the planning process and to guide future amendments to the Metropolitan Region Scheme and local planning scheme

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Bullsbrook Freight Industrial Land Use Strategy 2

## 1.3 Consultation

Prior to GHD being engaged to undertake the Bullsbrook Freight and Industrial Land Use Planning Strategy, limited consultation for the project had occurred. Consultation undertaken was mainly around the establishment of the Stakeholder Reference Group and the provision of project information to identified organisations that were asked to nominate representatives.

Agencies represented on the Stakeholder Reference Group included:

- Department of Planning Lands and Heritage
- Department of Transport
- City of Swan
- LandCorp
- Department of Defence
- Arc Infrastructure
- Water Corporation
- Western Power
- Main Roads Western Australia
- Department of Biodiversity, Conservation and Attractions
- Public Transport Authority
- Department of Water and Environmental Regulation and
- Freight Logistics Council

GHD developed a Stakeholder Engagement Strategy (SES) for the Bullsbrook Freight and Industrial Land Use Planning Strategy. SES focused on ensuring relevant stakeholders were informed about the project and were given the opportunity to provide feedback, ask questions and identify areas of concern.

Stakeholders were informed, consulted and engaged throughout the project in a variety of ways that included:

- four briefings and workshops with the Stakeholder Reference Group
- consultation with community groups and community members
- consultation with council staff, State Government agencies and servicing authorities
- provision of information about the project to stakeholders on the Department of Planning, Lands and Heritage website

Table 1 below, summarises the stakeholder groups that were engaged with as part of the project and the themes of discussion.

Further detail including date and type of engagement undertaken with stakeholders is provided in Appendix A.

**Table 1 - Stakeholder groups and Themes of Discussion**

Stakeholder group	Themes of Discussion
Department of Planning, Lands and Heritage	Opportunities and Constraints Planning considerations/issues Movement and access considerations/issues Review Stakeholder Reference Group Comments District Structure Plan Water Management
City of Swan	District Structure Plan Urban/industrial interface Proposed concept, land uses and yields within City of Swan Review Stakeholder Reference Group Comments Surrounding Development
MRWA	Connectivity Movement and interfacing road projects
Stakeholder Reference Group	Project risks District Structure Plan Emerging Issues Concept Plan
RAAF Base Pearce	Base operational requirements Future Base Planning District Structure Plan Defence Aviation Areas Regulations Aircraft Noise Public Safety Extraneous Lighting Bird and Flying Fox Strike
Department of Water and Environment Regulation	DWER requirements for DWMS Groundwater Monitoring Water Management Issues MRS Amendments Local Structure Plan, Local Scheme Amendments and Subdivision Environmental Investigations
Sirona (now Harvis)	Future Planning
Donald Veal Consultants	District Structure Plan Industrial land yields
Lendlease	District Structure Plan Urban Investigation Area - South of the District Structure Plan area.
WAPC	District Structure Plan
Water Corporation	District Structure Plan Urban Investigation Area - South of the District Structure Plan area.
Parcel Property	Proposed transport network Planning for proposed future developments

Stakeholder group	Themes of Discussion
Rowe Group	District Structure Plan Urban Investigation Area - South of the District Structure Plan area.

## 1.4 Background Studies

The preparation of this Strategy has been informed by the following supporting desktop studies:

- Environmental Study
- Regional Water Management Strategy
- Bushfire Hazard Level Assessment
- Transport Strategy
- Service Infrastructure Study
- Industrial Demand and Market Analysis

## 1.5 Scope and limitations

This report has been prepared by GHD for Department of Planning, Lands and Heritage and may only be used and relied on by Department of Planning, Lands and Heritage for the purpose agreed between GHD and the Department of Planning, Lands and Heritage as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Department of Planning, Lands and Heritage arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by Department of Planning, Lands and Heritage and others (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

## 2. Strategy area

### 2.1 Locational context

The Strategy area comprises approximately 3,509 hectares of land situated 35 km from the Perth CBD and 22 km north of the Midland Strategic Regional Centre (refer Figure 2). The Strategy area is bounded by the Royal Australian Air Force Base Pearce (RAAF Base Pearce) and GNH to the east, the southern boundary of the Shire of Chittering to the north, the PDNH to the west and Warbrook Road to the south. The Perth-Geraldton regional freight railway line bisects the Strategy area.

This Strategy applies to that land contained within the inner edge of the broken line denoting the Strategy boundary as shown on Figure 3.

### 2.2 Precincts

The Strategy identifies six precincts which have been determined based on a range of pertinent matters which become apparent in the latter sections of this Strategy. The precincts and their intended development objectives and form are further discussed in detail under Section 10 of this Strategy. However, a brief overview of each precinct is provided below and illustrated in Figure 1 below:

#### 2.2.1 Precinct A

Precinct A is approximately 508 hectares in area and is bounded by Stock Road to the south, GNH to the east, RAAF Base Pearce to the north and the rail line to the west.

#### 2.2.2 Precinct B

Precinct B has an area of approximately 590 hectares and abuts Stock Road to the north, GNH to the east, the Strategy area boundary to the south and Precinct C 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.

#### 2.2.3 Precinct C

Precinct C is approximately 442 hectares and bounded by Cooper Road to the north, Precinct B to the east, Warbrook Road extension to the south and Gngangara-Moore River State Forest to the west.

#### 2.2.4 Precinct D

Precinct D is approximately 560 hectares and is bounded by Precinct E to the north, the railway line to the east, Stock Road to the south and PDNH to the west.

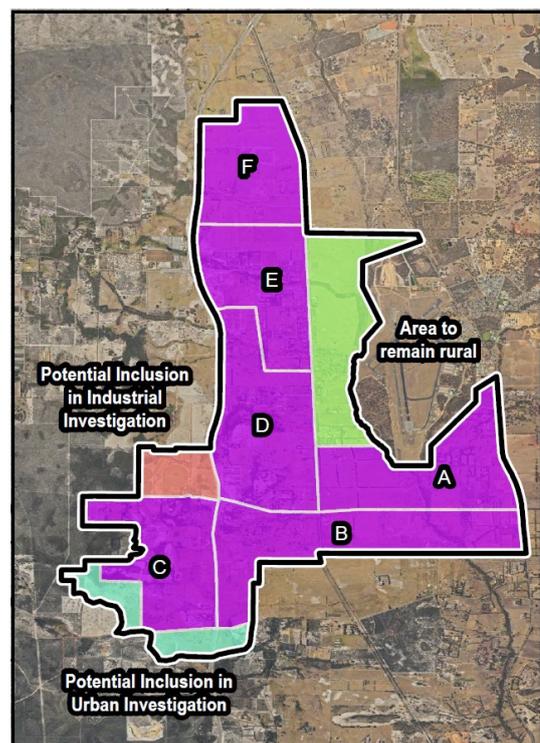


Figure 1 - Strategy area Precincts

## 2.2.5 Precinct E

Precinct E is approximately 422 hectares and is bordered by Precinct F to the north, the rail line to the east, Precinct D to the south and PDNH to the west. This precinct presents opportunities due to the east-west road connectivity which will be further discussed within this Strategy. It also presents opportunities to support the development of Muchea.

## 2.2.6 Precinct F

Precinct F is approximately 401 hectares and is bounded by PDNH to the north and west, the railway line to the east and Precinct E to the south.

## 2.3 Land ownership

The Strategy area comprises a mix of private landholdings and Commonwealth land, totaling 651 lots. Table 2 below describes the breakdown of lots, based on a desktop review of cadastral information.

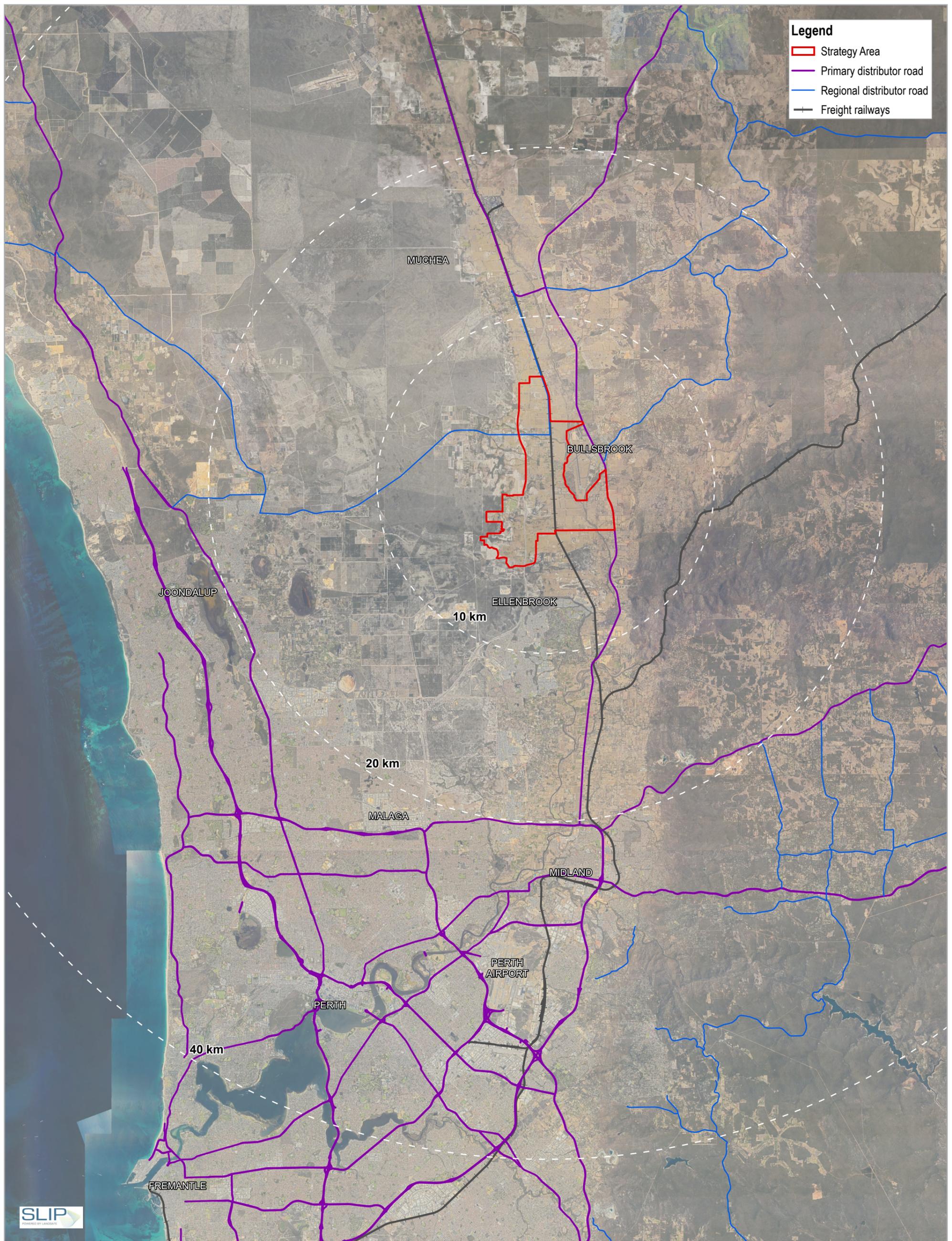
**Table 2 - Lot analysis**

	Small (0-1 ha)	Medium (1-5 ha)	Large (5-20 ha)	X-large (>20 ha)	Total
Crown Allotment	10	3	7	28	48
Freehold	288	50	124	52	514
Reserve	6	1	0	0	7
Road	45	25	7	0	77
Other	1	0	2	2	5
Total	350	79	140	82	651

The land within the Strategy area is fragmented with private landowners accounting for 78 percent of the landholdings. The majority of the private landholdings are held in lots of one hectare or less (refer Figure 4).

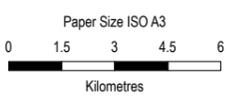
## 2.4 Land use

The Strategy area consists predominantly of rural land uses, with some industrial and public purpose land uses. The following describes generally the land use activities within and surrounding the Strategy area.



**Legend**

- Strategy Area
- Primary distributor road
- Regional distributor road
- Freight railways



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



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**BULLSBROOK MASTER PLAN  
 KEY SUMMARY FINDINGS REPORT**

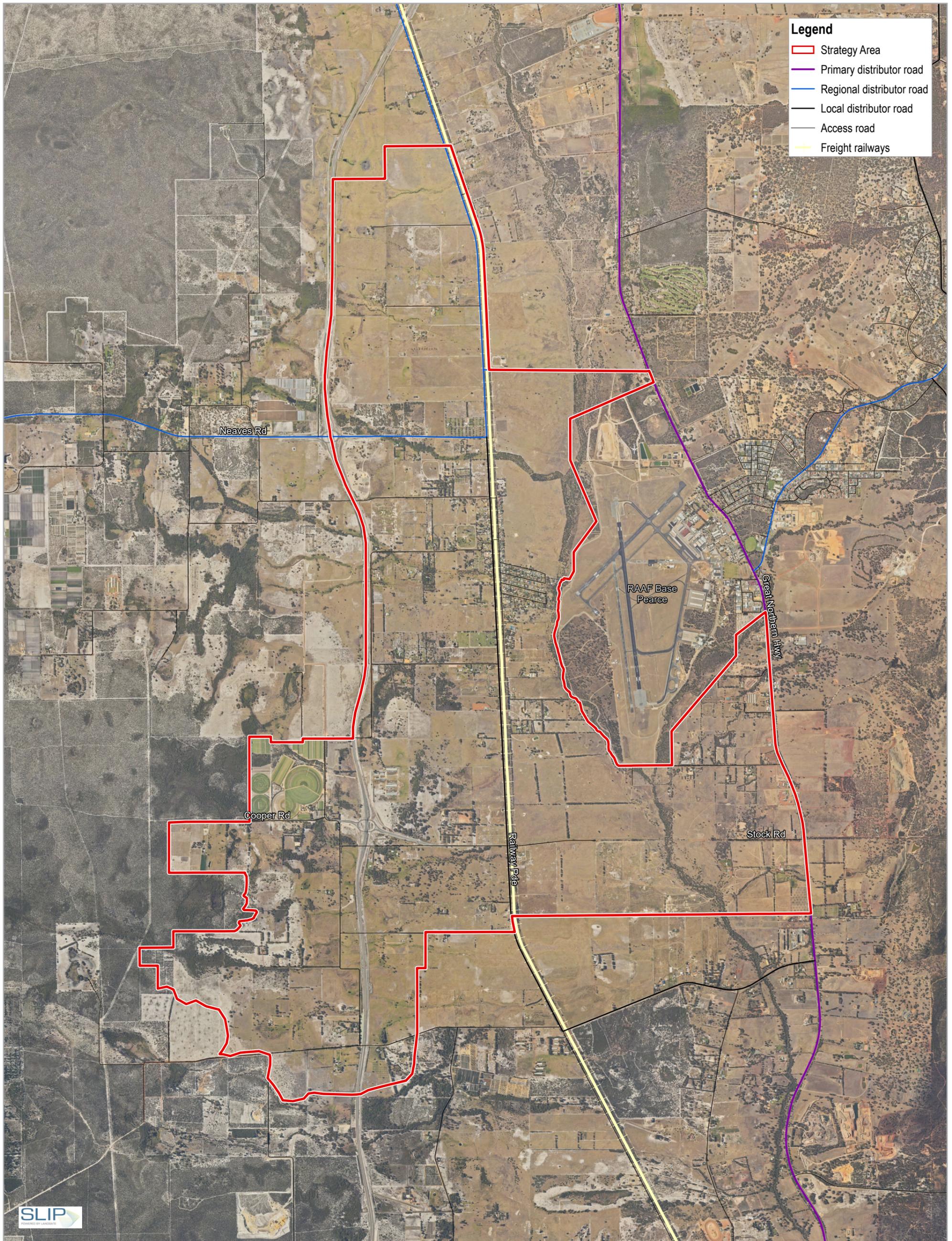
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**Study Area in Context**

**FIGURE 2**

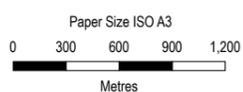
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Data source: Landgate: Railways - 20150305, locality boundaries - 20180319 WA Now Aerial Imagery - accessed 20180702; MRWA: Road hierarchy - 20170906; GHD: Master plan boundary - inset 100m from supplied masterplan boundary (DPLH - 201805), Buffer lines - 20180702; Geoscience Australia: National Geodata Topo 250k Series 3 - 2006; Landgate\_Subscription\_Imagery\_WANow; . Created by: htaniza

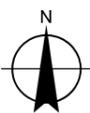


**Legend**

- ▭ Strategy Area
- ▬ Primary distributor road
- ▬ Regional distributor road
- ▬ Local distributor road
- ▬ Access road
- ▬ Freight railways



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50

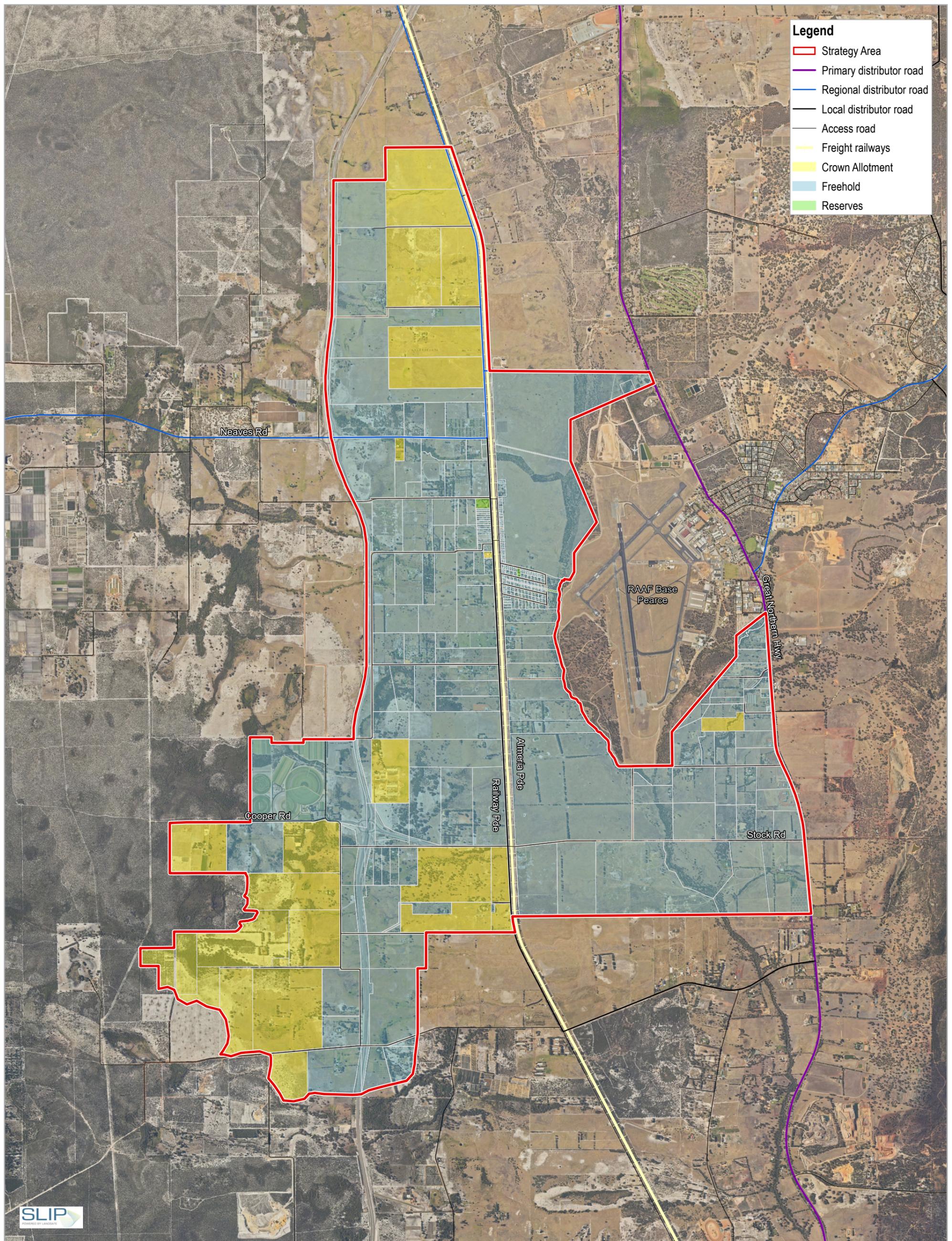


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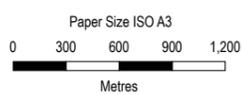
**Bullsbrook Master Plan Location**

**FIGURE 3**



**Legend**

- Strategy Area
- Primary distributor road
- Regional distributor road
- Local distributor road
- Access road
- Freight railways
- Crown Allotment
- Freehold
- Reserves



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



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**BULLSBROOK MASTER PLAN**  
**KEY SUMMARY FINDINGS REPORT**

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**Land Ownership in Study Area**

**FIGURE 4**

## 2.4.1 Rural

Rural land use activities currently undertaken within the Strategy area include horse agistment, cleared grazing land, catteries, kennels and rural-residential housing.

There is, however, a pocket of residential development located between the rail line and the RAAF Base Pearce, between Turner Road and Deanhead Street. This residential enclave consists of approximately 160 residential lots. It is not intended that this enclave be developed for industrial purposes. The inclusion of this land within the Strategy seeks to ensure that consideration is given to the interface between these residences and any industrial activity.

There is rural land north-west of Cooper Road and Tonkin Highway intersection comprising 5 lots totaling approximately 117ha. The land is bound by Cooper Road to the south, Tonkin Highway to the east, Commonwealth (Defence) owned land to the north and Bush Forever to the west. The land is potentially well located to take advantage of access to Tonkin Highway via the Stock Road intersection and as such has been identified as being potentially suitable for future inclusion as an industrial investigation area.

## 2.4.2 Industrial

The land that is currently zoned Industrial is cleared and undeveloped. As this land is appropriately zoned and the planning framework already established, it is anticipated that this land will be the first stage of development within the Strategy area. This would provide an early catalyst to attract and promote the development of freight and logistics land uses to this area as well as provide for some local industry to service the Bullsbrook South urban expansion catchment.

## 2.4.3 Urban

The Bullsbrook townsite is located to the east of GNH. The endorsed Bullsbrook Townsite Structure Plan proposes significant future residential development expanding predominantly to the south of the existing townsite. This urban expansion area is currently zoned 'Urban Deferred' and 'Rural' under the Metropolitan Region Scheme (MRS). It is estimated that the urbanisation of this area will more than triple the residential population from 6,048 people to 20,506 people by 2036.

The north-east sub-regional planning framework identifies land for urban investigation (generally referred to as North Ellenbrook) immediately to the south of the Strategy area. This urban investigation area is proposed to develop in the medium to long term and constitutes a significant potential employment base for the Bullsbrook freight and industrial area.

## 2.4.4 Commonwealth Government Purposes

The RAAF Base Pearce abuts the eastern boundary of the Strategy area. RAAF Base Pearce is the main air force base in Western Australia and one of the busiest in the country with high-frequency aircraft movements. RAAF Base Pearce occupies an area of approximately 688 ha and is likely to expand operations in the future as its role increases in importance.

The impact of base operations on development within the Strategy area will include, inter alia, height restrictions, separation distances and land use restrictions surrounding telecommunications and radar sites, matters relating to bird strike, lighting restrictions and restrictions associated with safeguarding of explosive ordnances. Additionally, there are plans to extend the runways at RAAF Base Pearce, which may further affect clearance/height requirements.

# 3. Planning framework

## 3.1 Zoning and reservations

The majority of land within the Strategy area is zoned 'Rural' under the MRS, with a portion of land to the east of Railway Parade and north of Stock Road zoned 'Industrial' (Figure 5). Various areas of land are reserved for Primary Regional Road, Other Regional Road, Public Purpose and Railway purposes

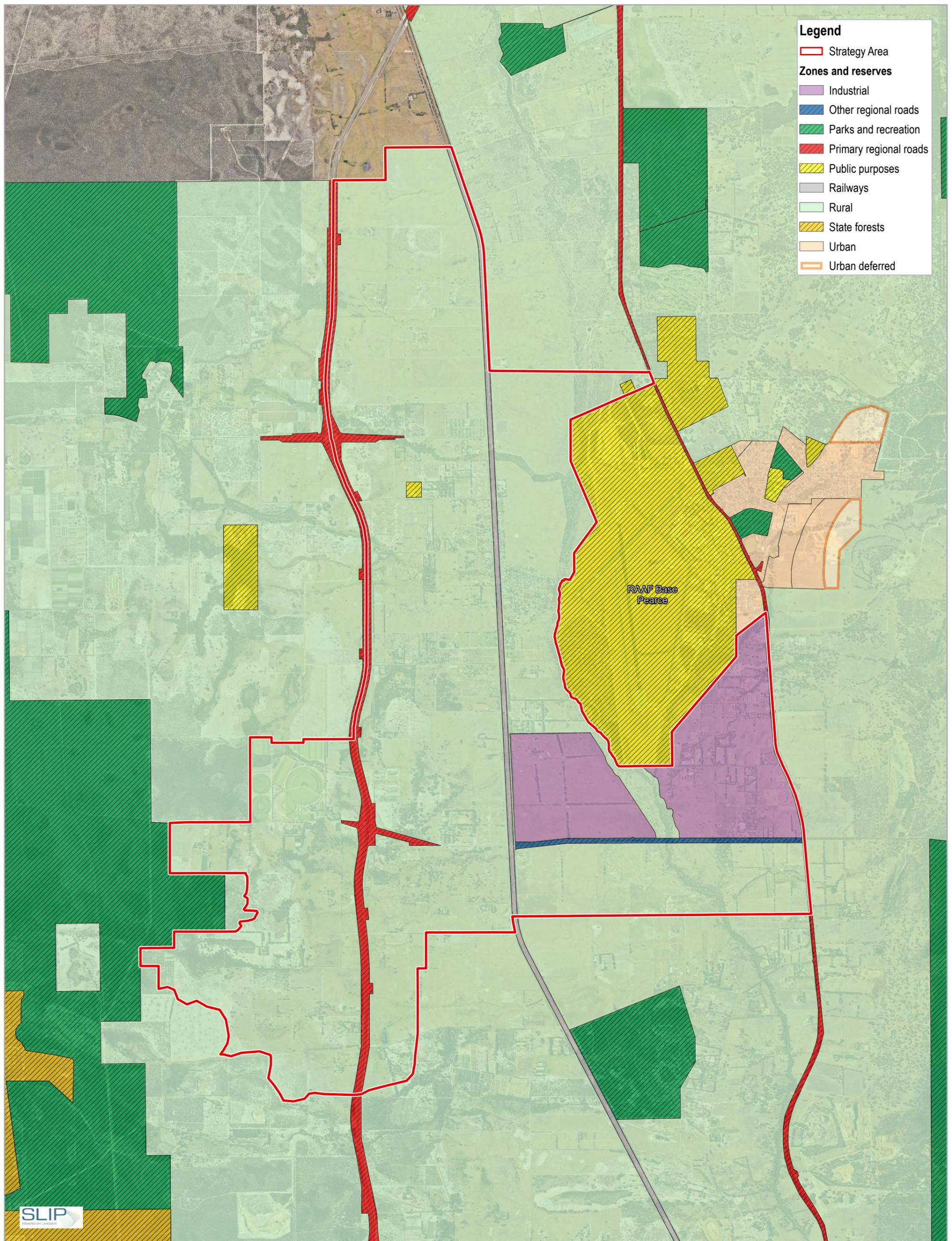
A PCA was declared on 21 July 2015 over the land to the northwest of the Railway Parade/Stock Road intersection for the purpose of identifying the land required for the proposed IMT (Figure 6). This PCA (PCA 150), has recently been renewed and will remain in effect until July 2025.

A further PCA (PCA 154) was declared on 22 July 2020 to protect land required for the upgrading and widening of Stock Road at existing and future intersections between GNH and the PDNH (Figure 7).

MRS Amendment 1219/41 rezoned two sites east of Railway Parade and north of Stock Road from 'Rural' to 'Industry'. These sites were subsequently rezoned 'Special Use' under The City of Swan Local Planning Scheme No. 17 (LPS 17). The remaining land within the Strategy area, that is not reserved in accordance with the MRS, is zoned 'General Rural' under LPS 17 (Figure 8).

The rezoning of any additional land to 'Industrial' under the MRS will require such land to be similarly rezoned under the local planning scheme. LPS17 contains the following industrial zones:

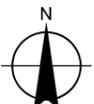
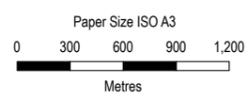
- light industrial (generally small-scale industrial development)
- general industrial (manufacturing, servicing, storage and distribution)
- industrial development (requires structure plan)



**Legend**

- Strategy Area
- Zones and reserves**
- Industrial
- Other regional roads
- Parks and recreation
- Primary regional roads
- Public purposes
- Railways
- Rural
- State forests
- Urban
- Urban deferred

RAAF Base Pearce



Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 50



DEPARTMENT OF PLANNING, LANDS & HERITAGE

**BULLSBROOK MASTER PLAN  
KEY SUMMARY FINDINGS REPORT**

Project No. 61-37134  
Revision No. 0  
Date 1/14/2022

**Metropolitan Region Scheme**

**FIGURE 5**

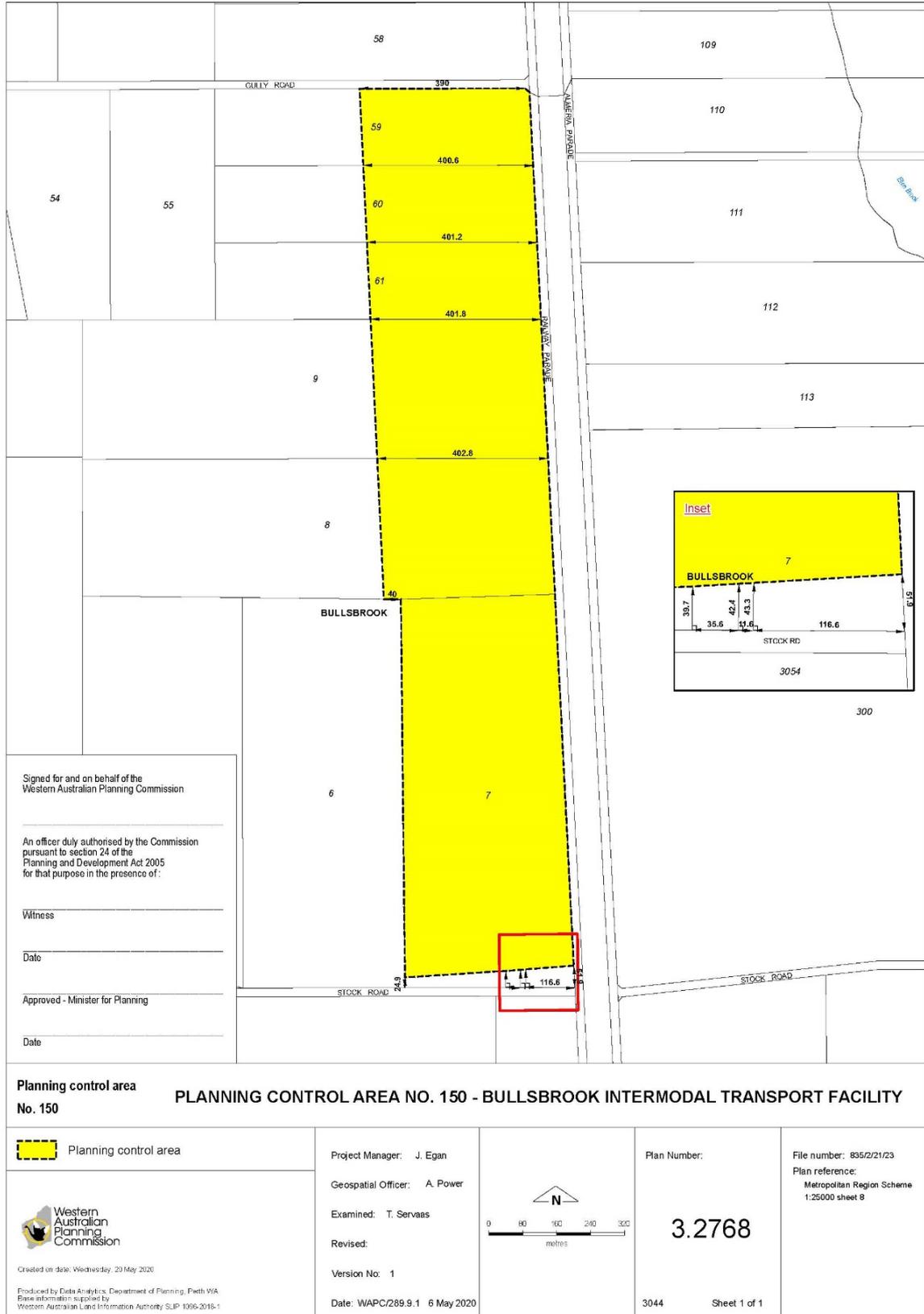
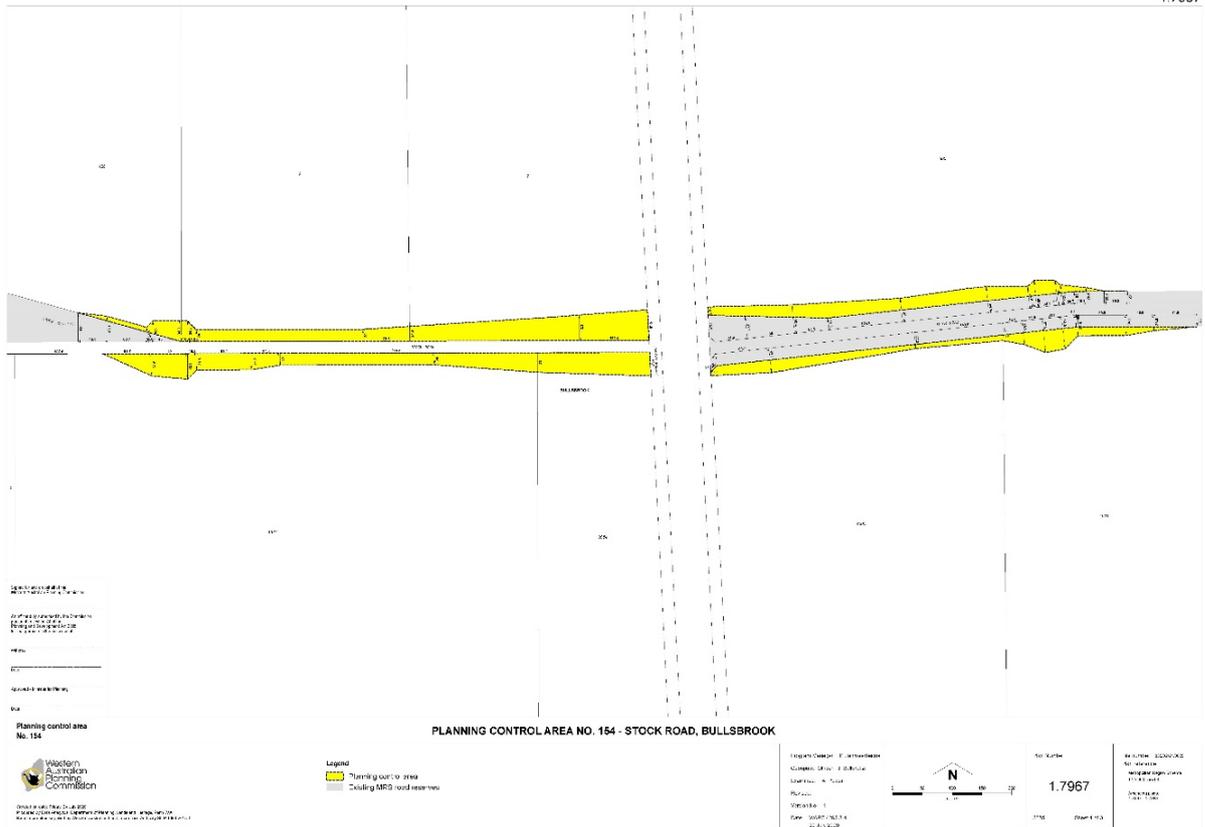
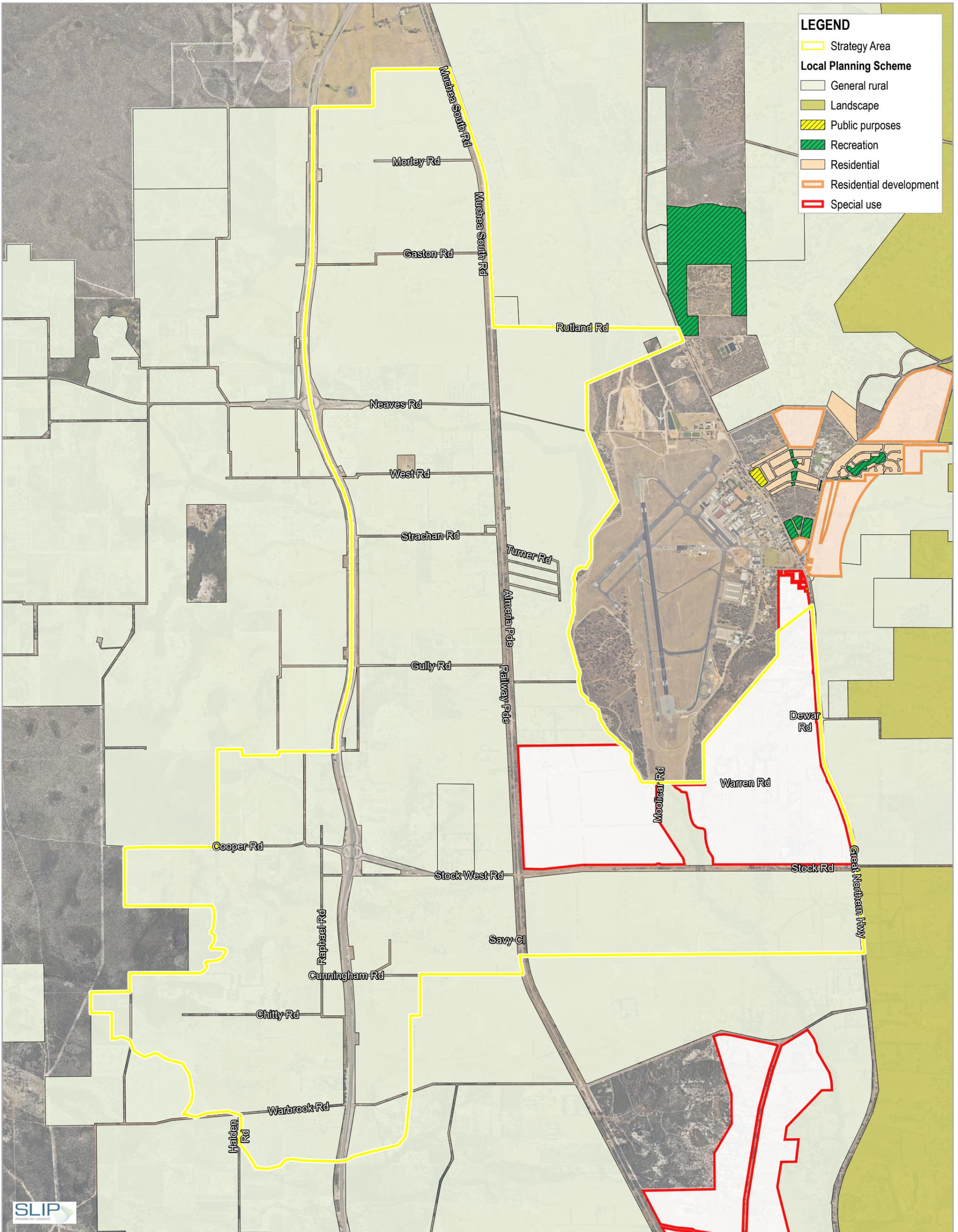


Figure 6 - PCA 150 (Source: DPLH)

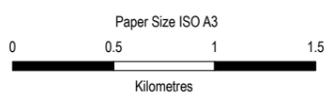






**LEGEND**

- Strategy Area
- Local Planning Scheme**
- General rural
- Landscape
- Public purposes
- Recreation
- Residential
- Residential development
- Special use



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



DEPARTMENT OF PLANNING, LANDS & HERITAGE  
**BULLSBROOK MASTER PLAN**

**Local Planning Scheme**

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**FIGURE 8**

## 3.2 Planning frameworks and strategies

### 3.2.1 State Planning Strategy

The State Planning Strategy 2050 is Western Australia's principal planning document for strategic integrated land use across State, regional and local jurisdictions. The State Planning Strategy recognises the need to plan for the State's economic development to ensure the release of land for infrastructure and industry to meet the needs of enterprise. It promotes structure planning of industrial areas to ensure optimal output with minimal waste and the development of industrial sites that encourage eco-efficiency and co-location of similar enterprises. Intermodal transportation and coordinated efficient freight logistics systems are identified as supporting improved efficiency of the freight distribution network. Aspirations relevant to this Strategy include:

- suitable land is allocated and zoned for enterprises, business and industry, including project ready industrial lands, buffers and infrastructure
- land is zoned or reserved for economic activity including strategic industrial sites and supporting infrastructure and buffers
- WA consistently attracts global investment that enables emerging enterprise to develop and raise productivity
- clusters of industry drive productivity and stimulate new ancillary businesses
- industrial areas are structure planned to produce optimal output with minimal waste
- all strategic industrial areas are developed to an approved structure plan

### 3.2.2 Economic and Employment Land Strategy: non-heavy industrial: Perth Metropolitan and Peel Regions

The Economic and Employment Lands Strategy (EELS) (WAPC 2012) recognises that a key constraint for industrial development in the northern sub-regions is the current lack of east-west connectivity linking the workforce in the northwest sub-region with the employment opportunities in the northeast sub-region.

The EELS further recognised the need for additional IMTs to optimise supply-chain efficiencies as a result of increased containerisation trends, noting the northeast sub-region as having potential to incorporate an inland IMT facility.

Relevantly, the EELS identifies Bullsbrook (South) as the potential location for the development of an IMT, as a key driver to strengthen industrial and employment activity in the region and recommended a heavy industrial site of approximately 471 ha, generally in the south-east portion of the Strategy area be developed to support this in the medium term (4-10 years).

### 3.2.3 Perth and Peel @3.5 Million

Perth and Peel @ 3.5 Million is the State Government's overarching strategic plan for the Perth and Peel regions over the next 30 years. This plan, which includes a suite of documents, provides a spatial vision for the metropolitan area through land use planning and infrastructure frameworks. A key strategic focus of these frameworks is the facilitation of increased employment self-sufficiency through the provision of employment opportunities close to where people live.

The northwest sub-region does not have any major freight, intermodal facilities or transport hubs that would act as a catalyst and support major industrial activities and employment. This combined with significant environmental constraints has resulted in the identification of limited industrial zoned land within the northwest sub-region.

Accordingly, increased accessibility to employment opportunities in the northeast sub-region, is required to support its workforce. A key objective of this Strategy is the provision of more direct linkages between the two northern sub-regions, delivering opportunities for additional employment within proximity of the northwest sub-region. This will in turn afford greater employment self-sufficiency in the northern sub-regions and decrease the commuter pressure on the regional transport network.

Bullsbrook is identified in Perth and Peel @ 3.5 Million as a potential location for the provision of a future intermodal freight terminal and industrial centre. Strategic development of the Bullsbrook freight and industrial area will both complement the existing worker profiles of the northern sub-regions as well as provide greater employment opportunities. The land uses proposed within this Strategy facilitate this through understanding the existing and future workforce profiles of the northern sub-regions, as outlined in the findings of the Industrial Land Demand and Market Analysis (see Appendix G).

### 3.2.4 Northeast Sub-Regional Planning Framework

The Strategy area sits within the northeast sub-region, the development and planning of which is guided by the NESRPF. The NESRPF identifies a significant area of land for industrial expansion and industrial investigation within the Bullsbrook locality (Figure 9).

Overall, the land proposed for industrial expansion and investigation within the Bullsbrook freight and industrial area is 2,542 ha (excluding the land within the Strategy area identified as remaining rural or subject of further urban investigation) which accounts for more than three quarters of proposed industrial land supply in the sub-region. The framework anticipates 31,800 additional jobs will be provided within the Bullsbrook and Ellenbrook areas.

The Muccha Industrial Park is located approximately 20 km north of the Bullsbrook freight and industrial area. The NESRPF identifies the Muccha employment node to the north of the sub-region and notes its development for land uses such as transport, livestock, fabrication, warehousing, wholesaling and general commercial use. The Strategy has considered the broader regional development and supply of industrial land in defining preferred land uses and precincts. In doing so, it is anticipated the Bullsbrook freight and industrial area will complement other industrial areas, including Muccha.

The NESRPF reiterates the proposed IMT at Bullsbrook as a medium to long-term development facilitating strategic employment and optimising transport infrastructure use, noting that it is unlikely to be required prior to 2031.

The NESRPF recognises the potential long-term opportunity to provide additional east-west linkages and enhance the future freight network (Figure 10) and identifies the following regional road functions within and surrounding the Bullsbrook freight and industrial area:

- PDNH, a primary distributor that will improve freight transport and general traffic capacity through the northern part of the sub-region

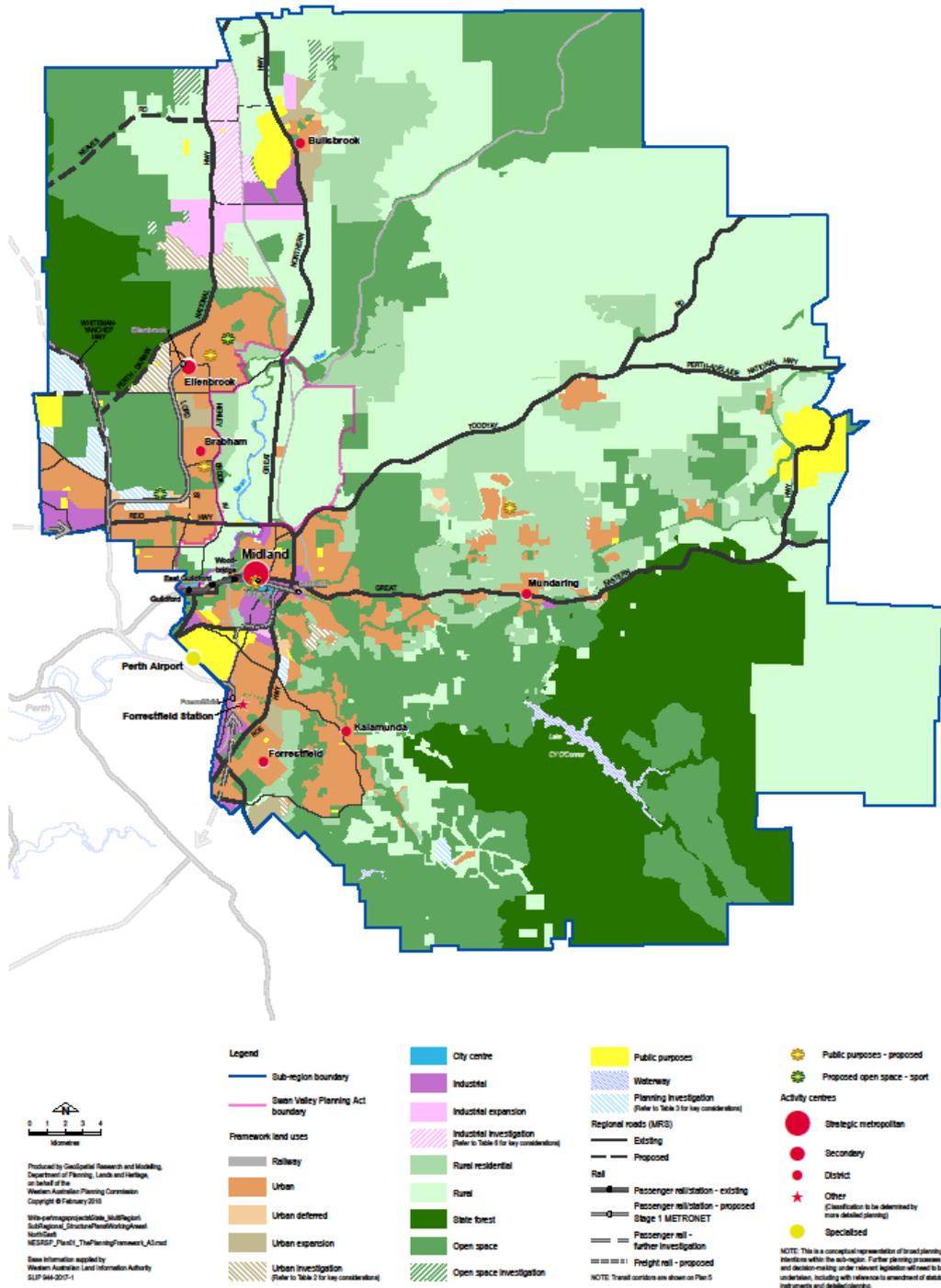
- Neaves Road, upgraded to primary distributor and extended east of the PDNH as an integrator arterial road will be an important east-west link road forming part of the freight network
- Cooper Road, a potential linkage to connect directly to the Stock Road extension to provide a more direct east-west connection. The NESRPF notes that future investigations would need to determine the feasibility due to environmental constraints including the Gngangara Priority 1 Water Protection Area and adjacent bushland

The Strategy reflects the NESRPF in promoting the PDNH and Neaves Road as major arterial roads.

### 3.2.5 Westport Port and Environs Strategy 2020

The Westport Port and Environs Strategy seeks to deliver an integrated plan to meet the freight and logistics needs for Perth and the South West for the next 50 to 100 years. The Westport Port and Environs Strategy identifies the importance of the Restricted Access Vehicle (RAV) network between the future Kwinana port and industrial areas in ensuring efficient containerised road freight supply chains. It is anticipated that the port will be connected to Tonkin Highway by east-west links at Anketell and Rowley Roads, providing a major freight route from Kwinana through to Muchea. Tonkin Highway would then efficiently connect through to a network of existing and proposed intermodal sites ringing the metropolitan area, including the IMT at Bullsbrook (east and west).

The Westport Port and Environs Strategy confirms the location of an IMT at Bullsbrook as part of a broader strategy to develop a ring of IMTs in outer metropolitan areas to support port and supply chains for Perth and surrounding regions.



**PLAN 1: The planning framework**

**Figure 9 – NESRPF (Source DPLH)**

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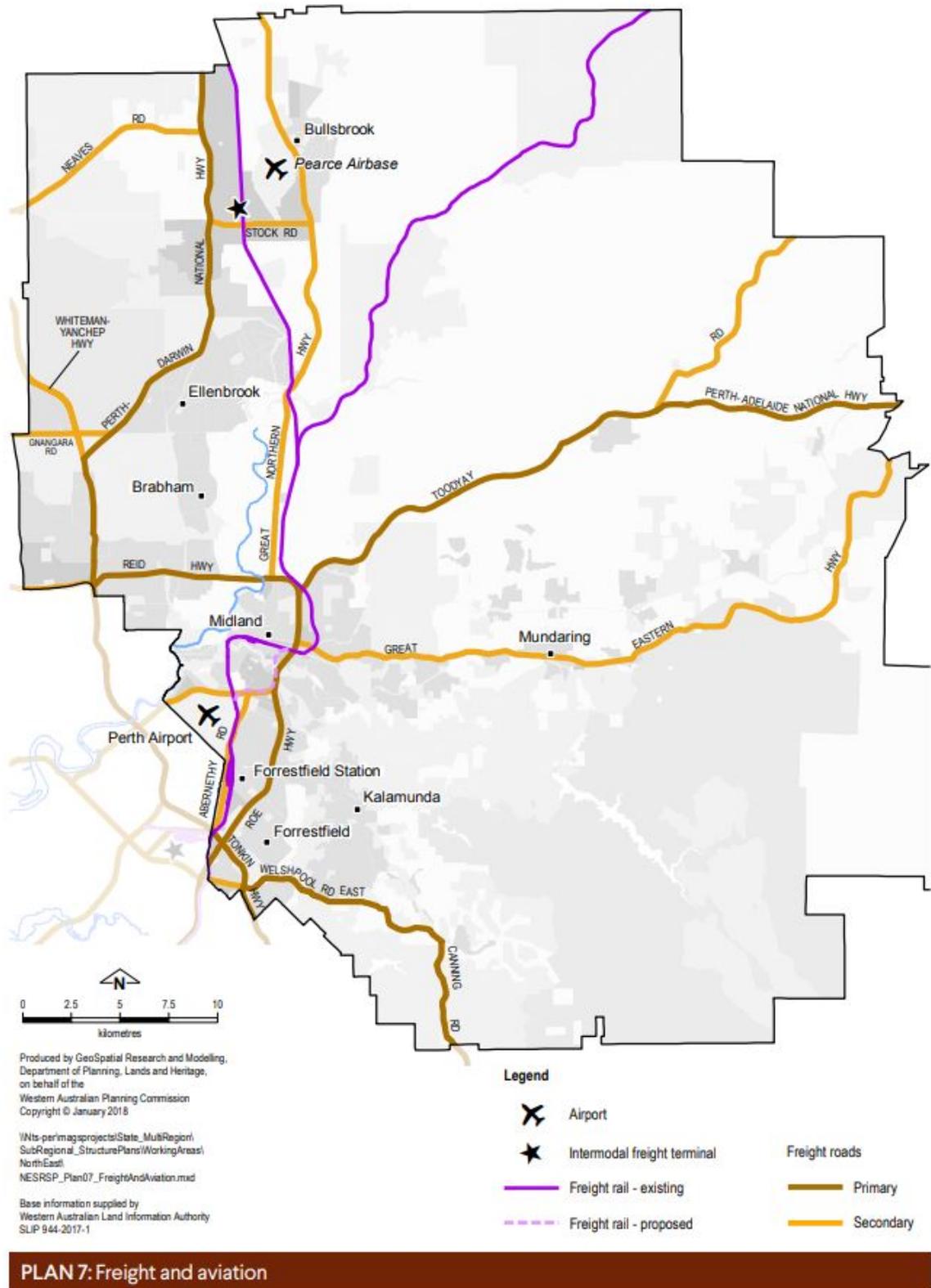


Figure 10 - NESRPF Plan 7: Freight and Aviation Network

### 3.2.6 City of Swan Local Planning Strategy 2020

A key economy and employment objective of the City of Swan Local Planning Strategy is:

“Facilitate the creation of a sustainable economy and provide opportunities for growth in a wide range of employment areas”

The Local Planning Strategy outlines a number of key issues under this objective which include the need to preserve existing industrial land, identifying future industrial land for employment and economic development and, the need for an intermodal terminal hub.

Bullsbrook South is mentioned as one of the strategic industrial areas with the smaller industrial area of Bullsbrook Central identified as existing industrial land needing preservation and future expansion. Furthermore, Bullsbrook South, Bullsbrook North, and Hazelmere South have been identified as potential medium-term non-heavy industrial sites with a zoning timeframe of 4 to 10 years. The Bullsbrook Townsite precinct (north) has been identified for non-heavy industrial use in the long term (more than 10 years). There is no intermodal terminal in the North-West or North-East sub-regions of Perth at present, however, Bullsbrook South is identified as having the potential to accommodate an intermodal terminal.

This Strategy will support the Local Planning Strategy’s objective and evidently aligns with the key issues identified by providing a range of industrial development opportunities to meet the needs of the City and surrounding areas.

### 3.2.7 City of Swan Local Rural Strategy

The City’s Local Rural Strategy complements the local planning strategy by establishing strategies and actions for development of all land not zoned ‘urban’ in the local government area. The strategy identifies the strategy area as an industrial investigation area with the objective to facilitate opportunities for development of additional industrial land. The strategy notes that structure planning will dictate the function and form of industrial development and land use within the structure plan location.

### 3.2.8 City of Swan Local Transport Strategy

The City’s Local Transport Strategy confirms that future road freight is primarily expected to follow the major highways within the City of Swan, with the most noticeable change being the construction of the PDNH. The PDNH will see a sizeable volume of freight vehicle use in preference to GNH, although some freight vehicles are likely to remain on GNH as this is the only major regional north-south freight route that allows for oversize overmass (OSOM) vehicles (i.e. up to 10 metres high and 10 metres wide).

It is further noted that changes to Neaves/Rutland Roads may require duplication works and realignment of the eastern portion (east of Railway Parade) to provide better connectivity with GNH. While the pre-eminence of the PDNH may serve to reduce traffic along this section of Neaves Road in the longer term, the overall function and usage of the eastern portion of Neaves Road will be greatly affected by the decision and timing of any realignment.

The City’s Local Transport Strategy further notes that Stock Road will ultimately form a major link between the PDNH and GNH, in addition to being the primary access to the South Bullsbrook Industrial Estate (Northern Gateway) and the Bullsbrook residential development. This additional

traffic is likely to necessitate an upgrade of the GNH/Stock Road intersection, as well as grade separation of the existing Stock Road rail crossing.

The City' Local Transport Strategy makes the following recommendations in relation to Bullsbrook:

- the timing of Stock Road intersection treatments as a result of regional road upgrades and development, should be investigated
- a rail crossing upgrade study for the Stock Road rail crossing should be undertaken
- an evaluation of Neaves Road including grade separation at PDNH should be undertaken

## **3.3 State Planning Policies**

### **3.3.1 SPP 1.0 – State Planning Framework**

SPP 1.0 provides a central State Planning Framework and sets the context for decision-making on land use and development in Western Australia. The policy reiterates the primary aim of planning as described in the State Planning Strategy, which is to provide for the sustainable use and development of land. Specific to the Strategy, a key principle of the framework is to facilitate trade, investment, innovation, employment and community betterment.

### **3.3.2 SPP 2.0 – Environment and Natural Resources**

SPP 2.0 is the overarching policy relating to the natural environment in broader land use planning and decision-making. The policy set outs principles to support sustainability in planning through integrating ecological, environmental and social considerations.

Future planning will need to consider and integrate environment and natural resource management in the development and implementation of detailed land use plans.

### **3.3.3 SPP 2.8 – Bushland Policy for the Perth Metropolitan Area**

SPP2.8 applies to Bush Forever areas within the Perth Metropolitan Region. The policy aims to ensure the protection and management of regionally significant bushland is addressed and integrated with broader land use planning decision-making.

Seven Bush Forever sites intersect the study area (Bush Forever sites 6, 100, 97, 294, 296, 298 and 399). Impacts of industrial development on the reserves will need to be managed through the structure planning process and subsequent detailed planning.

### **3.3.4 SPP 2.9 – Water Resources**

SPP2.9 recognises the importance of water resources in maintaining the wellbeing of the environment, community, and existing and future development. The policy provides additional guidance for the consideration of water resources in land use planning. SPP2.9 objectives seek to protect, conserve and enhance significant water resources, assist in ensuring availability of suitable water resources and promote their sustainable use.

### 3.3.5 SPP 3.4 – Natural Hazards and Disasters

SPP3.4 objectives are to include planning for natural disasters (including flooding and bushfire) as a fundamental element in preparation of all planning documents to minimise adverse impacts of natural disasters.

Planning for the area should have regard to the potential natural hazards in the area including flooding and bushfire.

### 3.3.6 SPP 3.5 – Historic Heritage Conservation

SPP3.5 sets out the process by which areas of historic heritage significance are identified, conserved and protected through planning decision making.

### 3.3.7 SPP 3.7 – Planning in Bushfire Prone Areas

SPP3.7 guides implementation of effective risk-based land use planning and development to reduce the impact of bushfire on property and infrastructure. The policy applies to strategic planning documents located in designated bushfire prone areas.

### 3.3.8 Draft SPP 4.1 –Industrial Interface

The purpose of Draft SPP4.1 is to protect industry and infrastructure facilities from the encroachment of incompatible land uses and ensure that planning decisions consider the locational constraints of these land uses, the significant investments they represent and their current and future benefits and costs to the community when considering the most appropriate land uses for the surrounding land. Draft SPP4.1 also seeks to prevent land use conflict between industry/infrastructure facilities and sensitive land uses.

### 3.3.9 SPP 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Transport

SPP5.4 provides measures to minimise adverse impacts of transport noise while balancing the effect on noise-sensitive development and cost of transport infrastructure. The objectives of the policy seek to facilitate development and operation of an efficient freight network and the strategic co-location of freight handling facilities.

## 3.4 Structure plans

### 3.4.1 Bullsbrook Townsite District Structure Plan

The Bullsbrook Townsite District Structure Plan (Bullsbrook Townsite DSP), approved by the WAPC in April 2018, sets out the strategy for future development of the Bullsbrook townsite to meet State Government objectives to provide for anticipated population growth. The Bullsbrook Townsite DSP encompasses land directly to the east of the Strategy area and comprises a variety of land uses including the land zoned 'Industrial Development' in the south-east of the Bullsbrook freight and industrial area (Figure 11). The Bullsbrook Townsite DSP estimates the area to generate at least 11,000 jobs at full build out, focusing on transport related industries complementary to the IMT. The plan provides strategic guidance for future land use planning and growth of the townsite aimed at:

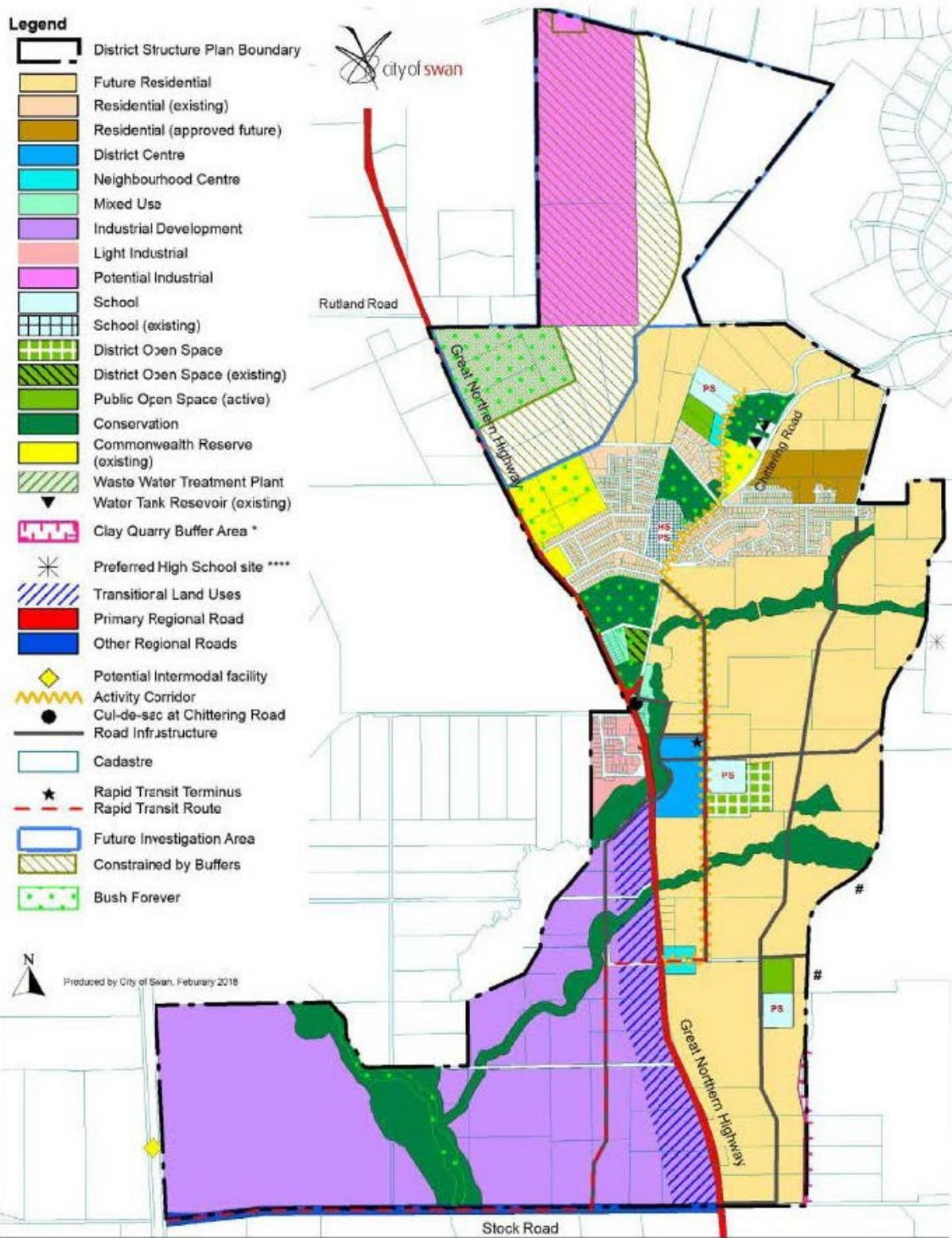
- allowing for a diversity of land uses, which generates local employment opportunities to contribute to self-sufficiency
- facilitating essential industrial growth within the existing 'Industrial Development' and 'Light Industrial' zones with an appropriate land use and built form interface along the GNH
- providing appropriate land use interfaces between residential and non-residential development by the inclusion of an area of 'Transitional Land Uses' along the western boundary of GNH

### 3.4.2 South Bullsbrook Industrial Precinct Local Structure Plan No. 1

The South Bullsbrook Industrial Precinct Local Structure Plan No. 1 encompasses 130 hectares of land and is bounded by the RAAF Base Pearce to the north, GNH to the east, Stock Road to the south and the Ellen Brook to the west. The structure plan provides for a wide range of industrial uses and includes a Highway Service zone adjacent to the intersection of Stock Road and GNH to provide for commercial opportunities that are able to capitalise on the increased exposure (Figure 12).

### 3.4.3 South Bullsbrook Local Structure Plan No. 2

The South Bullsbrook Local Structure Plan No. 2 encompasses 176.5 hectares and is bounded by the rail line to the west, the existing rural land to the north, Stock Road to the south, RAAF Base Pearce and Ellen Brook to the east. It is envisaged that the South Bullsbrook Local Structure Plan 2 will primarily service the resource sector. However there are also opportunities to integrate large freight and logistics operations with the future IMT which is to be located immediately west of the precinct (Figure 13).



**Figure 11 - Bullsbrook Townsite District Structure Plan**

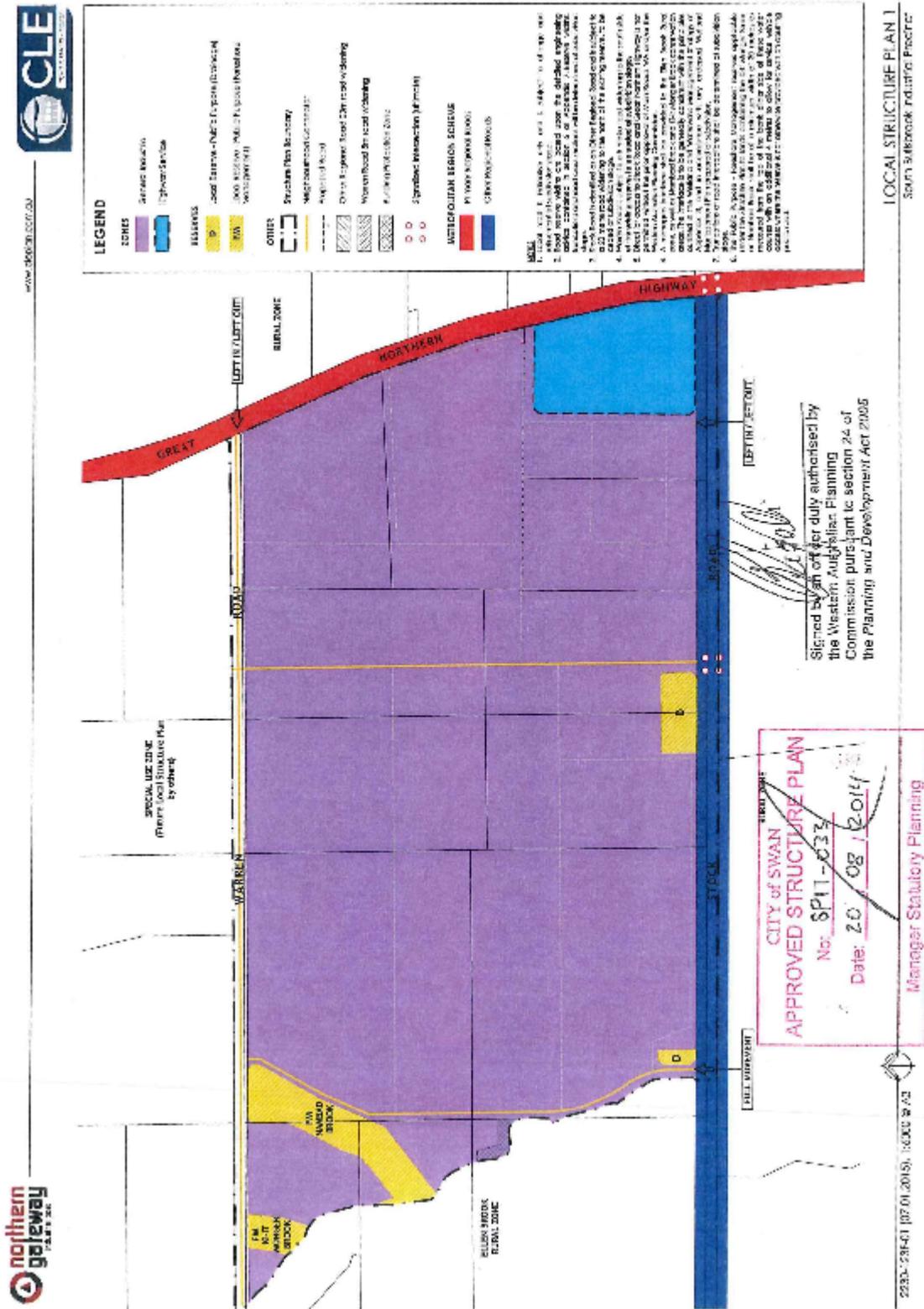


Figure 12 - South Bullsbrook Industrial Precinct LSP 1 Map

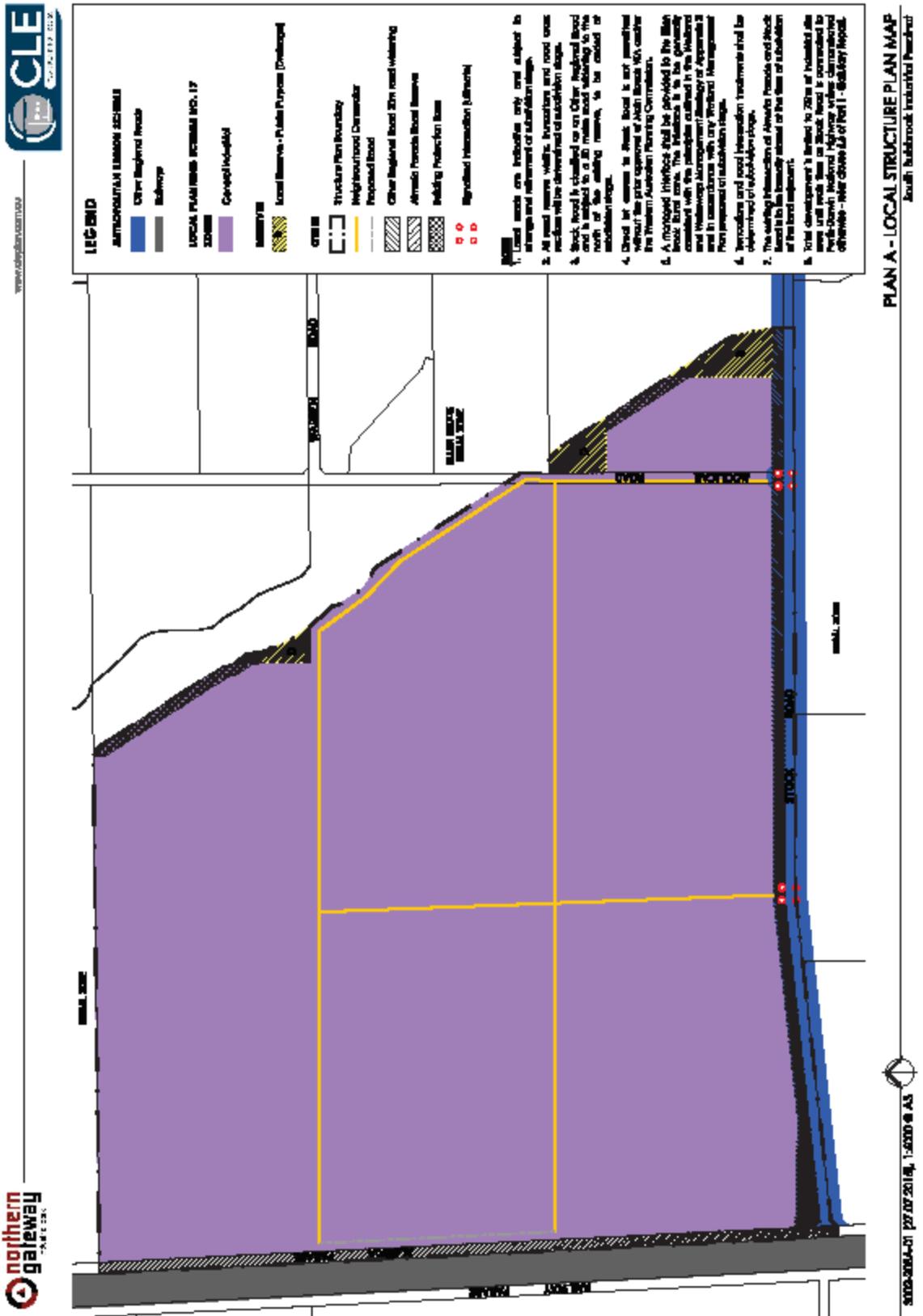


Figure 13 - South Bullsbrook Industrial Precinct Plan LSP 2 Map

## 4. Site conditions and constraints

### 4.1 Biodiversity and conservation

A desktop Environmental Study was prepared to support the Strategy and is contained in Appendix B – Environmental Study. The outcomes of this assessment are summarised below.

#### 4.1.1 Vegetation

The Strategy area is situated within the Swan Coastal Plain which is a low-lying coastal plain covered with woodland. The following four main vegetation complexes are identified within the site:

- Yangah Complex (generally *Melaleuca* sp)
- Beermullah Complex (*Casuarina*, *Marri* and *Eucalyptus Wandoo* sp)
- Bassendean Complex (*Banksia*, *Eucalyptus* and *Melaleuca* sp)
- Guildford Complex (*Eucalyptus* and *Melaleuca* sp)

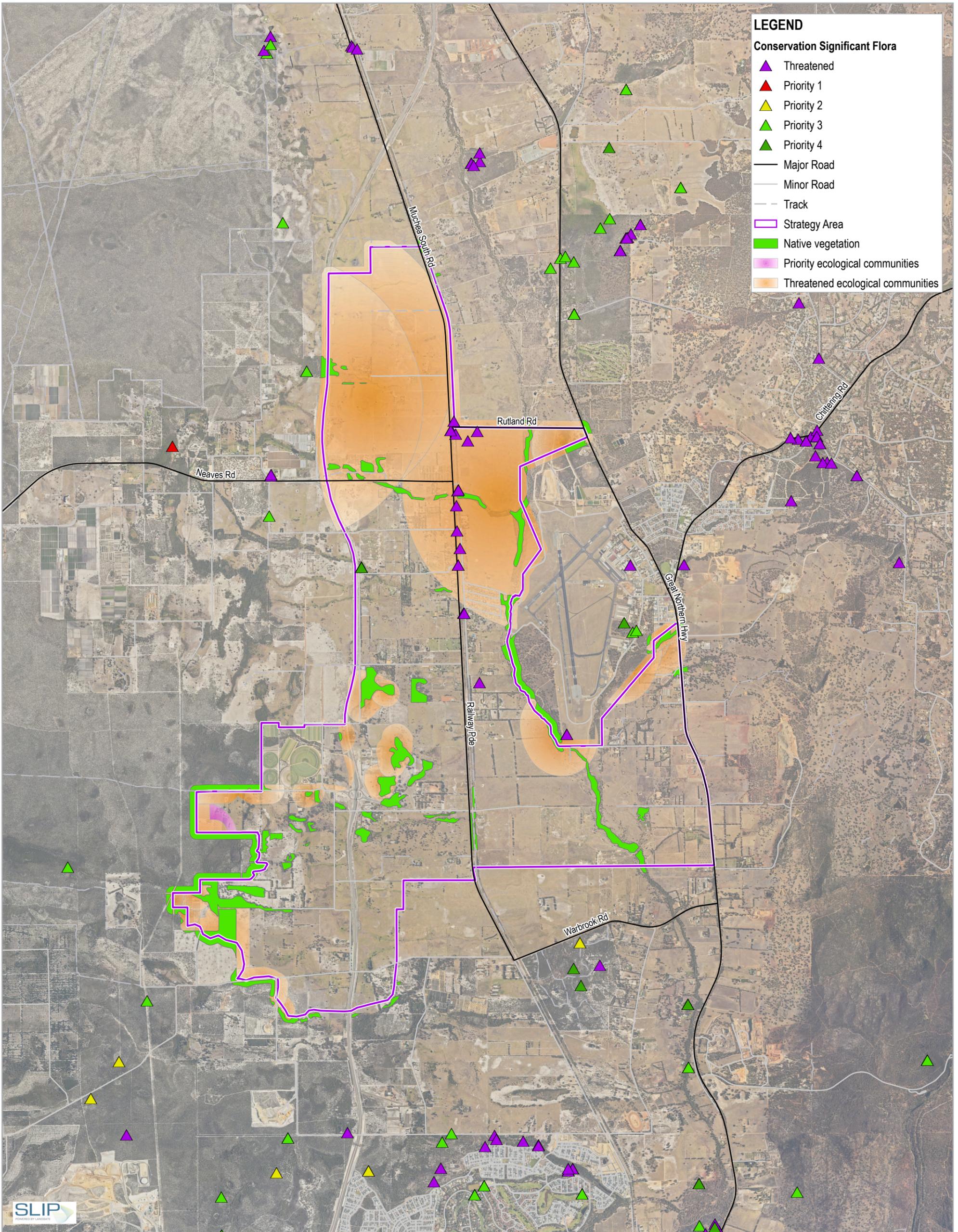
The native vegetation has been extensively cleared, with less than 10 percent of pre-European extent remaining. Remnant vegetation is generally retained within the Bush Forever sites and adjacent to water courses.

#### 4.1.2 Flora

There are 905 flora taxa representing 100 families and 351 genera within five kilometres, with a number of conservation significant flora within and adjacent to the Strategy area (Figure 14). Five Threatened Ecological Communities (TECs), listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), have been identified as occurring or likely to occur within the Strategy area, namely:

- assemblages of plants and invertebrate animals of tumulus (organic mound) springs of the Swan Coastal Plain. This community is known to occur within the Strategy area
- *Banksia* Woodland of the Swan Coastal Plain. This community, which is also listed as a Priority 3 – Priority Ecological Community by the Department of Biodiversity, Conservation and Attractions (DBCA) is likely to occur within the Strategy area
- Clay Pans of the Swan Coastal Plain. This community is known to occur within the Strategy area
- *Corymbia calophylla* – *Xanthorrhoea preissii* woodlands and shrublands of the Swan Coastal Plain. This community is known to occur within the strategy area
- Shrublands and Woodlands on *Muchea* Limestone of the Swan Coastal Plain. This community is known to occur within the area

Fauna and flora surveys, confirming the occurrence of any TECs, priority ecological communities or declared rare fauna, will be required to support any rezoning proposals.



**LEGEND**

**Conservation Significant Flora**

- ▲ Threatened
- ▲ Priority 1
- ▲ Priority 2
- ▲ Priority 3
- ▲ Priority 4

— Major Road

— Minor Road

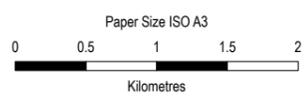
— Track

□ Strategy Area

■ Native vegetation

■ Priority ecological communities

■ Threatened ecological communities



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



Department of Planning, Lands and Heritage  
 Bullsbrook Freight and Industrial  
 Land Use Planning Strategy  
**Native vegetation and conservation  
 significant ecological communities  
 and flora**

Project No. 61-37134  
 Revision No. 0  
 Date 15 Jan 2022

**FIGURE 14**

\\ghdnet\internal\ghd\AU\Perth\Projects\6137134\GIS\Maps\Working\6137134\6137134.mxd Source: DPLH: Site Boundary - 20180702; Landgate: Imagery (August 2018); Roads - 20180820; DBCA: Conservation Significant Flora, Conservation Significant Fauna, TECOPEC; DPIRD: Native Vegetation - 20171026. Created by: htaniza  
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### 4.1.3 Fauna

There are 425 species of fauna within the Strategy area and within a radius of five kilometres of the Strategy area. The fauna include amphibians, birds, fish, invertebrates, mammals and reptiles. There are nine species of migratory birds and 37 listed threatened species, as well as several introduced and/or invasive species.

There are 13 conservation significant species within a five kilometre buffer of the Bullsbrook freight and industrial area, including the Forest Red tailed Black Cockatoo, Carnaby's Cockatoo, Peregrine Falcon, Chuditch, Quenda, Western Brush Wallaby, Black Striped Snake and Western Swamp Tortoise (Figure 15).

Fauna surveys to confirm the occurrence of any threatened, conservation significant or declared rare species, will be required to support any rezoning proposals.

### 4.1.4 Conservation areas

A number of environmentally sensitive areas occur or intersect with the Strategy area, likely aligned with TECs, DBCA managed lands, Bush Forever sites and geomorphic wetlands.

High quality conservation areas should be protected through appropriate measures which could include:

- inclusion within appropriate scheme reserves where required for protection
- implementation of buffer areas
- identification of appropriate land uses adjacent to these areas
- application of environmentally sustainable design
- implementation of drainage and water management systems that protect environmental assets

Further detailed studies and structure plans should identify appropriate measures to protect identified conservation areas.

#### 4.1.4.1 State forest

The Strategy area intersects with a portion of the Gngangara-Moore River State Forest along its western boundary which is also included in Bush Forever Sites No 6 and 399. The Gngangara-Moore River State Forest extends from Pinjar to Whiteman Park and covers an area of approximately 66,000 hectares. The land is managed by the DBCA. There are nine other DBCA managed conservation areas within five kilometres of the Strategy area. The State Forest is proposed to be retained in the Rural zone.

#### 4.1.4.2 Bush Forever

The Strategy area intersects with seven Bush Forever sites, with an additional nine sites within five kilometres. The majority of the Bush Forever sites are located within the Rural zone or along existing water courses. Where Bush Forever sites are within areas designated for future industrial use, they should be identified and set aside for conservation purposes.

#### **4.1.4.3 Western Swamp Tortoise**

The Western Swamp Tortoise is listed as Critically Endangered under the EPBC Act. The tortoise is found in two remnant habitats (Ellen Brook and Twin Swamps Nature Reserves) and two translocated habitats (Moore River National Park and Lake Wanamal Nature Reserve at Mogumber).

The Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011 is in place to protect habitat suitable for the long-term survival of wild populations of the Western Swamp Tortoise. The policy defines an area which includes Ellen Brook and Twin Swamps Nature Reserves. The southern boundary of the Strategy area is located approximately 0.8 km north of the Twin Swamps Nature Reserve and 4.7 km north of the Ellen Brook Nature Reserve and intersects the northern extent of the policy area.

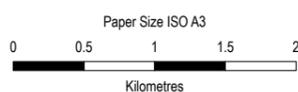
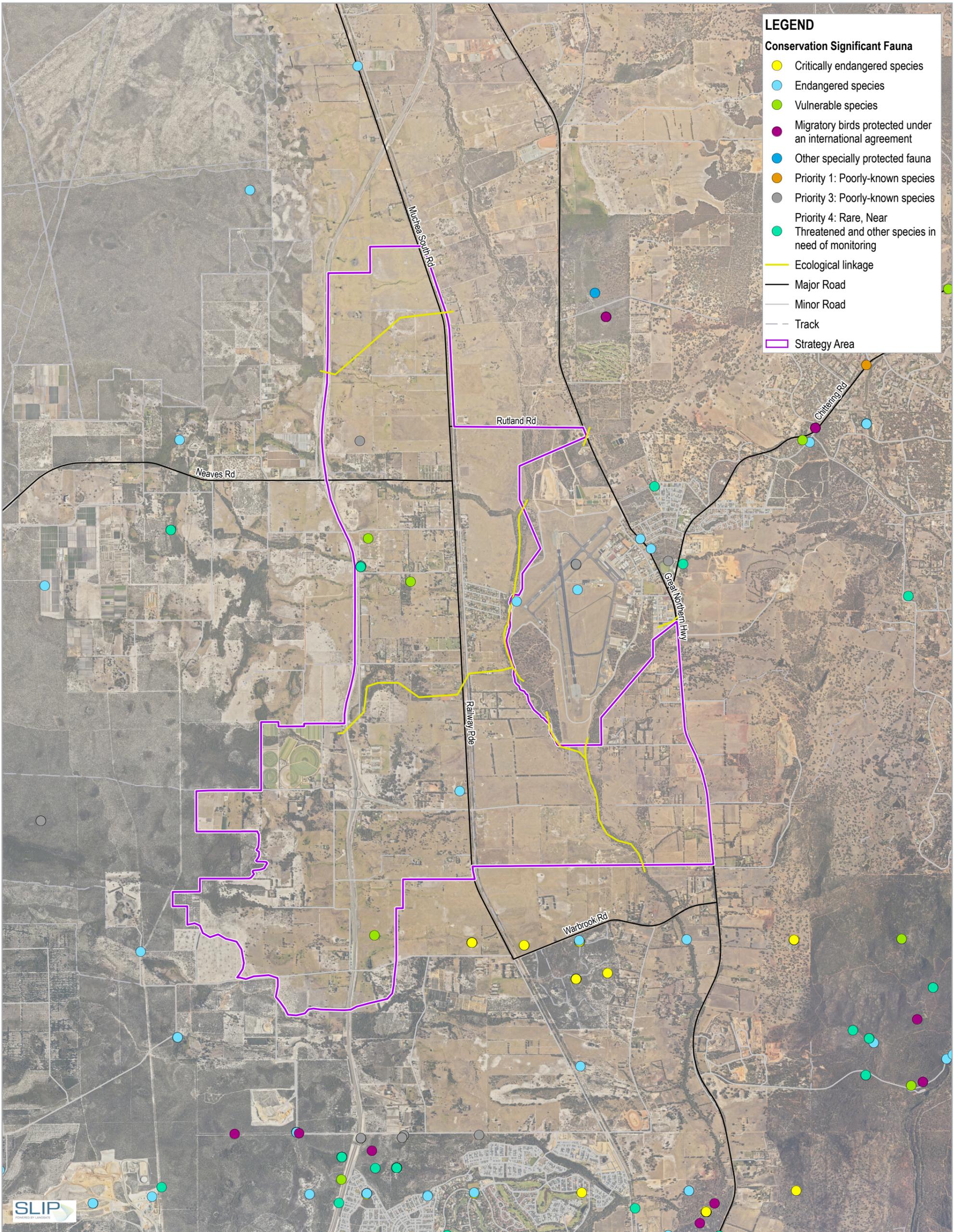
Development within the site is to comply with the provisions of the policy by minimising and avoiding impact from activities that might degrade the Western Swamp Tortoise habitat. This includes management of environmental, pollution control and drainage systems designed to maintain water quality and quantity. The Regional Water Management Strategy (RWMS) prepared as part of this Strategy provides management strategies to maintain water quality and quantity. These strategies should guide district and local water management strategies and development within specific precincts to mitigate impacts on the Western Swamp Tortoise habitat.

Local structure plans prepared for areas adjoining the Western Swamp Tortoise habitat should ensure that the allocation of future land use is cognisant of and consistent with the objectives of the policy. Additionally, management plans mitigating any adverse impacts on the Western Swamp Tortoise habitat will be required.

#### **4.1.4.4 Ecological linkages**

Five ecological linkages intersect the Strategy area (Link ID 27, 28, 29, 30 and 31).

Ecological linkages are to be maintained and protected where possible through local structure planning. The potential for their use as green corridors to provide amenity and protection for flora and fauna should be investigated during these subsequent planning stages.



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



Department of Planning, Lands and Heritage  
 Bullsbrook Freight and Industrial  
 Land Use Planning Strategy

**Ecological linkages and  
 Conservation Significant Fauna**

Project No. 61-37134  
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 Date 17 Jan 2022

**FIGURE 15**

## 4.2 Heritage

### 4.2.1 Aboriginal heritage

Four registered Aboriginal sites are present within the Strategy area as listed in Table 3. Any future development within the heritage site boundaries is required to have due regard to and comply with the requirements of the *Aboriginal Heritage Act 1972*.

**Table 3 - Registered Aboriginal sites**

ID	Name	Restriction	Status	Type
3525	Ellen Brook	No gender restrictions	Registered Site	Mythological
3583	Ki-It Monger Brook 2	No gender restrictions	Registered Site	Ceremonial, Modified Tree, Mythological
25735	Bingham Road Creek Artefact Scatter	No gender restrictions	Registered Site	Artefacts/Scatter
4362	South Bullsbrook	No gender restrictions	Registered Site	Artefacts/Scatter
21994	Neaves Creek Field Site 01	No gender restrictions	Registered Site	Artefacts/Scatter

There may be a need for future Aboriginal heritage surveys to be carried out as part of implementation of the strategy. In addition, further places/sites such as artefact scatters may exist within the area proposed for development and may be disturbed during works. Ongoing consultation with Traditional Owners will need to occur throughout implementation of the strategy.

### 4.2.2 Other heritage

There are two sites with historic heritage significance within the Strategy area:

1. West Bullsbrook Hall (25869) – heritage listed site of significant historic value to the local community. Adopted under the City of Swan Heritage List
2. Old shop (25963) – listed in the municipal inventory, the old shop has some historic value having served the community as a corner store. Adopted under the City of Swan Municipal Inventory

It is unlikely that future industrial development will affect the historic heritage sites as they are within the existing residential area which is to remain 'Rural'.

## 4.3 Landform and soils

### 4.3.1 Topography

The Strategy area lies immediately east of the Darling Escarpment and is generally flat in profile with topographic elevation ranging from 57 metres AHD to 40 metres AHD on the western edge of the area, and from 40 metres AHD to 30 metres AHD on the eastern edge of the area. The highest point is 64 metres AHD in the south-west corner and the lowest elevation is 24 metres AHD where Ellen Brook crosses the south eastern boundary.

## 4.3.2 Soils

The main geological units in the Strategy area are the Guildford Formation comprising alluvium and the Bassendean Sand comprising aeolian sand. The soils across the majority of the study area are classified as Pinjarra Landscape Zone, comprising seasonally waterlogged flats (palusplains). The Pinjarra Landscape Zone features numerous ephemeral waterways, natural or constructed, which intersect the palusplain. The Pinjarra Landscape Zone coincides with and is predominantly underlain by the fluvial deposits of the Guildford Formation (Low 1971).

The Bassendean Dune System occurs along the western boundary of the Strategy area. Along the eastern margin of the Bassendean Dunes relatively thin layers of sand are interspersed with silts and clays of riverine origin. A small portion in the south west corner of the Strategy area and at the end of Strachan Road is Bassendean sands, non-calcerous sands and podsolised soils with low-lying wet areas. A section at the eastern end of Rutland Road is part of the Dandaragan Plateau soils, gently undulating plateau with areas of sandplain and laterite on cretaceous sediments (refer Figure 16).

The flat profile of the land together with soil profile results in poor drainage capacity. Detailed site-specific geotechnical investigations will be required to support future local structure plans and associated Local Water Management Strategy (LWMS). Some geotechnical investigation may be required to support a District Water Management Strategy to inform modelling. This should be confirmed with the Department of Water and Environmental Regulation (DWER) at that stage.

## 4.3.3 Acid sulfate soils

The majority of the Strategy area contains soils with a 'Moderate to low risk of Acid Sulfate Soils (ASS) occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface'. There are also small portions to the south-west identified as having 'High to moderate risk of ASS occurring within 3m of natural soil surface' (refer Figure 17).

Acid sulphate soils are naturally occurring and generally pose no risk to surrounding areas when they are submerged under the water table. However, should this substance become dry, there is a risk that it will react with the air, producing airborne sulphuric acid.

It is recommended that further detailed investigation be carried out prior to development to assess the location, extent and severity of potential acid sulfate soils. Where the site is found to contain Acid Sulfate Soils, this may require an Acid Sulfate Soils and Dewatering Management Plan.

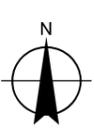
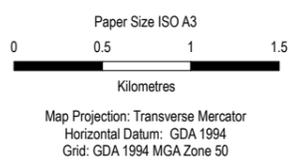
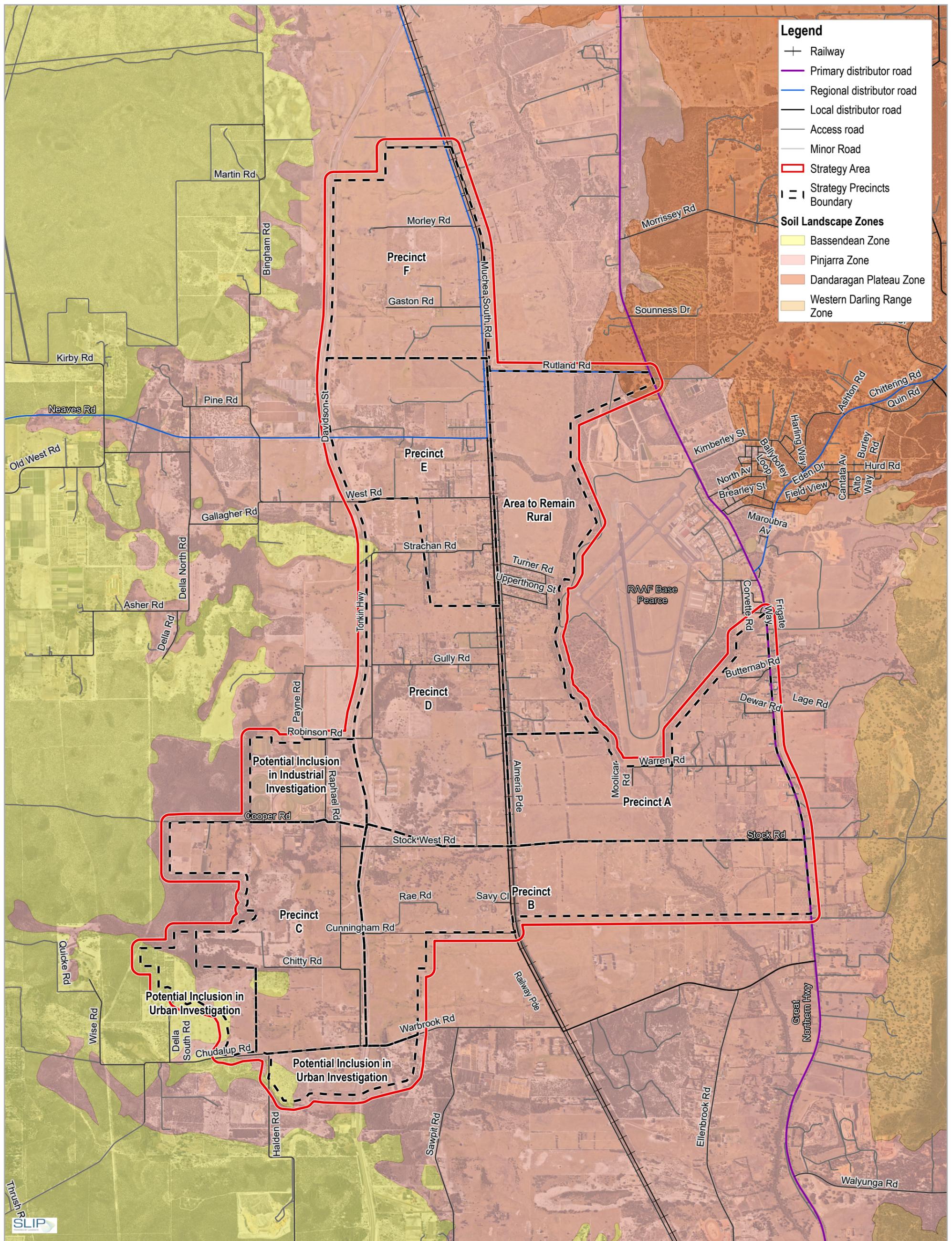
## 4.3.4 Contaminated sites

There are no contaminated sites listed on the DWER Contaminated Sites Database within the Strategy area. In this regard, previous studies have however indicated that existing and previous land uses in the area have the potential to contaminate soils. This includes activities such as poultry farms and deep soil irrigation farms. It is recommended that further investigations be undertaken at the time when a development application is being prepared on a lot that previously contained these sorts of uses to confirm whether remediation works are required.

Where a parcel of land has historically been used for intensive agricultural activities it is recommended that these sites be investigated further to assess if there is any evidence of potentially contaminating activities.

Per- and poly-fluoroalkyl substances (PFAS) contamination has been identified within the soil and water around RAAF Base Pearce, with contamination reported to have spread to groundwater within

West Bullsbrook due to surface water overflow from the Ellen Brook to land, and interaction between the Ellen Brook and superficial groundwater (GHD 2018). Appropriate use of groundwater within the contaminated areas should be considered in consultation with the Department of Health primarily, and the DWER.

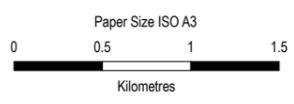
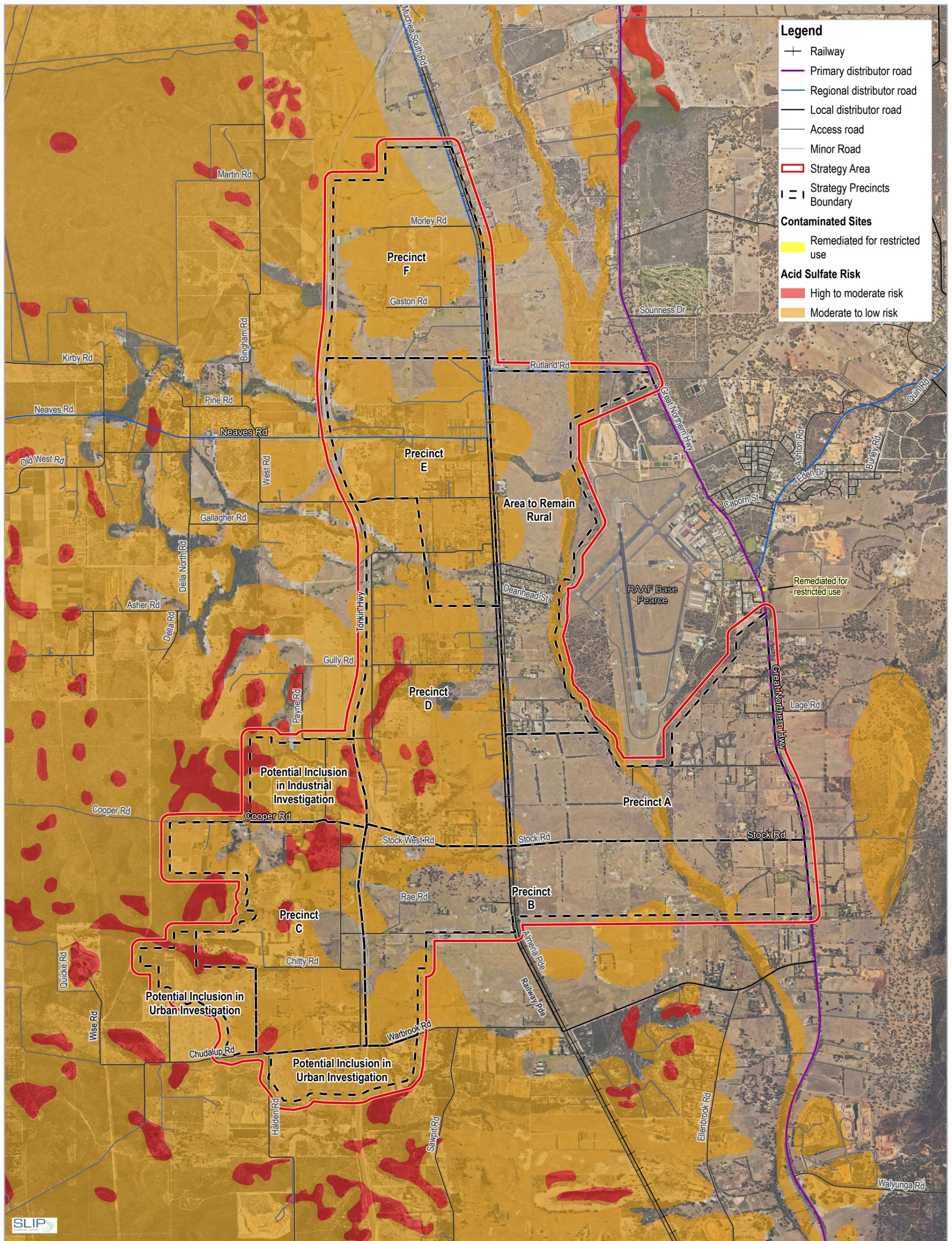


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Soil Landscape Zones

FIGURE 16



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



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**Acid Sulfate Soil and Contaminated Land**

**FIGURE 17**

## 4.4 Groundwater and surface water

A Regional Water Management Strategy has been prepared to support this Strategy and is included in Appendix C. The outcomes of the pre-development assessment are summarised below.

### 4.4.1 Surface water

The Ellen Brook, located along the eastern boundary of the Strategy area, is the major water body and runs for a length of approximately 65km from north to south discharging into the upper Swan River and is part of the Swan River Surface Water Area. Several ephemeral, unnamed tributaries, as well as the Ki-It Monger Brook and Nambab Brook join the Ellen Brook. Ki-It Monger Brook and Nambab Brook both flow from east to west crossing GNH, meeting the Ellen Brook just south of Warren Road. Sawpit Gully is just outside the Strategy area, to the south of Warbrook Road.

Due to being relatively flat and on the western side of the Darling Escarpment, a number of drainage lines occur within the Strategy area. There are 63 Geomorphic Wetlands that intersect the Strategy area (Figure 18). Due to the regional topography and geology found within the Swan Coastal Plain, the wetland networks typically operate as 'through flow' lakes. Under these operating conditions wetlands are hydraulically connected to the local groundwater system, being both an expression of the superficial aquifer and an opportunity for surface water recharge to groundwater based on the season. Due to the extensive interconnection between surface water and groundwater systems, any development within the Strategy area will be required to maintain both surface and groundwater flows as well as water quality, to protect these ecosystems.

Wetland buffers are recommended to protect conservation category wetlands from potential adverse impacts resulting from human activities, this can be appropriately managed through the appropriate reservation and/or zoning of conservation category wetlands (and their buffers) in local scheme reserves.

### 4.4.2 Groundwater

The Strategy area is located within the Swan Groundwater Area and approximately 200 metres east of the Gngangara Underground Water Pollution Control Area (Priority 1). Large portions of the Strategy area are subject to a moderate to high risk of seasonal inundation or waterlogging (Figure 19). Some decline in groundwater levels has occurred due to abstraction for agricultural purposes.

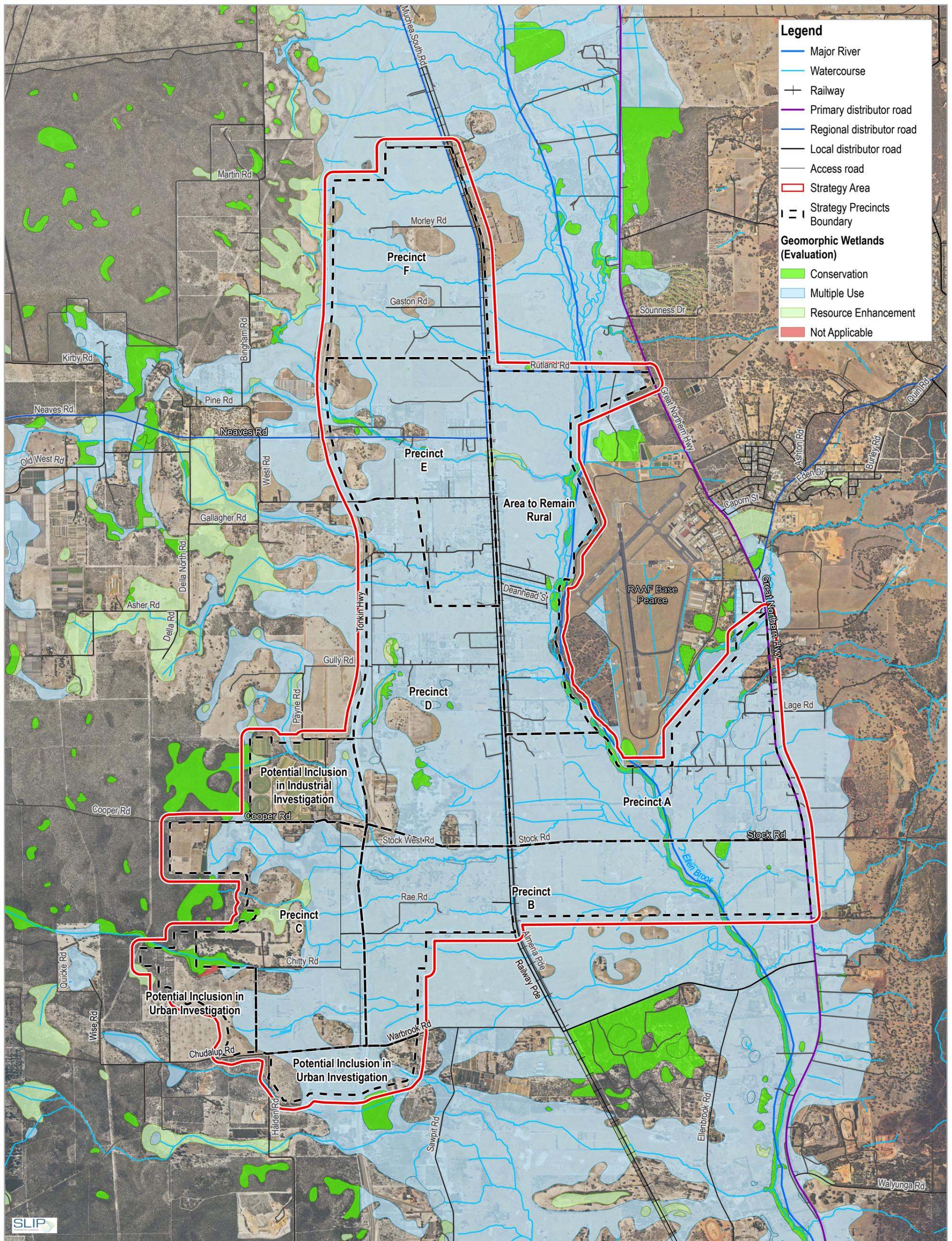
For allocation purposes, aquifers are divided into specific groundwater areas and subareas. The Strategy area is predominately located within the Radar groundwater subarea. A small region of the south west of the Strategy area lies within the Neaves groundwater subarea, and small area of the south east of the Strategy area lies within the Bandy Springs groundwater subarea. Advice from the DWER indicates that all aquifers are over allocated within the region and water demand requirements for any further development will need to be met through investigation of existing groundwater allocation and alternative water sources in the short-term.

Groundwater will significantly contribute to the transport of nutrients to Ellen Brook and the Swan-Canning estuary, largely due to the close proximity to the natural ground surface during periods of inundation, causing mobilisation of nutrients. Within the Strategy area the superficial aquifer has been drained to reduce seasonal inundation and enable agricultural and other land use. The superficial aquifer also supports a mix of remnant ephemeral, seasonal and permanent wetlands. Several geomorphic wetlands and drainage systems within the area are recognised as Type 2 and

Type 3 Groundwater Dependent Ecosystems, requiring certain elements of the quantity and quality of groundwater to remain consistent in order to persist.

Groundwater abstraction is one of the easiest and most cost-effective alternatives to scheme water for industry feedwater and irrigation purposes. Due to the long-term nature of the proposed development of the Strategy area, the status of the groundwater allocations may change as land use changes. As development progresses the current availability of groundwater for open space irrigation and industry specific use should be reassessed.

The quality of the groundwater (salinity, alkalinity, heavy metal concentrations etc.) could affect industrial processes, therefore filtration or treatment of the groundwater may be required depending on the desired end use. Given the emerging risk of PFAS contamination within the Bullsbrook area, groundwater quality testing should be considered prior to consideration of superficial groundwater within potentially affected areas.

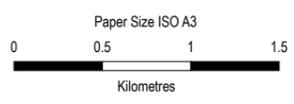


**Legend**

- Major River
- Watercourse
- + Railway
- Primary distributor road
- Regional distributor road
- Local distributor road
- Access road
- Strategy Area
- - - Strategy Precincts Boundary

**Geomorphic Wetlands (Evaluation)**

- Conservation
- Multiple Use
- Resource Enhancement
- Not Applicable



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



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Geomorphic Wetlands

FIGURE 18



### 4.4.3 Wetlands

There are no wetlands listed under *Ramsar Convention on Wetlands of International Importance 1971* (RAMSAR) within, or in 5 km of the Strategy area. However, there are numerous wetlands of conservation significance within the Strategy area of which 37 are classified as Conservation Category Wetlands (CCW) and a further 12 are classified as Resource Enhancement Wetlands (REW). The majority of the Strategy area is designated as Multiple Use Wetland (MUW)

The Ellenbrook, its banks and foreshore are identified as a CCW with a number of other CCWs and REWs occurring along or in proximity to the Ellen Brook and its minor tributaries.

### 4.4.4 Water management and development

The Strategy area comprises a series of water dependent ecosystems, environmentally sensitive areas and land which is seasonally inundated. This presents complex challenges for the integrated management of surface and groundwater to maintain water quality and ecological functions as well as protect development from risk of flood and inundation. This is further compounded by the lack of planned water and wastewater servicing for the area.

Traditional development across the Swan Coastal Plain has typically relied on a combination of between 1.0 to 2.0 metres of imported sand fill and subsoil drainage where groundwater is within 1.5 metres of the finished surface level. The availability and cost of fill could present a significant cost constraint to traditional development approaches across the Strategy area, which experiences shallow groundwater conditions and seasonal inundation. The required level of fill will be determined by a number of factors including ecological water requirements for water dependent ecosystems, building and infrastructure design, and subsoil drain spacing.

Key considerations and water management issues to be addressed within the Strategy area at the next stage of planning include:

- the area is dominated by broad low-lying floodplains, intersected by a network of minor and major surface drainage channels with high connection to the superficial aquifer. Conditions are variable across the Strategy area including near surface groundwater, seasonally perched groundwater and slightly confined groundwater with upward vertical gradients.
- due to the shallow nature of groundwater across the Strategy area, and the high connectivity between surface and groundwater systems, the water resources and water dependent ecosystems are vulnerable to impacts from changes in water quantity and water quality.
- the Strategy area is large and remote from established and serviced urban fronts. The Water Corporation has indicated there is limited capacity to provide scheme water servicing to parts of the Strategy area, however wastewater servicing is limited to urban development. The Government Sewage Policy requires provision of wastewater reticulation to all new industrial development and specifies minimum lot sizes for on-site disposal. Extensive parts of the Strategy area are constrained by sewage sensitive areas.
- due to significant water resource, water supply and environmental constraints, any proposed change in land use to accommodate industrial activities will likely require a site-specific investigation to determine the feasibility and practicalities of on-site versus reticulated sewer and water supply.

## 4.5 Bushfire hazard

The Department of Fire and Emergency Services (DFES) Map of Bushfire Prone Areas (DFES 2018) identifies several sites within the Strategy area as bushfire prone (Figure 20). The majority of these sites are located around remnant vegetation and existing natural assets. A pre-development bushfire hazard level assessment has been prepared to support the Strategy (Appendix D).

Vegetation within the bushfire hazard level assessment area reflects Class B Woodland (at varied heights and density based on level of disturbance resulting in the three subclasses of Low Woodland (07), Open Woodland (06) and Woodland (05)), Class G Grassland, Class C Shrubland and Class D Scrub. These relate to the original vegetation types across the overall strategy area at varying levels of clearing and degradation from the agricultural use of the locality.

This assessment indicates that the area is largely located within a 'Moderate' bushfire hazard area with some small areas of 'Extreme' hazard. The assessment demonstrates that future development will largely occur within areas of low to moderate bushfire hazards. Any development within patches of extreme hazard will result in the removal of that vegetation, and therefore the removal of that hazard.

Those areas of extreme bushfire hazard with environmental values that require protection (for example Bush Forever) should be reserved and protected from development. Other areas of hazard can be cleared to enable industrial development, dependent on existing groundwater levels. Where vegetation is to be retained, further structure plans will be required to demonstrate how the bushfire risk can achieve a low to moderate bushfire hazard.

The assessment demonstrates that bushfire hazards can be managed subject to implementation of appropriate bushfire protection criteria at future planning stages. Spatial demonstration of bushfire protection criteria and strategies for compliance should be assessed at the local structure planning stage through the preparation of a bushfire management plan. The bushfire management plan should accompany a local structure plan and provide recommendations and strategies to ensure all development will be limited to areas of low to moderate bushfire hazard.

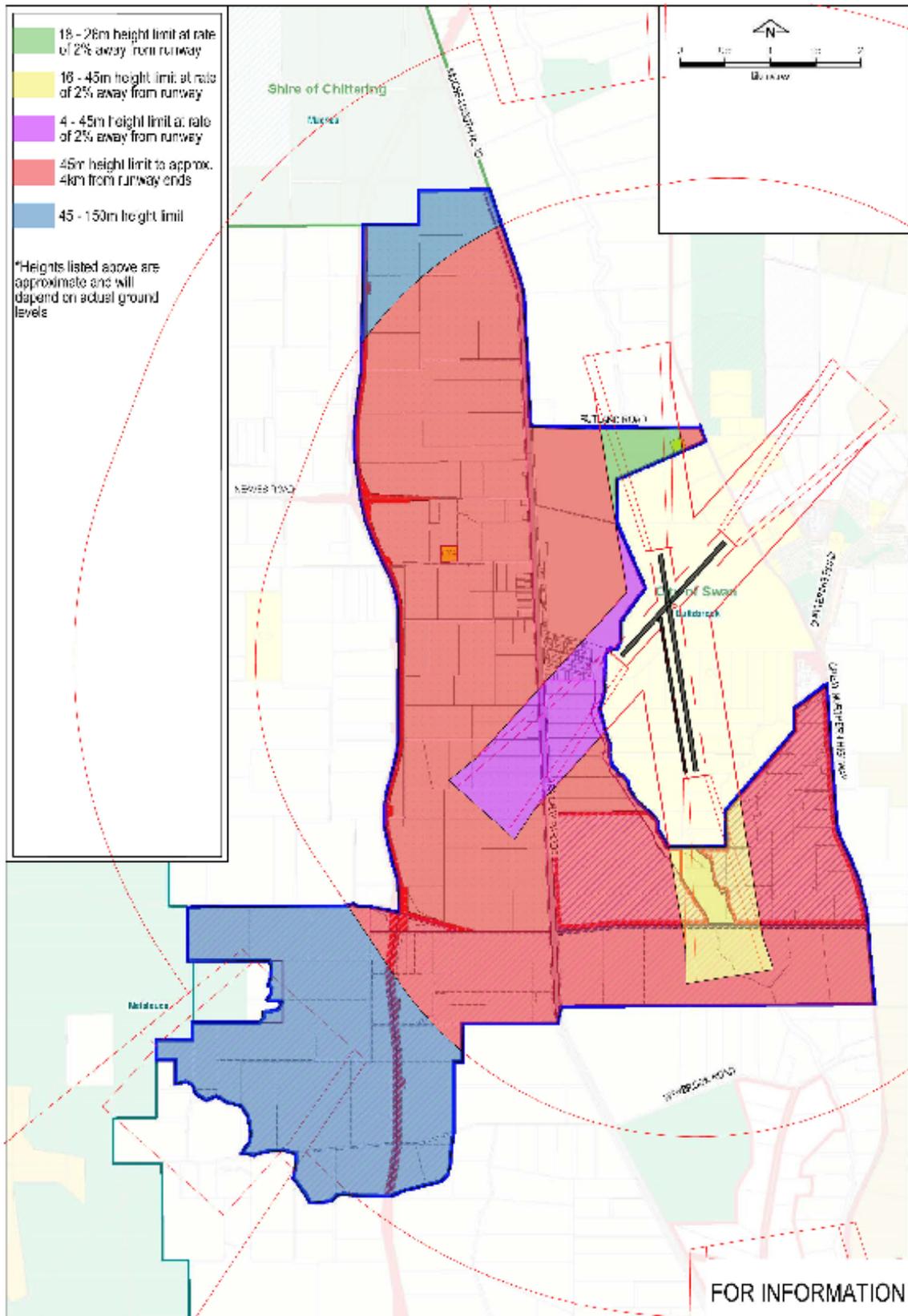
Bushfire Attack Level (BAL) assessments and contour mapping that implement local structure plan recommendations and strategies to comply with bushfire protection criteria must accompany subdivision applications.



## 4.6 Royal Australian Air Force – Base Pearce

The RAAF Base Pearce adjoins the eastern and northern boundaries of the Strategy area and introduces a number of matters which should be considered when developing the land including:

- notifications on the Certificates of Title acknowledging that the RAAF Base Pearce operates 24/7 and aircraft noise is inevitable.
- outdoor lighting within six kilometres of the RAAF Base Pearce must comply with Department of Defence (DoD) guidelines to avoid glare from reflective surfaces for pilots. This may pose some design challenges for some industrial operators including the IMT and for hardstand yard lighting.
- activities leading to an increased likelihood of bird strike by aircraft should be avoided.
- in accordance with the Part 11A Defence Regulation 2016 development should not prejudice existing utility services for RAAF Base Pearce.
- as per the Part 11A Defence Regulation 2016 height restrictions apply to development within proximity to RAAF Base Pearce indicated on Figure 21. Any development within a kilometre radius of RAAF Base Pearce will require DoD approval for any structures that may pose a hazard to aircraft and this will need to be addressed as part of the development application process.
- the DoD has plans to extend the runways at RAAF Base Pearce (the timing has not yet been determined as at the date of this Strategy). Accordingly, clearance/ height requirements should be re-checked at subsequent stages of the planning process.
- RAAF Base Pearce is likely to attract very specific and potentially atypical traffic patterns particularly if it is used for civil aviation, or increased defence aerospace industry.



**Figure 21 - Pearce Air Base Height Restrictions**

## 5. Movement networks

The development of the Bullsbrook freight and industrial area will require the provision of transport linkages, both internally and externally. Of particular importance will be the provision of safe and efficient transport links between the IMT and other parts of the Strategy area. Furthermore, as a potential major employment node, the provision of passenger and active transport to the precinct should be a major consideration to enable safe and appropriate access for all users.

The relationship between the Bullsbrook freight and industrial area, the IMT and the other proposed industrial/employment nodes (at Muchea, North Ellenbrook, Wangara and Neerabup) must be considered, as does the potential distribution of employment and customer travel to and from the broader Bullsbrook industrial precinct.

Current planning for the IMT site seeks to facilitate a development that will ultimately cater for throughput of 250,000 TEU<sup>1</sup>/annum. Initial terminal capacity has been estimated as 150,000 TEU/annum. In addition to containerised cargo, it is expected that large volumes of light commercial vehicles and passenger cars (primarily used for commercial purposes) will access the IMT and the wider Bullsbrook freight and industrial area on a daily basis.

As a potential major employment centre, the provision of passenger transport to the precinct is a major consideration in the structure planning process. The significant distance between existing surrounding residential areas and the industrial precinct will be a major factor that is likely to make access by active and public transport challenging and will require careful planning of direct road connections to/from the precinct, particularly across significant barriers such as Tonkin Highway and the freight rail line. However, this distance will be lessened with the development of the Ellenbrook North (west and east) District Structure Plan areas to the south of Warbrook Road (west and east of Tonkin Highway). Development of these areas will bring a significant residential population base (and potential workforce) in proximity to the Bullsbrook freight and industrial area which will improve the viability of public transport services.

The Strategic Transport Strategy (Appendix E) provides several key recommendations to enable the road network to meet the requirements of the Bullsbrook freight and industrial area during development and at full build-out. The purpose of the recommendations are to:

- enable appropriate access to the industrial area to facilitate strategic industrial activity that fully utilises and integrates with the IMT
- provide increased connectivity between the northern sub-regions to support greater employment self-sufficiency and access between urban areas and the Bullsbrook industrial employment node
- provide safe and efficient access for the road freight network
- safeguard accessibility of existing residents within the West Bullsbrook townsite to / from the 'Rural' area

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<sup>1</sup> A TEU (Twenty-foot Equivalent Unit) is a measure of containerised cargo mass based upon a standard 20-foot international shipping container. Double length (40 foot) containers are also commonly used to ship freight, which equates to two TEUs each.

- allow for integration with the broader road network and strategic movement corridors to facilitate freight and commuter access

## 5.1 Roads

Given the predominantly rural nature of existing land uses within the Strategy area, the road network is sparse. The PDNH and GNH are the primary north-south roads within proximity of the Strategy area. Railway Parade, transecting the Strategy area, is a secondary north-south road. There are currently no east-west primary routes through the Strategy area. Secondary east-west routes include Warbrook Road in the south and Neaves and Rutland Roads in the north, however none of the connections provide direct access across the railway.

### 5.1.1 Perth – Darwin National Highway

The Perth Darwin National Highway, between Reid Highway and Muchea, is being delivered as part of the NorthLink project, which includes:

- The upgrade of Tonkin Highway between Guildford Road and Reid Highway; and
- The extension of Tonkin Highway from Reid Highway north to Muchea

The southern section from Guildford Road to The Promenade in Ellenbrook was completed in 2019, with the northern section to Muchea completed in late April 2020. The PDNH forms the main north-south road along the western edge of the Strategy area and is forecast to carry approximately 9,000 vehicles per day by 2031 (Worley Parsons, 2013).

Interchanges within the Strategy area include those at Stock/Cooper Roads and Neaves/Rutland Roads. No further interchanges are planned by Main Roads WA within and surrounding the Strategy area.

Main Roads WA is planning a road train assembly area at Muchea, with the intention that triple road trains (53.5 metres) will not proceed south of that point. To best integrate road and rail transport with the industrial land use at Bullsbrook (specifically including the IMT), and ensure maximum efficiency, it would be preferable that triple road trains be permitted along the PDNH to Stock Road and into the Bullsbrook freight and industrial area and IMT. However, the design of PDNH south of the Brand Highway interchange only accommodates 36.5 metre vehicles, thereby precluding this option.

### 5.1.2 Great Northern Highway

With the completion of PDNH, it is predicted that 2031 traffic volumes on GNH will be similar to present volumes, with a much lower proportion of heavy vehicle traffic due to much of it being diverted to PDNH (Urbsol, 2013).

GNH forms part of the OSOM road network. Main Roads does not propose to change the OSOM route along GNH following completion of the PDNH.

Minor upgrades will be required at existing and/or new intersections created by the development of the industrial land on the western side of GNH between Warbrook Road and Brig Way. GNH is expected to be duplicated at some point in the future, south of the Bullsbrook townsite, which will replace the intermittent overtaking provisions in this location. In addition, changes to the intersection with Stock Road will be required to support increased traffic volumes at this location as well as its inclusion in the RAV network.

### 5.1.3 Stock Road

Stock Road east is currently not constructed, and Stock Road should be upgraded to provide a four-lane dual carriageway between the PDNH and GNH and to provide a grade separation over the railway. As part of this upgrading, the current stagger between Stock Road East and Stock Road West, should be remedied.

The upgrading of Stock Road provides an opportunity to alter the RAV network, to include Stock Road and the PDNH (north of Stock Road). Main Roads WA has advised that GNH would need to remain as an OSOM route as the Stock Road interchange with PDNH will not cater for the largest OSOM loads. Whilst the section of Stock Road west of the proposed IMT site will not provide a 10 m x 10 m clearance, there is potential to design and construct the section of Stock Road between the IMT and GNH to provide such clearance.

### 5.1.4 Neaves Road

Neaves Road provides a major east-west route linking Perth's north east and north west corridors and is forecast to carry approximately 9,000 vehicles per day by 2031 (Worley Parsons, 2013). In the *Transport @ 3.5 Million Plan*, Neaves Road (west of the PDNH) is identified as a Secondary Freight Route. It is proposed to be connected with Rutland Road and thereby to GNH, including an overpass of the freight rail line and a connection to Railway Parade. This will provide a connection between Mitchell Freeway in the west to the PDNH and GNH in the east.

### 5.1.5 Railway Parade/spine road

The Bullsbrook IMT Planning Study (GHD, 2016) considered options for the treatment of Railway Parade and recommended that it be realigned west of the proposed IMT, with a four-way intersection with Stock Road about mid-way between the railway and the PDNH. This recommendation is supported as it would provide substantial benefits, including:

- elimination of the need for a level crossing where trains enter and exit the IMT
- retention of north-south connectivity, together with a convenient connection between Stock Road and Railway Parade
- provision of a frontage road along the west side of the IMT to create a safe and efficient entry and exit for trucks servicing the IMT

A need has been identified for a new north-south road mid-way between the PDNH and the existing Railway Parade. The spine road is recommended to continue south of Stock Road to connect to the existing Sawpit Road, terminating at Maralla Road.

### 5.1.6 Restricted access vehicle network

The restricted access vehicle (RAV) network includes routes that accommodate B-Doubles and above as outlined below.

- GNH, Rutland Road, Warren Road – 36.5 metre road train routes
- Stock Road, part of Railway Parade, Neaves Road – 27.5 metre truck routes

## 5.2 Rail

The existing narrow-gauge Millendon–Narngulu freight railway, which runs north-south through the middle of the study area, will remain the sole external rail link and will have a spur to connect to the IMT. The IMT site has been sized to accommodate 650-metre trains, with provision for extension to 900-metre trains in future, if necessary<sup>2</sup>. The spacing of internal sidings and turnouts has been designed to allow upgrade to dual gauge if warranted in future. The approach siding will extend from just north of Warbrook Road to Stock Road, which is sufficient to accommodate an 1800-metre interstate train, which would then be broken into 900-metre rakes for shunting into the IMT. The siding will be located within the existing railway reserve and positioned to allow future duplication of the main line, should this ever prove necessary.

Trains to/from the north would initially use the southern approach siding by way of a crossover. If demand grows in the future, the IMT layout must be flexible enough to allow for a direct approach from the north.

Provision has been made in the planning of the IMT to accommodate 1800-metre standard gauge trains in future, however it is expected that the existing narrow-gauge line will be the only rail freight service in the short to medium term. For interstate trains to access the IMT, considerable infrastructure upgrades would be required, including reconstruction of the existing line from Millendon to Bullsbrook as dual gauge, with consequent upgrades to bridges, culverts and signals. Conversion of the Millendon Junction to a triangle arrangement would allow direct access to the upgraded line but is likely to be strongly resisted on social impact grounds.

Operational changes would also be necessary for interstate trains to access the IMT. This might include provision of a siding south of Millendon, where trains could be reversed. Alternatively trains could be sent to Forrestfield/Kewdale, however this is less efficient.

The construction of a standard gauge link to give rail access to the eastern states is complex and will require additional studies beyond the scope of this Strategy.

### 5.2.1 Level crossings

There are a number of at grade railway crossings throughout the Strategy area. The existing at-grade railway crossings at Stock and Rutland Roads will be grade separated under current proposals to upgrade these links. The design is expected to accommodate double stacked railway vehicles (height of 7.2 metres). The span of the bridge crossing at Stock Road must be sized to incorporate sidings along the west side of the main railway line.

“Formal” sealed level crossings currently exist near West Road and Strachan Road, providing connectivity to the residential area on the east side of the railway line along Almeria Parade. These are likely to remain in the near term, with the potential to upgrade the level of control to improve safety (i.e. install boom gates). However, in the longer term, it is anticipated that they may be removed in line with State Government policy. Should this occur, alternative connections should be provided, prior to removal of the crossings.

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<sup>2</sup> The IMT masterplan study (GHD 2016) noted that the primary market for the Bullsbrook IMT would be container (and some break-bulk) commodities coming over the wharves at Fremantle and Kwinana, for distribution to Perth’s north-west and north-east corridors, and areas north of Perth. For this purpose, the 650-metre port shuttle was adopted as the design train.

A number of unsealed railway crossings also exist, the status of these as formal or informal crossings is not known. In the near term, it is recommended that these be closed or upgraded to a controlled crossing, where feasible, in order to improve safety.

## 5.3 Freight network

The NESRPF forecasts the volume of freight movement on the regional road and rail networks to increase substantially by 2050. This increase will be centred on interstate road and rail routes, particularly those servicing port facilities and connecting with intermodal terminals located at Kewdale, Hope Valley/Wattleup (Latitude 32), Bullsbrook and Mundijong.

The PDNH is identified as the primary freight route north-east of Perth, with GNH becoming a secondary route. Stock Road is required to connect the two with Neaves Road providing the connector to other routes to the west.

The proposed Bullsbrook IMT will have an important role in the freight network having rail connections to Fremantle Port and the proposed Kwinana Outer Harbour, as well as to regions north of Perth. Rail and road access to the potential IMT requires detailed planning and protection from encroachment by incompatible development. Similarly, the design, construction, upgrade and operation of the infrastructure within these corridors should seek to minimise impacts on surrounding land uses.

## 5.4 Public transport

The Strategy area is served by one Transperth bus service (Route 311), which operates between Bullsbrook and Midland Station, with three services between 7.00 am and 8.00 am on weekdays. The return journey in the PM peak from Midland Station to Bullsbrook has three services (which departs Midland Station at 3:08 pm, 3:48 pm and 5.49 pm). These bus services are not directly connected to other major activity centres.

Transperth has advised that no additional public transport routes are planned for the area in the short-term. In the longer term, the extensive residential developments east of GNH and north of Ellenbrook together with the delivery of new jobs within the Bullsbrook freight and industrial area will likely drive demand for increased bus services.

Typically, Transperth would undertake bus network planning once an area is substantially developed. As development levels permit, peak period bus routes should be considered to service the area along the major north-south spines of GNH and Railway Parade and across to the Bullsbrook town site east of the RAAF Base Pearce.

There is no existing train station in the immediate vicinity of the Strategy area, although through the METRONET project, the Ellenbrook station will soon be developed. This station will be in the Ellenbrook town centre, approximately 10.8 kms from the Strategy area. While it is not confirmed whether bus services will operate out of the Ellenbrook station, the provision of such a service would greatly increase the viability of public transport usage in the region, including the Strategy area.

## 5.5 Pedestrian and cycling

The primary road routes within the Strategy area do not contain any adjacent walking or cycling paths, however the road reserve widths allow for their accommodation. Almost all roads in the area are sealed two-lane carriageways with marginal or no sealed shoulders. The only existing active

transport infrastructure within the Strategy area is limited to a small section of footpath on Almeria Parade adjacent the residential area east of the railway.

The provision of Principal Shared Paths (PSP) along the primary routes of the PDNH, GNH, Maralla Road, Stock/Cooper Road, Neaves/Rutland Road and Railway Parade to cater for walking and cycling are recommended.

## 5.6 Future network requirements

The future primary road network within the Strategy area is shown in Figure 22. It includes four north-south links (the new PDNH, a new central spine road, a realigned Railway Parade and a duplicated GNH along the eastern boundary) and two east-west links (Stock/Cooper Roads and Rutland/Neaves Roads).

Over the longer term, an additional east-west road connection between the north-west sub-region (the future Whiteman – Yanchep Highway) and the Bullsbrook freight and industrial area may be required. A number of roads have been considered for this connection, including Cooper Road, Warbrook Road and Maralla Road.

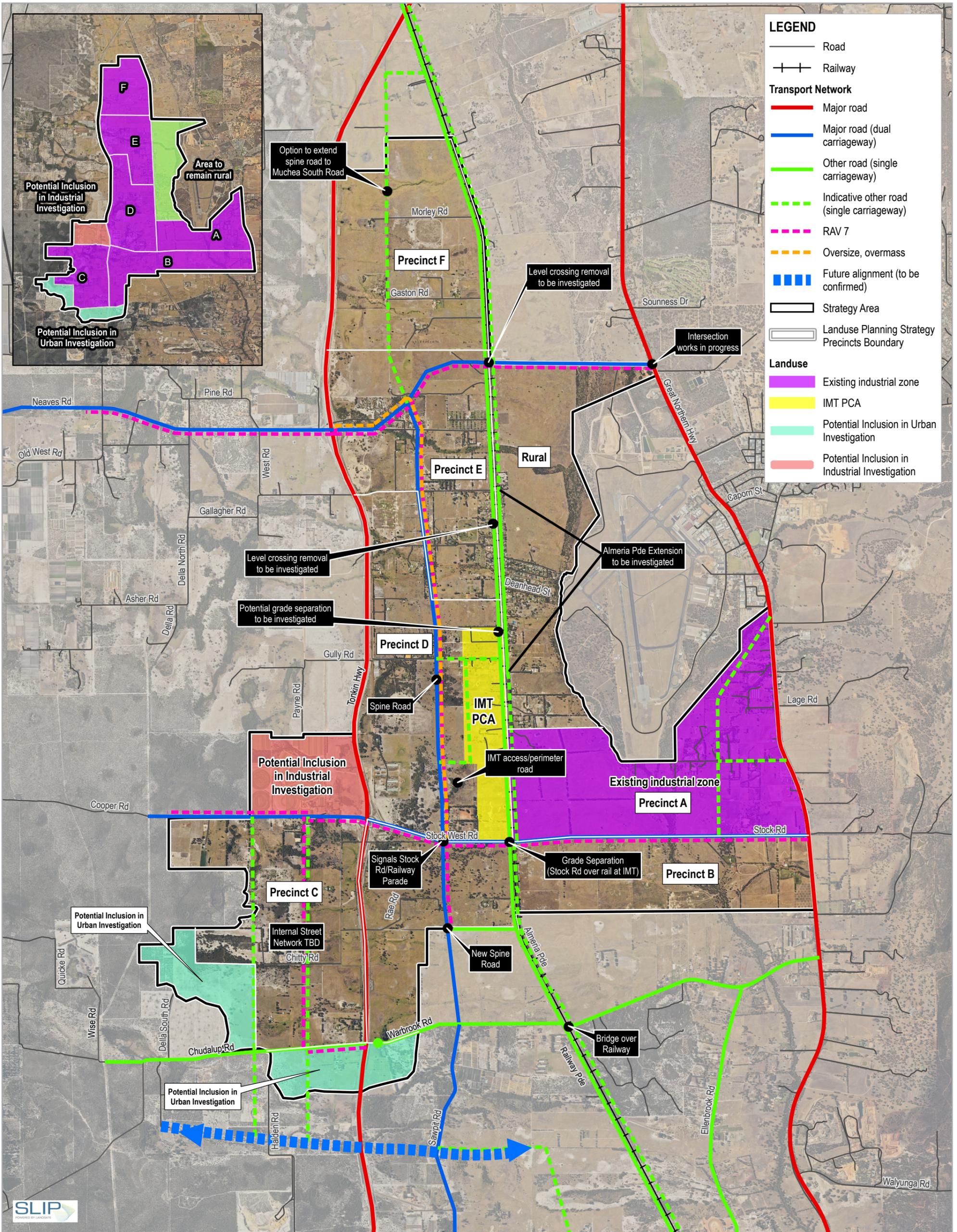
The westward extension of Cooper Road is problematic due to significant environmental constraints, primarily that it passes through an extensive area of native vegetation and much of the length is in the Priority 1 water catchment area.

Warbrook Road was considered however, Main Roads WA has advised that an interchange at this location is too close to Stock Road (2.35 km). Maralla Road was also considered as a potential alignment but was found unsuitable due to environmental constraints.

Accordingly, it is recommended that an interchange be built at the PDNH, approximately mid-block between Warbrook and Maralla Roads. It is unlikely however that this alignment would connect to GNH or to the future Whiteman-Yanchep Highway due to the proposed residential developments on either side of PDNH and the desire to prevent the dissection of these estates with a major cross-regional road.

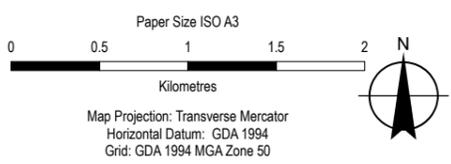
Should this situation arise, Gngangara and Neaves Roads would take on greater importance as east-west connections with the Strategy area. Connectivity to/from the west may then become an issue. This lack of direct connectivity to/from the west may reduce the efficiency of transport operations in the precinct and impede access by future workforce.

Proposed road reservation widths for each of the primary roads within the Strategy area are shown in Table 4.



**LEGEND**

	Road
	Railway
<b>Transport Network</b>	
	Major road
	Major road (dual carriageway)
	Other road (single carriageway)
	Indicative other road (single carriageway)
	RAV 7
	Oversize, overmass
	Future alignment (to be confirmed)
	Strategy Area
	Landuse Planning Strategy Precincts Boundary
<b>Landuse</b>	
	Existing industrial zone
	IMT PCA
	Potential Inclusion in Urban Investigation
	Potential Inclusion in Industrial Investigation



Department of Planning, Lands & Heritage  
Bullsbrook Freight and Industrial  
Land Use Planning Strategy

**Proposed Primary Transport  
Network at Full Development**

Project No. 61-37134  
Revision No. D  
Date 03/02/2021

**FIGURE 22**

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Print date: 18 Jan 2022 - 09:44

Data source: GHD: Masterplan Boundary, Transport Network - 20200203, Created by: htmiza

**Table 4 – Primary road reservation widths and cross sections**

Road	Section	Arterial type	RAV status	Reserve width	Cross section
Stock Road	GNH to Tonkin Highway	Primary Distributor	RAV 7 & OSOM (Spine Road to GNH)	60.0 m	Two carriageways, each with <ul style="list-style-type: none"> <li>• 2 x 3.5 m traffic lanes</li> <li>• 3.0 m outside shoulder</li> <li>• 1.0 m median shoulder</li> </ul> 6.0 m median 3.0 m off-road cycleway 10.0 m vertical clearance (GNH to Spine Road)
Cooper Road	Tonkin Highway to west of study area	Regional Distributor	RAV 7	40.0 m	Single carriageway <ul style="list-style-type: none"> <li>• 2 x 3.5 m traffic lanes</li> <li>• 2.0 m shoulders</li> </ul>
Neaves Road	Tonkin Highway to rail line	Primary Distributor	RAV 7, OSOM	50.0 m	Two carriageways, each with <ul style="list-style-type: none"> <li>• 2 x 3.5 m traffic lanes</li> <li>• 3.0 m outside shoulder</li> <li>• 1.0 m median shoulder</li> </ul> 6.0 m median 3.0 m off-road cycleway 10.0 m vertical clearance (GNH to Spine Road)
Rutland Road	All	Primary Distributor	RAV 7, OSOM		6.0 m median 3.0 m off-road cycleway 10.0 m vertical clearance (GNH to Spine Road)
GNH	Warbrook Road to Brig Way	Primary Distributor	RAV 7 Remains OSOM	Variable, mostly per existing	Variable depends on local features. Focus on intersection treatments in the short to medium term
Muchea South Road	Rutland Road to north of study area	Regional Distributor	RAV 4	40.0 m	Single carriageway <ul style="list-style-type: none"> <li>• 2 x 3.5 m traffic lanes</li> <li>• 2.0 m shoulders</li> </ul>

Road	Section	Arterial type	RAV status	Reserve width	Cross section
Spine Road	All	Regional Distributor	RAV 7 & OSOM	40m	Two carriageways, each with <ul style="list-style-type: none"> <li>• 2 x 3.5 m traffic lanes</li> <li>• 2.0 m outside shoulder</li> <li>• 1.0 m median shoulder</li> <li>• 6.0 m median</li> </ul>

Changes to the road network within the Strategy area will be driven by:

- the now completed PDNH
- traffic generated by new industries and subdivision within the Strategy area
- provision for an IMT on the west side of the railway line
- external traffic generators, such as the rapidly growing residential areas at Bullsbrook east of GNH and the future urban areas to the immediate south of the Strategy area

## 6. Servicing infrastructure

The Strategy area is large and remote from established and serviced urban fronts, with an extended development timeframe.

The Strategy area is not currently serviced and the Water Corporation has advised they have not undertaken any long-term planning to provide servicing of the Strategy area, with the exception of the areas that are already zoned for industrial development immediately south of the Bullsbrook Townsite.

While the need for a review of the water and wastewater service planning for the Strategy area is identified, the ultimate solution will be dependent on a range of factors, these being:

- how much land will ultimately be set aside for Industrial use;
- timing of upgrades in the adjacent water and sewer system network;
- finalisation of transport corridors and crossings; and,
- uptake in industrial land

The proposed water and sewer upgrades for the Bullsbrook Townsite are anticipated to occur in the next 15 years. As development planning progresses within the area developers should liaise with Water Corporation to assess the status of water and wastewater service provision.

### 6.1 Water

In order to service industrial and service/commercial land use within the Strategy area, new scheme water distribution infrastructure will need to be planned and built within and near the Strategy area.

The Water Corporation have advised that there is some capacity, within the long-term planning, to service parts of the Strategy area with scheme water. In the short to medium term, water supply for the proposed 'Urban Investigation' areas to the north of Ellenbrook and the southern parts of 'Precinct B' and 'Precinct C' industrial areas may be supplied by the Gngangara Reservoir.

To meet additional industrial demand in the long-term, increased storage will be required to supplement the Gngangara Reservoir supply and provide adequate capacity for the southern parts of the proposed industrial area. Engineering investigations will need to be completed to determine the hydraulic limits of gravity supply from the Gngangara Reservoir and a plan prepared for the staged construction of required water distribution infrastructure.

Current planned upgrades to service the full urban development of the Bullsbrook Townsite area further identify construction of large (2 x 20 ML) water storage tanks from 2040. The Water Corporation has identified that these tanks could potentially service the northern parts of the Strategy area in proximity to the Bullsbrook Townsite (potentially Precincts E and F).

For those parts of the Strategy area outside of existing or planned Water Corporation scheme water upgrades, additional planning upstream is required. Any additional demand will require reinforcement from another source along with further tanks to provide the additional capacity.

Challenges to be resolved include arrangements for rail and highway crossings, including the alignment in Stock Road and crossing of Ellen Brook and consideration of the impact of shallow ground water in the low-lying areas. These can be substantial cost items and are likely to impact on the overall alignment and distance of water distribution. In addition, light and general industries have

highly variable water demands, and more detailed planning is required to enable estimates of scheme water demand.

Increasing demand for water coupled with declining water availability may result in the need for development within the Strategy area to reduce its reliance on reticulated water and look to alternative fit for purpose water source options.

Many factors will influence the availability of cost-effective, suitable fit for purpose water supplies, with the preferred options likely to vary at the precinct scale based on the proposed industry types, intensity of land use and timeframe for development. Options for future evaluation may include rainwater storage systems, groundwater and recycled water.

## 6.2 Sewer

The Strategy area is not serviced by reticulated sewerage and the Water Corporation have advised that outside of existing planning no provision for wastewater reticulation for industrial land use has been planned for.

With the decommissioning of the Bullsbrook Wastewater Treatment Plant (WWTP), reticulated wastewater service provision for the Bullsbrook Townsite will be directed to Beenyup WWTP, with reuse as part of the groundwater replenishment scheme. The Water Corporation have identified that the proposed sewer pressure main does not have capacity to accept additional out-of-catchment wastewater from the Strategy area.

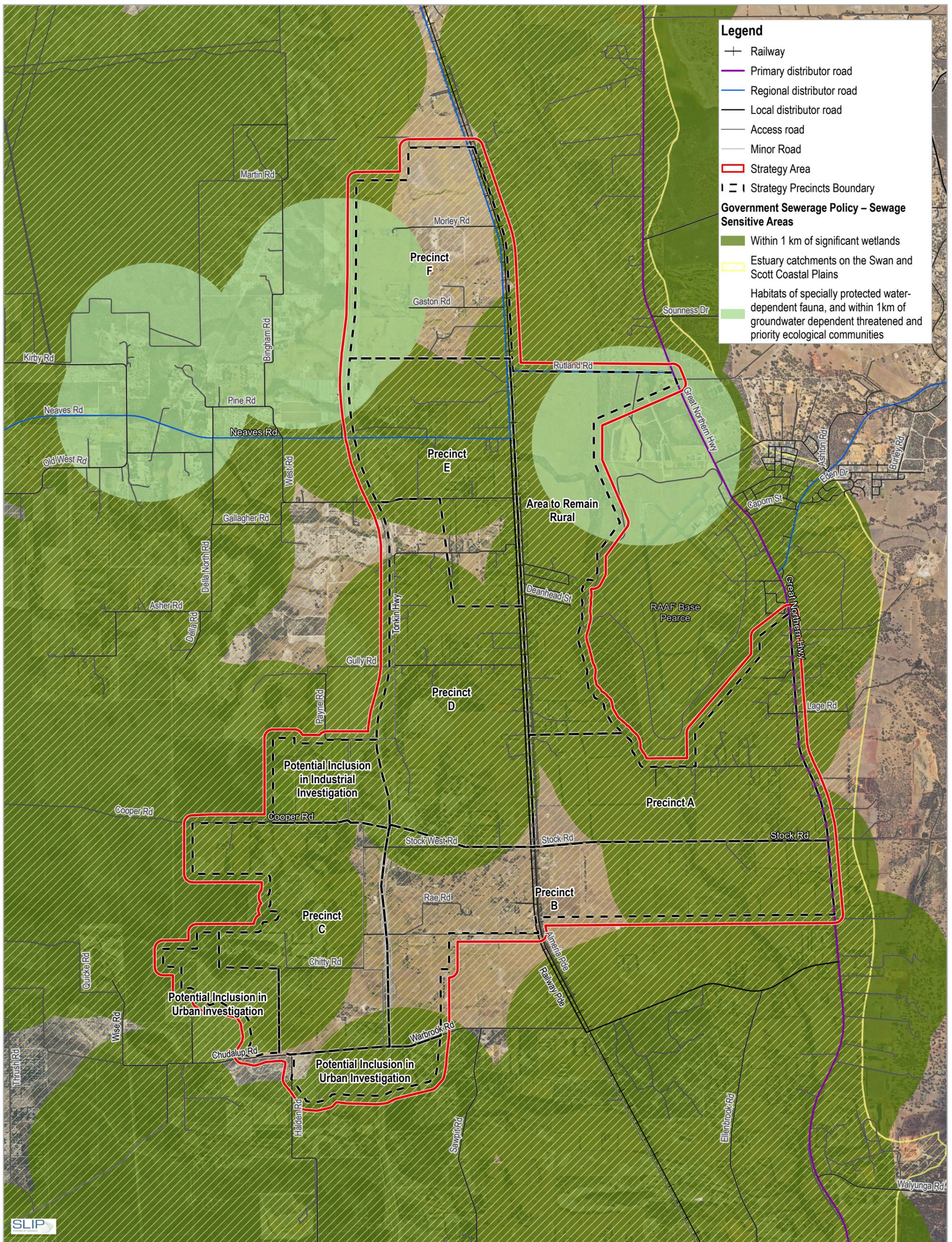
Additionally, there are environmental risks associated with transferring wastewater through the Gngangara Reservoir which may influence future sewer pressure main alignments from Ellenbrook, as it is necessary to pump additional sewer effluent demand over to the coastal treatment plant systems.

The Government Sewerage Policy (Sewerage Policy) outlines a number of requirements for the connection to reticulated sewerage. Relevantly, the Sewerage Policy identifies the following key matters relating to on-site sewerage treatment which are relevant to the proposed development of the Strategy area:

- where reticulated sewerage is not provided the potential impacts to development include low intensity development and restricted or reduced flexibility to change or intensify land use in future
- a one-hectare minimum lot size is applied to land within high groundwater level (for example, less than 0.5 metres below natural ground level) and/or sewage sensitive areas to manage cumulative impacts on the environment and water resources
- the majority of the strategy area is mapped as within 1km of significant wetlands, and part of Precinct F is mapped as “Habitats of specially protected water-dependent fauna, and within 1km of groundwater dependent threatened and priority ecological communities” to the east of Neaves Road (DPLH 2019)
- separation distances for on-site disposal from water resources and groundwater
- on-site systems should not be sited in areas that are low-lying and prone to flooding.
- industrial development proposals are required to provide detail of likely trade waste, details of proposed method of disposal of trade waste and contingency measures such as emergency response to spills

While on-site disposal may be considered, this should be assessed at the subdivision and/or development application stage based on the specific land capability (e.g. soil types, depth to groundwater) across each precinct. On-site disposal may not be suitable for large parts of the Strategy area due to the presence of sewage sensitive areas (water dependent ecological communities and wetlands), waterways and shallow depth to groundwater (limiting infiltration capacity of soils and resulting in insufficient land available for sewage disposal). Additionally, in sewerage sensitive areas, lot sizes for on-site disposal are restricted to one hectare, and development will likely be restricted to dry industry only. This is unlikely to result in the desired range of industrial land uses or employment densities.

An option for wastewater servicing across the majority of the Strategy area is provision of reticulated sewerage through small package treatment plant(s) or decentralised system(s), operated by a service provider. However, operation of a local WWTP requires economic evaluation at the precinct scale for provision of services. Where land development occurs prior to the volumes required to make a local WWTP operationally and economically viable, developers will be required to investigate and fund temporary servicing arrangements to convey wastewater. The proposed water and sewer upgrades for the Bullsbrook Townsite are anticipated to occur in the next 15 years. The Water Corporation has advised that the ultimate solution will depend on the required demand determined by how much land will ultimately be set aside for industrial use, timing of upgrades in the adjacent water and sewer system network, finalisation of transport corridors and crossings, and uptake in industrial land.

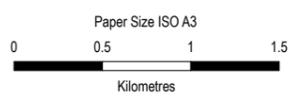


**Legend**

- +— Railway
- Primary distributor road
- Regional distributor road
- Local distributor road
- Access road
- Minor Road
- ▭ Strategy Area
- ▭ Strategy Precincts Boundary

**Government Sewerage Policy – Sewerage Sensitive Areas**

- Within 1 km of significant wetlands
- Estuary catchments on the Swan and Scott Coastal Plains
- Habitats of specially protected water-dependent fauna, and within 1km of groundwater dependent threatened and priority ecological communities



Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50



Department of Planning, Lands & Heritage  
 Bullsbrook Freight and Industrial  
 Regional Water Management Strategy

Project No. 61-37134  
 Revision No. G  
 Date 1/18/2022

**Sewerage Sensitive Area**

**FIGURE 23**

## 6.3 Power

There is available capacity at the Muchea Zone Substation over the next 5 years to service initial stages of the industrial development. However, the limiting factor is the existing 22kV power line capacity. The existing 22kV feeders from the Muchea Zone Substation will only be able to service a limited amount of development before upgrades are required. Initially upgrades such as capacitors and upstream line augmentation will be sufficient, however as the development demand triggers larger load requirements, new 22kV cable feeders from the Muchea Zone Substation will be required to provide extra capacity.

Ultimately a new 132kV zone substation or 330kV terminal station will be required to service the broader industrial area, dependent on future load requirements. A line assessment study will be required prior to the construction of the line(s) to determine the final route and associated restriction zones. Western Power anticipates the restriction zones could be a minimum width of 20 metres for 132kV and 60-70 metres for 330kV depending on span lengths, and would restrict building development within these zones. The restriction zone would need to be protected by a Western Power transmission line easement over any freehold properties affected to ensure that Western Power has unobstructed access, safety standards are met and the asset is protected.

A “Public Purpose – SEC” reservation would be required under the Metropolitan Region Scheme (MRS) to protect and manage the zone substation or terminal station assets.

## 6.4 Telecommunications

Various providers are able to service industrial developments in the Strategy area with telecommunications, whether it be fixed line or wireless systems.

## 6.5 Gas

ATCO Gas has an existing distribution main along the Railway Parade corridor that is capable of servicing industrial demand, and thus the expansion of capacity can occur as required.

# 7. Industrial land market

## 7.1 Overview

Emerging trends occurring in industrial land markets across Australia reveals how the use of industrial land is changing. The globalised economy emphasises a requirement for innovation and specialisation to establish a competitive niche. This has resulted in changes to the planning and positioning of industrial estates, with lots needing to be more flexible and adaptable to tenant needs and requirements. Key trends include:

- more flexible lot sizes
- bigger more efficient warehousing
- greater accessibility by road, rail and public transport for both business and employees
- convenient location close to growing residential areas and hence access to workforce
- greater importance placed on competitive advantage
- reduction in land costs in order to be more competitive
- an ability to have an increased number of functions occurring at any one site

The Bullsbrook freight and industrial area, once environmental, drainage and servicing constraints are addressed, is well placed to respond to the factors described above, due to its high accessibility to rail and road and relatively large landholdings enabling flexibility in lot sizes to adapt to market conditions.

## 7.2 Competition

Initially, the major competition to industrial land within the Strategy area will come from The Junction, located along the GNH in Upper Swan. The project covers approximately 150 hectares and will provide “light industrial” zoned land. Lots range in size from 4000 sqm to 14,000 sqm.

Muchea located approximately 20 km north of the Strategy area, at the intersection of the Brand Highway and GNH, is well positioned with strategic location factors very similar to Bullsbrook, including access to GNH, the future PDNH, the northwest sub-region and freight rail as well as a sustainable employment base. Due to its location north of Bullsbrook and provision of a large vehicle break-down area, Muchea provides an advantage for businesses involved in transporting large equipment and other goods to and from locations in the Mid-West and Northwest.

Expansion of the Muchea employment node is constrained by the lack of suitable land for industry and may not be able to provide enough land for the total forecast demand or more importantly, land suitable for the prescribed uses. Bullsbrook however, is relatively flat and as such is able to provide land suitable for industrial use, in particular large lot development.

Other competitive areas include Meridian Park (Neerabup), Forrestdale, Hazelmere and to a lesser extent the Flinders Precinct at Latitude 32. Meridian Park in Neerabup is identified as a more direct competition for the Strategy area due to its ability to release larger lots to the market, its location in the northern suburbs, proximity to the existing industrial estate in Wangara (which already has a critical mass) and the employment catchment expected through the northern sub-regions.

Notably, the Stockyards Estate in Hazelmere has been very successful. This can be attributed to its attractiveness to freight and logistics users due to its close proximity to the airport and major arterial routes as well as the consolidated land ownership, which facilitates the ability to deliver large lots to the market with custom-built facilities in a relatively short timeframe.

## 7.3 Comparative Advantage

A key competitive advantage of the Strategy area is its strategic location, with great north-south connectivity and proposed improved east-west connectivity. The completion of NorthLink WA in particular, provides a catalytic boost to the accessibility of the strategy area. The Bullsbrook freight and industrial area's connectivity to road and rail infrastructure will provide access to:

- metropolitan industrial areas (Neerabup and Muchea)
- northwest sub-region
- Midland-Geraldton railway line providing port access at Fremantle and proposed outer harbour
- agricultural areas
- broader regional freight network, including Mid-west and North West
- a sustainable employment base

Additionally, the identification of a future IMT has the potential to catalyse a micro-economy driving freight and logistics, distribution centres and head offices as well as other supporting sectors. Adequate industrial land supply is critical to support agglomeration and clustering of industrial activities.

## 7.4 Demand

Several factors drive industrial demand, primarily:

- export and import driven economic growth (including mining)
- domestic industrial production and construction
- population and employment growth

### 7.4.1 Economic growth

Western Australia's annual economic growth rate of -2.7 per cent was the slowest growth of all the states and territories and over the past 10 years with the state averaging 3.9 per cent growth per year (Macroplan, 2020). Forward projections indicate that there will be a quick turnaround in State economic growth from the 2017/18 financial year onwards with Western Australia's economy projected to grow at an annual average of 3.0 per cent in the long-term (Macroplan, 2020).

Economic conditions are a key driver of population growth in Perth. This is primarily due to the employment prospects created in a strong economy, which attract additional permanent migrants.

## 7.4.2 Production and construction

Mining investment is expected to fuel demand for labour and create significant flow-on multiplier benefits for the Western Australian economy. There is significant capital expenditure in the mining sector within Western Australia, with more than \$176 billion in capital expenditure in projects.

Even under conservative assumptions there will be demand for more than 25,000 construction jobs and more than 4,000 operational jobs. The flow on impacts into other supporting sectors such as mining service, building and construction services, and materials manufacturing, will drive strong industrial growth within the Perth market (Macroplan, 2020).

## 7.4.3 Population

Population growth and dwelling construction will be a key driver of industrial land demand given the synergies in regard to construction and building services, distribution centres for retail operators and other local industrial service precincts.

Perth's northwest urban corridor remains the biggest greenfield sub-region of Perth and Peel and will require increased linkages to the northeast sub-region to provide sufficient employment generating lands within suitable commuting distances for the growing population.

The population within the northwest sub-region is expected to double to 740,330 people by 2050, increasing annually by three percent. In the northeast sub-region, population growth is occurring at a rate of two percent per annum more than doubling by 2050 from 209,150 people in 2011 to 450,580 by 2050.

## 7.4.4 Employment

Perth's population has an average annual growth of 4.1 percent across the past decade, matched by equally strong growth in employment. Between 2006 and 2016, the composition of employment within Perth altered slightly as the general economy moved towards a service sector base however over the five years leading up to 2016, there has been a noticeable shift in the industry composition.

The mining industry now accounts for 5.0 percent of employment, construction 9.9 percent and transport and warehousing about 4.6 percent. This shift in trend has implications for the future industrial land requirements of Perth. As employment in these industries continues to grow faster than average employment growth, the demand for industrial land will continue.

Demand for business and technology parks will continue to grow, and large intermodal and freight hubs will be required as knowledge and innovation-based businesses linked to mining and minerals seek to move into the supply chain.

## 7.4.5 Demand analysis

Perth, while isolated from the rest of Australia, has strong international connectivity with economic links to Asia. From a trade perspective, these connections are more efficient than the eastern states due to time zones and transport costs. The implications are that Perth can accommodate businesses and absorb investment from overseas potentially more effectively than the eastern states.

The Bullsbrook freight and industrial area provides an opportunity to help service this export growth, building an efficient, high-technology IMT facility without interrupting existing operational facilities.

The large area available for development could deliver a long-term solution to meet the needs of Western Australia’s growing economy while providing land supply and keeping prices contained to facilitate economic development. With opportunities in traditional areas of Kewdale and Welshpool diminishing, the Strategy area is ideally located to become the next freight and logistics hub, actively servicing areas in the north-west such as Geraldton and the Pilbara. The inclusion of a potential IMT further enhances its appeal to the freight and logistics sector.

The Strategy area has a number of potential industry segments, particularly those related to the transport industry, including:

- heavy haulage and ancillary uses
- freight and logistics
- transport related services (i.e. mechanical workshops)
- agriculture
- mining related industries (i.e. product testing)

The overall size, zoning and composition of industrial employment land within the Strategy area will depend on the end user. As such, potential employment sectors have been identified along with the associated infrastructure requirements, lot sizes and implications for the overall project (Table 5).

The lots sizes should reflect the target industries and the natural competitive advantages of the precinct(s). There are a number of market gaps in Perth’s industrial market, with an under-representation of larger lots. The Strategy area could address this current market gap through flexible lot sizes dictated by market forces and end user requirements.

**Table 5 - Land use specification and schedule**

Target market	Infrastructure requirements	Lot sizes	Project Outcome
Transport and logistics	<ul style="list-style-type: none"> <li>• Good ingress and egress for B-Double/B-Triple</li> <li>• Intermodal facilities</li> <li>• Access to port and rail</li> </ul>	10+ ha	Be developed to be the next transport and logistics hub in the northern sub-regions
Heavy haulage and ancillary uses including Highway Service centre	<ul style="list-style-type: none"> <li>• Good ingress and egress</li> <li>• Wider roads</li> <li>• Dual road access</li> <li>• Lay down areas</li> <li>• Hardstand areas</li> <li>• Fuel and road service</li> </ul>	1 – 10 ha	Help to create a cluster of transport and related industries. Provide support services to the transport and logistics tenants
Agriculture/rural including processing and storage	<ul style="list-style-type: none"> <li>• Flexible zoning</li> <li>• Flexible lot sizes</li> <li>• High power</li> </ul>	1 – 2 ha	Potential to attract from the existing worker profile and use of the area
Mining related	<ul style="list-style-type: none"> <li>• Flexible lot sizes</li> <li>• High power</li> <li>• High on-site security</li> </ul>	Up to 2 ha	Help add diversification to the estate while also complementing other targeted industrial uses
Non-industrial uses including storage	<ul style="list-style-type: none"> <li>• Flexible lot sizes</li> <li>• Parking</li> </ul>	Up to 2000 sqm	Provide on-site amenity for tenants, increasing the

Target market	Infrastructure requirements	Lot sizes	Project Outcome
			estate's appeal and increasing employment opportunities for the local population

## 7.5 Employment generation and economic value

Over the longer term, development of the Strategy area in conjunction with the Muchea employment node will ideally form an employment corridor in much the same way as Dandenong South in Melbourne and the Casey Cardinia Employment Corridor.

The proposed industrialisation of the Strategy area will serve three key objectives:

- Provide industrial land with the flexibility to respond to future requirements.
- Provide much needed supply and hence competition to the industrial market assisting in keeping the general cost of land at more affordable levels.
- Create employment opportunities to promote population growth.

Delivery of industrial land at Bullsbrook will provide significant opportunities for local employment and industrial activities to support the Bullsbrook area. These employment opportunities can be classified into three categories:

- Direct employment generation: the initial amount of ongoing jobs directly created by the proposed construction/development phase and other expenditure flows.
- Indirect employment generation: additional ongoing jobs indirectly created by the proposed development
- Long-term supported employment in industrial land.

Long-term supported employment has been calculated from a review of the likely employment land mix within the Strategy area to the benchmarks established in Table 6.

**Table 6 - Job densities by industry (Source: Macroplan 2020)**

Industry	Jobs (per ha)
Manufacturing	33-40
Construction	33-50
Wholesale trade	20
Transport and storage	20
Support services	18

Based on the above schedule and the employment land mix identified, an average density of 30 jobs per hectare is likely to be achieved. It is estimated that there will be approximately 1,395 hectares of land that can be developed after conservation and transition areas are taken into account. This suggests that the Bullsbrook freight and industrial area is likely to generate around 41, 850 jobs once fully developed. The following table (Table 7) outlines the anticipated jobs generated in the short, medium and long term.

**Table 7 - Job generation (Source: Macroplan 2018)**

Development Timeframe	Period	Developable Land (ha)	Direct Employment
Short-term	2020-2040	270	8,100
Medium-term	2030-2075	450	13,500
Long-term	2050-2100+	675	20,250
Total	2020-2100+	1,395	41,850

## 8. Strategy vision and objectives

The vision for the Bullsbrook freight and industrial area is:

***“To provide for a range of traditional and emerging industries with a focus on supporting the freight objectives for the broader metropolitan region and increasing employment opportunities in the north metropolitan subregions, while recognising the need to protect environmental attributes and the amenity of the residential and other sensitive uses within and adjacent to the area.”***

The key objectives of the Strategy can be broadly classified into key categories including economy and employment, development interfaces, transport and infrastructure and environment. Local Structure Plans prepared for land within the Strategy area will be required to demonstrate how these objectives will be met and implemented. The objectives are detailed below:

### Economy and Employment

1. protect industrial and employment lands from encroachment of incompatible land uses
2. allow for flexibility in land use as the economy and cyclical factors determine demand for industrial development in the future

### Development Interfaces

3. maximise opportunities for freight related land uses surrounding the IMT
4. achieve a high level of amenity and built form outcomes within a modern well-planned industrial estate
5. transition industrial uses to provide appropriate interfaces to sensitive development

### Transport and Infrastructure

6. integrate broader road and movement networks to facilitate industrial access
7. ensure that connectivity for existing residents is maintained and accessibility for future residents and workforce is maximised
8. ensure that land is appropriately serviced to accommodate anticipated and desired industrial land uses

### Environment

9. protect the natural environment from adverse impacts
10. acknowledge and respect cultural heritage

# 9. Strategies and actions

The objectives of the Strategy have been developed to address key land use and planning issues upon which a framework for further detailed planning can be developed.

The following section analyses the key issues that influence each planning objective and provides appropriate planning strategies and actions to resolve these issues to achieve the Strategy’s intended purpose. These strategies and actions also provide the context for the Strategy.

## 9.1 Economy and Employment

**Objective 1: protect industrial and employment lands from encroachment of incompatible land uses**

The key drivers to industrial land demand are population growth and export volumes. Growth in exports, particularly around the mining industry has a flow on effect for employment, freight movements and population growth. This in turn drives demand for industrial land to support the expansion of warehousing and storage facilities, the need for additional IMTs and other population driven industrial uses.

The NESRPF indicates that demand for industrial land in the north-east sub-region is expected to grow to 2, 810 ha by 2050, representing an average take up rate of 34.7 ha per annum. In comparison, it is estimated that the Strategy area could achieve a take up rate of between 12-15 ha per annum over the same period.

In view of this, protection of the existing rural zone is required until the land is required for industrial purposes. This will prevent land fragmentation and minimise the potential for encroachment from incompatible uses prejudicing the future use of the land for industrial purposes.

Strategy	Action
1.1 protect existing rural land as an interim measure	<ul style="list-style-type: none"><li>a. preserve rural zonings until land us required for industrial purposes</li><li>b. maintain current framework for decision making</li><li>c. limit the number of discretionary land uses within the rural zone which may prejudice the objectives of this Strategy. For example, retirement villages, educational establishments, places of public worship</li></ul>

**Objective 2: allow for flexibility in land use as the economy and cyclical factors determine demand for industrial development in the future**

Full build-out of the Strategy area is a long-term proposition, therefore, the planning of this area must be highly responsive to changes in economic cycles and in the way land may be developed as the estate evolves and matures. This will entail ensuring there is the flexibility for a diversity of industrial uses and developments, recognising that land requirements can vary considerably, from smaller sites (1,000m<sup>2</sup> – 2,000m<sup>2</sup>) for service commercial/light industry, through to large sites of several hectares for freight and logistics activities.

Having flexible lot sizes, with the ability to accommodate custom built facilities based on tenant requirements, will enhance the attractiveness of the estate. Additionally, land assembly mechanisms should allow adaptive responses to changing industry needs and requirements.

Strategy	Action
2.1 Provide a range of industrial lot sizes to accommodate the needs of various industry types.	<ul style="list-style-type: none"> <li>a. Require that the mix of industrial lot sizes proposed as part of future structure planning have regard to up-to-date industrial land demand and supply modelling</li> <li>b. Incorporate minimum lot size restrictions into structure plans to preserve large lots that can be customised to suit tenant requirements</li> </ul>
2.2 Provide flexibility in land assembly.	<ul style="list-style-type: none"> <li>a. Promote flexible land tenure options such as leasehold arrangements to prevent land fragmentation</li> <li>b. Create lot sizes/configurations which provide for larger lots and/or allow for lots to be consolidated/amalgamated as required</li> </ul>

## 9.2 Land Uses and Interfaces

**Objective 3: maximise opportunities for freight related land uses surrounding the IMT**

Bullsbrook is located within 20 kilometres of the planned Muchea Industrial Park which shares the same characteristics of high accessibility to road and rail networks and a sustainable employment base. While in the longer term it is envisaged that Bullsbrook and Muchea will ultimately form an employment corridor, it will be necessary in the short to medium-term to ensure that both industrial areas can be sustained independently of each other.

Bullsbrook has the opportunity to be focused on distribution centres for the northern metropolitan sub-regions, interstate freight and import processing. The presence of an IMT within the Strategy area provides an opportunity to rationalise freight transport within the Perth metropolitan region, especially by using rail to transport goods and commodities to and from the ports at Fremantle and Kwinana. This would assist in managing many of the externalities and issues associated with the movement of containerised freight through Perth, particularly as the Fremantle inner-harbour and its major servicing roads approach their practical capacity limits.

Land use activities that are aligned with and support this change in the freight task should be supported. The Bullsbrook freight and industrial area represents the most significant area for proposed future industrial development in the northeast sub-region. The proposed intermodal terminal will facilitate freight related strategic employment, optimise the use of existing road and rail infrastructure and provide for increased containerised freight movements, thereby maximising supply chain efficiencies and decreasing freight conflicts on the road network.

The development of the Bullsbrook freight and industrial area requires the provision of transport linkages, both within the Strategy area and externally. Of particular importance will be the provision of safe and efficient transport links between the proposed IMT and other parts of the Strategy area.

Freight operators require the capacity to move goods on a 24/7 basis. As international freight movement has become more rapid and responsive to customer demand, the activities of logistics and distribution centres have increasingly become dependent on the timing of other supply chain activities. It is likely that future trends in freight movement and supply chain management strategies will influence the demands and activity that occurs within the Strategy area, particularly the IMT.

Current planning for the IMT site seeks to facilitate a development that will ultimately cater for throughput of 250,000 TEU<sup>3</sup>/annum. Initial terminal capacity has been estimated as 150,000 TEU/annum. In addition to containerised cargo, it is expected that large volumes of light commercial vehicles and passenger cars (primarily used for commercial purposes) will access the IMT and the wider Bullsbrook freight and industrial area on a daily basis.

Strategy	Action
3.1 provide a safe and efficient transport network to better integrate the IMT with surrounding industrial land uses	<ul style="list-style-type: none"> <li>a. provide direct road access to the IMT site by realigning Railway Parade along the west boundary of the IMT site</li> <li>b. provide access to the IMT from Neaves Road via Railway Parade and the PDNH</li> <li>c. upgrade Stock Road to dual carriageway to accommodate OSOM vehicles along Stock road between the IMT and GNH</li> <li>d. construct Stock Road East to provide a road connection between GNH and the PDNH</li> </ul>
3.2 encourage the development of freight related land uses by modifying and upgrading the rail network to accommodate potential future freight demand including interstate rail traffic	<ul style="list-style-type: none"> <li>a. upgrade the railway between Millendon Junction and Bullsbrook to dual gauge with higher axle capacities</li> <li>b. make provision to accommodate 1800 metre trains in the southern approach siding, with internal sidings capable of expansion to 900 metres</li> <li>c. space turnouts and sidings to allow future upgrade to dual gauge</li> <li>d. design rail corridors to allow for future standard gauge conversion</li> <li>e. design new grade separations that allow for double stacked rolling stock</li> <li>f. provide flexibility in the IMT layout to accommodate direct approach for trains to/from the north</li> </ul>
3.3 encourage the location of key anchor tenants adjacent to the IMT	<ul style="list-style-type: none"> <li>a. work with landowners and the Department of Transport to catalyse development of a freight and logistics hub adjacent to proposed IMT facility</li> <li>b. provide suitable land for transport, logistics and heavy haulage activities focused on intrastate/interstate and metropolitan demand, adjacent to the IMT</li> <li>c. optimise rail/container access and identify key locations for intermodal freight and handling facilities</li> </ul>

<sup>3</sup> A TEU (Twenty-foot Equivalent Unit) is a measure of containerised cargo mass based upon a standard 20-foot international shipping container. Double length (40 foot) containers are also commonly used to ship freight, which equates to two TEUs each.

#### Objective 4: achieve a high level of amenity and built form outcomes within a modern well-planned industrial estate

The Bullsbrook freight and industrial area interfaces with existing rural and future urban areas and is traversed by a number of high-volume roads. Existing residents will naturally be concerned with the impacts of industrial development on the amenity of the locality. Additionally, the attractiveness of the industrial estate will impact the willingness of new investors and future residents to locate to Bullsbrook.

The siting and design of buildings is an important element in enhancing the visual appearance and attractiveness of the Bullsbrook freight and industrial area. It is important that future industrial development presents an attractive frontage, particularly if fronting high volume roads or close to rural and residential developments. As a minimum, future development within the Bullsbrook freight and industrial area should respond to the following principles:

- sensitivity to the scale and character of adjoining areas
- retain active frontages where possible to key roads and locations
- ensure a high standard of design particularly where fronting major roads and sensitive uses e.g. residential
- incorporate landscaping to frame buildings, outdoor storage areas and car parks

Strategy	Action
4.1 incorporate measures that promote high amenity development	<ul style="list-style-type: none"> <li>a. consider the use of vegetation buffers where appropriate to screen industry from rural and residential property</li> <li>b. include requirements in the local structure plan(s) requiring the preparation of Design Guidelines</li> <li>c. ensure development is sensitively designed and sited with respect to environmental assets, rural landscape, major road vistas and amenity</li> <li>d. include provisions in local structure plans to provide for built form that incorporates environmentally sensitive design principles including passive solar design, energy and water efficiency principles</li> </ul>
4.2 promote active frontages to key roads	<ul style="list-style-type: none"> <li>a. provide opportunities for commercial, bulky goods retailing and associated service business along portions of Stock Road, GNH and local distributor roads</li> </ul>

#### Objective 5: transition industrial uses to provide appropriate interfaces to sensitive development

Managing the interface between industries and sensitive uses is necessary not only to prevent adverse impacts on residents and other sensitive users but also to protect the ongoing employment and economic benefits associated with industrial development.

Different types and scales of industry deliver different sorts of benefits to the local and regional economy and have different impacts on adjoining development. Land use conflicts can be effectively

managed by separating industries, which have the potential to generate off-site impacts, from residential and other sensitive uses. This can be achieved by transitioning the different types of industry where they are in close proximity to residential or other sensitive land uses.

Light industrial development generally comprises light and service industries. Conversely, general industry provides for a broad range of industrial, service, logistical and storage activities, which, by the nature of their operations, should be isolated from residential and sensitive uses. Where there is a potential for land use conflict, local structure plans and local planning scheme zones should make provision for the transitioning of compatible land use zones for example, by placing Light Industry between the General Industry and Residential zones.

Additionally, where rural residences or sensitive uses are located in proximity to a General Industry zone, consideration should be given to limiting the permissible land uses within the General Industry zone, allowing some lighter industrial uses which could provide an appropriate transition between the two zones.

There is also potential for land use conflicts to arise from future development and the continued operations of the RAAF Base Pearce. Provisions should be identified in any future local structure plans and included in the local planning scheme to ensure that areas impacted by the operations of the RAAF Base Pearce airbase are cognisant of the development restrictions which may apply under Part 11A of the *Defence Regulation 2016*.

Strategy	Action
5.1 transition industrial uses between General Industry and Residential and Rural zones	<ul style="list-style-type: none"> <li>a. develop land adjacent to future residential areas for Light Industry to manage impacts from general industrial uses</li> <li>b. include provisions within the planning framework which limits the land use permissibilities of industries within the General Industry zone within proximity to the Bullsbrook rural enclave, to those land uses which are complementary to residential development</li> </ul>
5.2 recognising the development requirements from the RAAF Base Pearce	<ul style="list-style-type: none"> <li>a. include provisions within the local planning framework requiring that development impacted by the RAAF Base Pearce operations, comply with Part 11A of the <i>Defence Regulation 2016</i><sup>4</sup></li> </ul>

### 9.3 Transport and Infrastructure

**Objective 6: integrate broader road and movement networks to facilitate industrial access**

The proposed intermodal terminal will facilitate freight related strategic employment, optimise the use of existing road and rail infrastructure and provide for increased containerised freight movements, thereby maximising supply chain efficiencies and decreasing freight conflicts on the road network.

<sup>4</sup> <https://www.legislation.gov.au/Details/F2020C01014>

The development of the Bullsbrook freight and industrial area requires the provision of transport linkages both within the Strategy area and externally. Of particular importance will be the safe and efficient transport links from the IMT, and other industrial areas to the Bullsbrook freight and industrial area. It is linked by good east-west road connections and well located to growing workforces and employment centres in the north-west sub-region.

Challenges to be resolved include arrangements for rail and highway crossings, including the alignment in Stock Road and crossing of Ellen Brook, and consideration of the impact of shallow groundwater in the low-lying areas.

Strategy	Action
6.1 reclassify/reserve roads to reflect their purpose and function in the broader road network	<ul style="list-style-type: none"> <li>a. reserve the portion of Stock Road between GNH and the PDNH for regional road purposes (status to be determined) in the MRS</li> <li>b. reserve the section of Neaves Road west of the PDNH for Other Regional Road purposes in the MRS</li> </ul>
6.2 upgrade roads and intersections to accommodate industrial and local traffic	<ul style="list-style-type: none"> <li>a. upgrade Stock Road to dual carriageway and the section of Stock Road between the IMT and GNH to accommodate OSOM</li> <li>b. connect Stock Road to Tonkin Highway and GNH with grade separation over the railway</li> <li>c. realign Railway Parade with Stock Road and the IMT</li> <li>d. construct a new north-south spine road through the precinct by extending Sawpit Road to connect Neaves Road</li> <li>e. realign and duplicate Neaves Road to connect to Rutland Road and GNH with a grade separation over the railway line</li> <li>f. consider duplication of GNH particularly the southern approach to the Bullsbrook townsite</li> <li>g. extend Almeria Parade south to connect to Stock Road and future industrial area at Lot 300</li> <li>h. design road connections suitable for heavy vehicle use (up to 36.5 metres)</li> </ul>
6.3 network changes and upgrades to the railway line should Bullsbrook become a destination for interstate rail traffic	<ul style="list-style-type: none"> <li>a. upgrade railway between Millendon Junction and Bullsbrook as dual gauge, to accommodate greater rail transport capacity to and from Bullsbrook</li> <li>b. provision to accommodate 1800m trains in the southern approach siding, with internal sidings being capable of expansion to 900m</li> <li>c. the design of all rail corridors should allow for standard gauge conversion and for future double stacked rolling stock</li> <li>d. IMT layout to be flexible to allow for direct approach from the north</li> </ul>

**Objective 7: ensure that connectivity for existing residents is maintained and accessibility for future residents and workforce is maximised**

The potential for freight infrastructure to influence (and be impacted by) urban development should be considered by further detailed planning.

As a potential major employment centre, the provision of passenger transport to the Strategy area should be considered in future local structure planning processes. The distance between the surrounding residential areas and the Strategy area will be a major factor that could make access by active and public transport challenging and will require careful planning of direct road connections to and from the precinct, particularly across significant barriers such as the PDNH and the freight rail line.

The relationship between the Strategy area, the IMT and the other existing and future industrial/employment nodes (at Muchea, North Ellenbrook, Wangara and Neerabup) must also be considered, as well as the potential distribution of employment and customer travel to and from the broader Strategy area.

Strategy	Action
7.1 promote alternate modes of transport	<ul style="list-style-type: none"> <li>a. provide off-road shared paths along PDNH, GNH, Stock/Cooper Roads, Neaves/Rutland Roads and Railway Parade for pedestrians and cyclists</li> <li>b. road reserves should be wide enough for cycling to provide a 'last mile' connection from the primary routes</li> <li>c. require the provision of end of trip facilities for all development</li> <li>d. provide safe pedestrian crossing facilities at signalised intersections and adjacent to public transport stops</li> </ul>
7.2 investigate opportunities to develop a public transport network	<ul style="list-style-type: none"> <li>a. undertake bus network planning once subdivision and development in the area is sufficiently progressed</li> <li>b. investigate potential for bus routes linking the future Ellenbrook station and Bullsbrook town centre via the industrial area</li> </ul>
7.3 increase east west connectivity between the industrial area and existing and future residential areas	<ul style="list-style-type: none"> <li>a. make provision for an additional interchange to the PDNH mid-way between Warbrook and Maralla Roads</li> <li>b. investigate the opportunity for a new east west road linking future populations and workforce in East Wanneroo to the PDNH</li> <li>c. maintain the level crossings at Strachan and West Roads to enable continued east west access to the existing enclave of rural residences to the east of the rail line</li> <li>d. investigate opportunities for increased controls at retained crossing (i.e. boom gates for increased safety)</li> </ul>
7.4 provide for safe and efficient access for all road users	<ul style="list-style-type: none"> <li>a. prepare access strategies that accommodate the safe access and movement of commuter and freight traffic while maintaining road functionality</li> </ul>

## Objective 8: ensure that land is appropriately serviced to accommodate anticipated and desired industrial uses

At present, the provision of water and wastewater is constrained by limited capacity of existing water sources, costs relating to increased distribution and uncertainty around the ultimate requirements. In addition, light and general industries have highly variable water demands and as such, more detailed planning is required to enable estimates of scheme water demand.

There is currently no capacity within the existing Bullsbrook WWTP and until a viable alternative can be identified, the lack of sewerage will restrict the types of industries that may be contemplated.

Before land is rezoned for industrial use, the State Government and its servicing agencies will need to establish a clear understanding of ultimate servicing needs and staging requirements in order to deliver a coordinated and proactive response for the staged release of industrial land within the Strategy area.

In the short-term, a lack of available service infrastructure may restrict the development of industrial zoned land to those industries which are not reliant on major infrastructure such as trunk sewer/water for example, freight and logistics and intermodal facility.

Strategy	Action
8.1 ensure that future development makes adequate provision for wastewater disposal	<ul style="list-style-type: none"> <li>a. investigate and plan for provision of sewerage services</li> <li>b. undertake groundwater modelling to inform the planning and siting of service infrastructure</li> <li>c. liaise with the Water Corporation to explore opportunities to construct sewer infrastructure that supports a wide range of industrial uses within the Strategy area</li> </ul>
8.2 improve access to and distribution of reticulated water supply	<ul style="list-style-type: none"> <li>a. liaise with the Water Corporation to identify opportunities to strategically extend the reticulated water supply system</li> </ul>
8.3 encourage early investment and planning in extending and augmenting power supply	<ul style="list-style-type: none"> <li>a. liaise with Western Power to prioritise important electricity supply upgrades</li> </ul>

## 9.4 Environment

### Objective 9: protect the natural environment from adverse impacts

The Bullsbrook freight and industrial area is subject to several environmental constraints including seven Bush Forever sites, water dependent ecosystems and the potential presence of conservation significant flora and fauna. Additionally, the potential for any off-site impacts on the Western Swamp Tortoise habitat and the Gngangara Moore River State Forrest will have to be appropriately managed.

In addition to the statutory protection of environmental attributes (where appropriate), environmentally sustainable land use and development should also be encouraged. This could include measures such as water sensitive urban design, rainwater harvesting, greywater recycling and the treatment of stormwater.

Strategy	Action
9.1 protect native vegetation, environmentally sensitive areas and ecological linkages	<ul style="list-style-type: none"> <li>a. identify foreshore and buffer areas to waterways and conservation category wetlands as part of the rezoning process</li> </ul>

Strategy	Action
	<ul style="list-style-type: none"> <li>b. protect foreshore reserves and wetland buffers as part of the local planning scheme amendment process</li> <li>c. undertake flora and fauna surveys on the ground to identify, retain, protect and manage significant remnant vegetation within the Strategy area</li> <li>d. amend the local planning scheme to apply the new Environmental Conservation reserve to Crown reserves in instances where it is desirable to retain native vegetation</li> <li>e. insert provisions into the local planning scheme to avoid areas of native vegetation when developing structure plans for land within the Strategy area</li> <li>f. ensure that appropriate interfaces are provided between development and environmentally sensitive areas</li> </ul>
9.2 encourage environmentally sensitive design	<ul style="list-style-type: none"> <li>a. Through a structure planning or local planning policy framework, implement design guidelines which incorporate environmentally sensitive design principles and solutions which are to be satisfied as part of subdivision and/or development</li> </ul>
9.3 support integrated water management in accordance with State Planning Policy 2.9 – Water Resources	<ul style="list-style-type: none"> <li>a. work with the Department of Water and Environmental Regulation to prepare a District Water Management Strategy that will build upon the Regional Water Management Strategy that was prepared as part of this document</li> <li>b. require local water management strategies to be produced as part of the local structure planning processes</li> <li>c. require urban water management plans to be produced as a condition of subdivision</li> </ul>
9.4 integrate bushfire risk into local planning decisions	<ul style="list-style-type: none"> <li>a. require that bushfire assessments in accordance with SPP 3.7 are undertaken at the relevant stages of the planning process</li> </ul>

### Objective 10: acknowledge and respect cultural heritage

All planning and development must consider the requirements of heritage and cultural protection afforded under State and Commonwealth legislation. Land use should embrace the cultural history of the area by incorporating interpretation, conservation and protection of culturally sensitive sites, where appropriate.

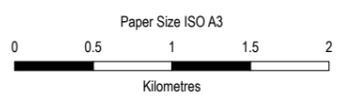
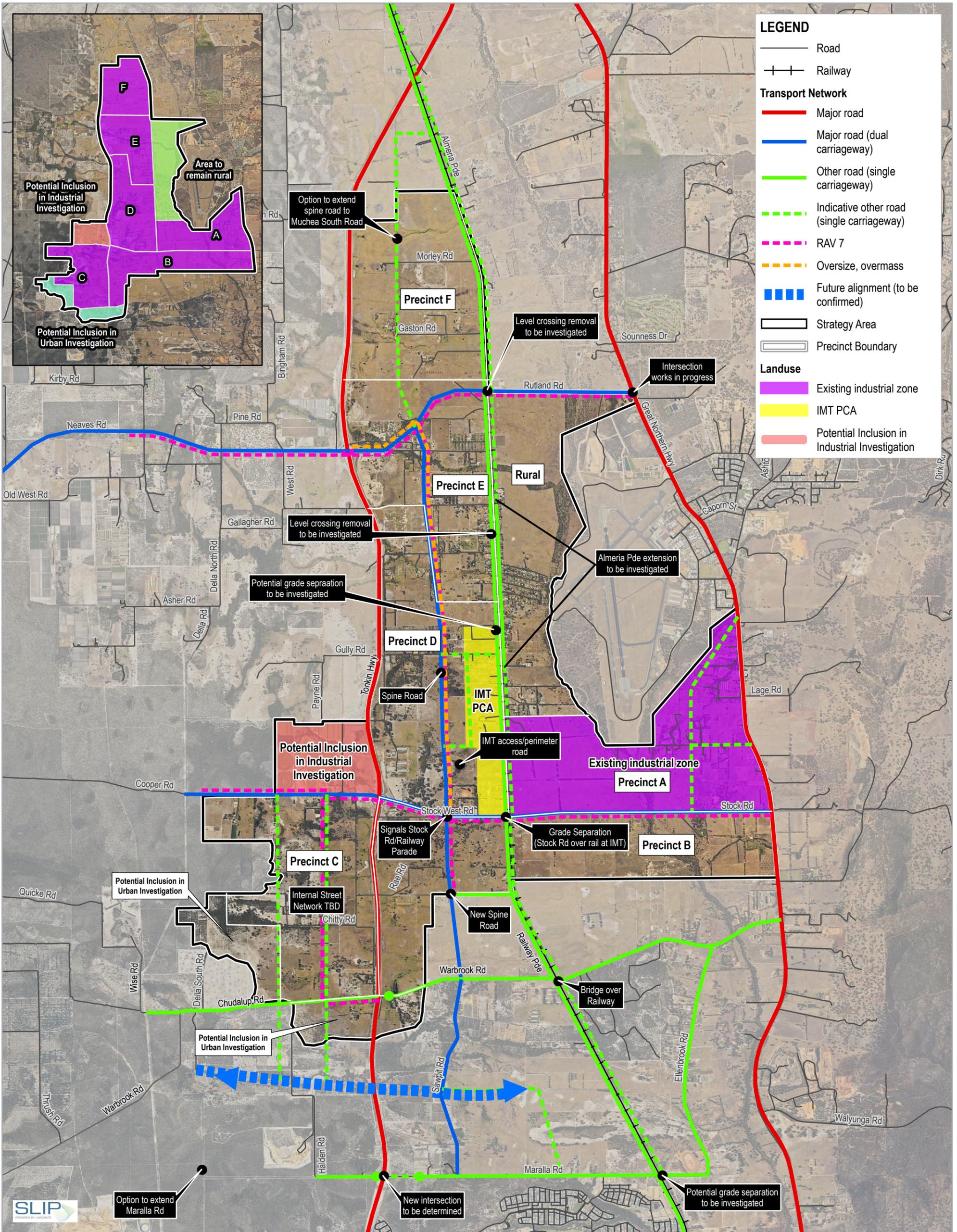
Strategy	Action
10.1 Recognise sites of Aboriginal heritage significance.	<ul style="list-style-type: none"> <li>a. Support the protection of sites with heritage/cultural values</li> <li>b. Require that matters of Aboriginal heritage are addressed in local structure plans and design guidelines</li> <li>c. In consultation with Indigenous communities develop management plans, to ensure Indigenous heritage places and values are appropriately respected</li> </ul>

# 10. Strategic Land Use Plan

The strategic land use plan provides an overall framework for the future planning of the Strategy area (refer Figure 24). It identifies preferred land uses and key movement networks in the context of the specific six precincts as identified earlier under Section 2.2. It also outlines the actions required to resolve any issues within each precinct, in relation to the provision of appropriate servicing and drainage infrastructure.

It is noted that the six precincts have been informed by staging triggers, preferred uses, the proposed movement network, locational opportunities as well as environmental and servicing constraints. The intent of the land use precincts shown in the Strategic land use plan is to specify the general objectives and considerations that should be taken into account when undertaking further detailed planning for the area. The precinct boundaries provide strategic guidance and should not be read as absolute, with the ultimate extent and type of land uses to be defined through more detailed structure planning.

The strategy land use plan also identifies land north-west of Cooper Road and Tonkin Highway intersection as an area for potential inclusion in industrial investigation. The parcel of land identified comprises 5 lots totaling approximately 117ha. Whilst currently zoned Rural, the land is potentially well located to take advantage of access to Tonkin Highway via the Stock Road intersection (which extends from Cooper Road). Further investigations and modelling will be required to determine whether this land is suitable for formal inclusion as part of the Bullsbrook freight and industrial area / one of the 6 precincts earmarked for industrial expansion.



Department of Planning, Lands & Heritage  
 Bullsbrook Freight and Industrial  
 Land Use Planning Strategy

Project No. 61-37134  
 Revision No. 2  
 Date 1/18/2022

Strategy Plan

FIGURE 24

Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 50  
 Print date: 18 Jan 2022 - 09:54

Data source: GHD: Masterplan Boundary, Transport Network - 20180702, Concept Plan - 20181102, Landgate: Roads, Railway - 20180820. Created by: hmaniza

## 10.1 Precinct A

This precinct should be developed in accordance with the endorsed local structure plans (i.e. Bullsbrook Townsite District Structure Plan and South Bullsbrook Industrial Precinct Local Structure Plan No. 1 and No 2). The precinct is likely to accommodate a wide range of large-scale industrial uses that may have some potential for off-site impacts in accordance with its Industrial zoning under the MRS, as well as an area of commercial activity within the Highway Service zone as identified in the endorsed local structure plan.

### Example land uses which may be suitable for Precinct A (subject to further detailed planning)

- service station
- transport depot
- warehouse/storage
- incidental office

## 10.2 Precinct B

Development within Precinct B is intended to be a mix of general industrial and light industrial uses capitalising on the precinct's transport linkages to adjacent major arterial roads while recognising the proximity of sensitive environmental areas. Further detailed planning will be required to respond to the following:

- Provide a variety of lots sizes which are appropriately located and configured to accommodate more intense industrial activity such as light industrial and service commercial uses over time. The higher intensity lots are generally to be located adjacent to Stock Road, GNH and the local distributor roads.
- Consider establishment of limited service-commercial development along Stock Road, the realigned Railway Parade and GNH. Alternative locations can be considered where it can be demonstrated that it will be exposed to high volumes of traffic and can provide high amenity, proximity to urban development, appropriate car parking and vehicular access and has the ability to service local workers.
- The preparation of an access strategy which identifies how access to Stock Road and GNH will be appropriately managed to ensure that direct access from these roads to lots is limited. The access strategy is to address the grade separation along Stock Road, and consider the possibility of OSOM vehicles using Stock Road.
- The road network in Precinct B should be designed to a RAV 4 standard.
- Ensure that the land is appropriately serviced to accommodate the anticipated development. Where available, development is to be connected to reticulated sewer. In the absence of reticulated sewerage, development is to be restricted to dry industry only, subject to a Department of Health assessment (site and soil evaluation) demonstrating that the quality and quantity of effluent can be disposed of on-site in accordance with the Government Sewerage Policy.

### Example land uses that may be suitable for Precinct B (subject to further detailed planning)

- manufacturing, dismantling, processing, assembly servicing, maintenance or repair of goods/products
- large-format sale of goods (showroom) e.g. white goods, furniture, outdoor furniture (along major arterial roads only)
- service commercial (servicing local residents and workers) e.g. automotive and appliance repairs, hardware shop and office supplies

- Provide appropriate interfaces to any future urban areas and the Western Swamp Tortoise habitat, ensuring that any impacts are effectively mitigated.
- Create an attractive streetscape through built form and landscaping of frontages along Stock Road the realigned Railway Parade, and GNH to improve visual amenity along major roads.

## 10.3 Precinct C

Precinct C will accommodate a mix of uses predominantly smaller scale light and service industrial activities that capitalise on adjacent urban development and population driven activity. The local structure plan and any development within Precinct C is required to respond to the following:

- The co-ordination and efficient extension of trunk infrastructure with the expansion and development of adjacent urban areas. Connection to reticulated sewer and water will be required.
- Ensure development within the precinct provides a suitable land use interface to rural land and/or residential development.
- The provision of a hard road interface between industrial development and environmentally sensitive areas.
- Deliver street frontages with high-quality landscaping, building design and adequate setbacks to minimise noise and visual impact of industrial development and the PDNH.
- Retain and protect areas of high environmental value. Development of areas of extreme bushfire hazard and significant environmental value are to be precluded unless it can be demonstrated that management will not compromise the protection of environmental assets, people, property and infrastructure.
- The preparation of an access strategy which identifies how access to Stock Road, Cooper Road and Warbrook Road will be appropriately managed to ensure that direct access to these roads is prevented.
- Provide a variety of lot sizes between 2000m<sup>2</sup> up to 1 ha, responsive to market demand.
- The road network in Precinct C should be designed to a RAV 4 standard.

### Example land uses that may be suitable for Precinct C (subject to further detailed planning)

- garden centre
- large-format sale of goods (showroom)
- equipment hire
- trade display
- light industrial and service commercial e.g. automotive repairs, tyre outlets, hardware stores, curtain manufacturers, furniture shops, paint stores, lighting showrooms etc. (low impact – servicing local residents and workers)

## 10.4 Precinct D

Precinct D encompasses the preferred IMT site and transition area which will provide for general large scale industrial uses that are complementary to the IMT. The broader precinct will be focused on transport, freight and logistics as well as vehicle related services that benefit from direct access to the major arterial road network.

Further detailed planning within Precinct D is required to respond to the following:

- Prevent the encroachment of land uses and activities which may compromise the establishment of a future IMT. Encourage uses that add value to and complement the IMT activities, including but not limited to distribution centres, mechanical workshops, processing and packaging, transport depots and manufacture and component assembly.
- Ensure the road network is designed to accommodate industrial traffic including heavy haulage vehicles, providing high levels of accessibility for freight vehicles between adjoining precincts and between the IMT and major roads.
- Where appropriate alternative access can be provided, at-grade crossings should be removed as the precinct develops to provide adequate safety for users.
- RAAF Base Pearce development restrictions including, but not limited to, height (inclusive of temporary structure such as cranes), storage of hazardous materials, lighting, bin storage and noise.
- The preparation of an access strategy which identifies how direct access to Stock Road and the proposed north-south spine road is to be restricted, with access being obtained off secondary roads.
- The road network in Precinct D should be designed to a maximum RAV 7 standard.
- Provide lot sizes that are capable of accommodating large format industrial uses. The precinct should provide a variety of lot sizes of 0.5 hectare and above.
- Limit subdivision of land where proposed lot sizes are less than 20 ha to avoid fragmentation of the land and maintain future flexibility and adaptability as the precinct develops. Subdivision to lot sizes less than 20 ha may be considered where it can be demonstrated that the proposed subdivision meets the key objectives of this Strategy and satisfies the abovementioned criteria.

**Example land uses that may be suitable for Precinct D (subject to further detailed planning)**

- Distribution centre
- workshop
- transport depot
- Warehouse
- Storage

## 10.5 Precinct E

Precinct E is suitable for value adding industries, manufacturing and processing in the longer-term. This precinct presents opportunities due to the east-west road connectivity to support general industrial land uses such as showroom and warehouse developments along portions of Neaves Road as well as industries that complement the development of Muchea.

Further detailed planning within Precinct E is required to respond to the following:

- RAAF Base Pearce development restrictions including, but not limited to, height (inclusive of temporary structure such as cranes), storage of hazardous materials, lighting, bin storage and noise.
- Retention and protection of areas of high environmental value. Development of areas of extreme bushfire hazard and significant environmental value are to be precluded unless it can be demonstrated that management will not compromise the protection of environmental assets, people, property and infrastructure.

**Example land uses that may be suitable for Precinct E (subject to further detailed planning)**

- processing and packaging
- mining support industries
- manufacture and component assembly

- Ensure that the land is appropriately serviced to accommodate the anticipated development. Where available, development is to be connected to reticulated sewer. In the absence of reticulated sewerage, development is to be restricted to dry industry only, subject a site and soil evaluation by the Department of Health.
- The preparation of an access strategy which identifies how access to Neaves Road and the internal north-south spine road will be appropriately managed to ensure that direct access to these roads is limited.
- The road network in Precinct E shall be designed to a RAV 7 standard.
- Limit subdivision of land where proposed lot sizes are less than 20 ha to avoid fragmentation of the land and maintain future flexibility and adaptability as the precinct develops. Subdivision to lot sizes less than 20 ha may be considered where it can be demonstrated that the proposed subdivision meets the key objectives of this Strategy and satisfies these criteria.

## 10.6 Precinct F

Take-up of land within Precinct F is expected to be over the longer-term and is anticipated to be the last precinct to be developed within the Strategy area, with an expected development timeframe greater than 70 years. Development of this precinct will be best determined through future local structure planning which responds to the market, demand and technology requirements of the time.

The local structure plan and any development within Precinct F is required to respond to the following:

- Limit subdivision of land where proposed lot sizes are less than 20 ha to avoid fragmentation of the land and maintain future flexibility and adaptability as the precinct develops. Subdivision to lot sizes less than 20 ha may be considered where it can be demonstrated that the proposed subdivision meets the key objectives of this Strategy and satisfies these criteria.
- Deliver street frontages with high-quality landscaping, building design and adequate setbacks to minimise visual impact of industrial development.
- Ensure that the land is appropriately serviced to accommodate the anticipated development. Where available, development is to be connected to reticulated sewer. In the absence of reticulated sewerage, development is to be restricted to dry industry only, subject to a Department of Health assessment (site and soil evaluation) demonstrating that the quality and quantity of effluent can be disposed of on-site in accordance with the Government Sewerage Policy.
- Retention and protection of areas of high environmental value. Development of areas of extreme bushfire hazard and significant environmental value are to be precluded unless it can be demonstrated that management will not compromise the protection of environmental assets, people, property and infrastructure.

### **Example land uses that may be suitable for Precinct F (subject to further detailed planning)**

- to be determined (potential for head offices, non-mainstream training facilities and knowledge intensive industry e.g. mining/agriculture research)

# 11. Implementation

The Strategy is a high-level planning framework for development of the Bullsbrook freight and industrial area. It provides, amongst other things, the broad spatial allocation of land uses, movement networks and infrastructure provision.

It is likely to take several decades before the area is completely developed. Consequently, a flexible and adaptable planning framework that is able to accommodate a range of industrial land uses in a proper and orderly manner is required.

The Strategy area is divided into six land use precincts with general objectives and considerations for each that should be taken into account when undertaking further detailed planning. Which areas are developed first will be contingent on infrastructure requirements for the various industries and resolution of issues relating to the coordination and efficient provision of necessary infrastructure.

Prior to subdivision and development, the land is required to be appropriately zoned under the MRS and local planning scheme. Given the complexity of issues associated with development of this area, there are various investigations and studies that will likely need to be undertaken prior to the WAPC and City of Swan initiating the required amendments.

Fundamental to the future development of the Bullsbrook freight and industrial area is the resolution of water management issues. The area is highly constrained by environmental issues, shallow groundwater and water dependent ecosystems. The management of water resources will ultimately determine the amount of land that can be developed and whether or not the level of servicing required to generate the anticipated employment densities can be achieved.

The amount of fill required to achieve the necessary separation of any future development to the groundwater table warrants further investigations early on. In addition, widescale filling may have unacceptable impact on environmentally sensitive areas. It is likely that an innovative approach combining a range of measures will be required, for example, controlled groundwater levels and sub-soil drainage. For these reasons it is recommended that issues relating to water management are fully understood and addressed as part of progressing any rezoning of land within the Strategy area.

Table 8 below identifies the various studies that are required to be undertaken to support the various planning stages within the Strategy area.

**Table 8 - Rezoning requirements**

Stage of Planning Process	Requirement	Justification	Key Stakeholders
MRS / Local Planning Scheme Amendment	District Water Management Strategy	The area comprises a series of water dependent ecosystems, environmentally sensitive areas and land which is seasonally inundated. This presents challenges for development including fill requirements, drainage, servicing and road planning. As such, water management strategy should form part of the early understanding of the issues relating to water	Developer Department of Water and Environmental Protection City of Swan DPLH

Stage of Planning Process	Requirement	Justification	Key Stakeholders
		management so as to inform infrastructure planning, developable area/land use and protection of environmental attributes.	
	Service Infrastructure Strategic Planning	Strategic planning of service infrastructure is required to confirm availability of services, identify major infrastructure requirements and confirm intensity and suitability of land uses.	Service Agencies DPLH
	Preparation of development contribution plan (district level infrastructure)	The WAPC and City of Swan will need to have an understanding of key infrastructure requirements to support initiation of amendments to the local planning scheme.	Developers City of Swan DPLH WAPC
	Preparation of major road design concept plans and land requirement plans for road upgrades.	The land requirement plans will be used to determine the reserve width and required upgrades for the major roads within the Strategy area having regard to drainage, service infrastructure, traffic and any public transport requirements. These land requirement plans will inform development contribution plan(s) as well as the rezoning of the land and identification of triggers for the staging of these upgrades.	Developers City of Swan MRWA DPLH
	Undertake vegetation, wetland assessments and/or flora and fauna surveys	Assessments required to allow identification and assessment of environmental/conservation areas. Landowners to undertake further consultation with relevant agencies to determine what specific surveys or wetland assessments are required.	Developers Department of Water and Environmental Regulation Department of Biodiversity, Conservation and Attractions.
	Preparation of a Bushfire Hazard Level Assessment and Bushfire Management Plan	Developers to undertake relevant investigations in consultation with the City of Swan and DFES	Developers City of Swan DFES
	Identification of broad spatial land use patterns	There is a need to identify the land use patterns to ensure alignment with the strategic objectives for the area including the management of land use	Developers City of Swan DPLH WAPC

Stage of Planning Process	Requirement	Justification	Key Stakeholders
		interfaces.	
	Preparation of Traffic Impact Assessment	To assess the impacts of any modifications to the road network and/or impacts arising from development	Developer City of Swan MRWA
Local Structure Plans	District/Local water Management Strategy	A DWMS/LWMS is to be prepared in accordance with Better Urban Water Management (WAPC 2008), State Planning Policy 2.9 Water Resources (WAPC 2006) and Planning Bulletin 92 Urban Water Management (WAPC 2008).	Developer Department of Water and Environment Protection City of Swan
	Bushfire Hazard Risk and Assessment	Required to be prepared in accordance with WAPC's Guidelines for Planning in Bushfire Prone Areas (Dec 2015), SPP 3.7 – Planning in Bushfire Prone Areas and the Australian Standard AS3959-2009 Construction of buildings in bushfire prone areas (AS3959) (Standards Australia 2009).	Developer City of Swan Department of Fire and Emergency Services DPLH
	Engineering Servicing Report	An Engineering Servicing Report is to be prepared to investigate ground conditions, sewerage, water supply, power supply, telecommunications, gas, and stormwater management and drainage.	Developer City of Swan Service agencies
	Environmental Summary Report / Level 2 Flora and Vegetation Assessment	Developer to undertake consultation with relevant agencies to determine level of investigation required	Developers City of Swan DWER DBCA
	Transport Impact Assessment	To assess the impacts of any modifications to the road network and/or impacts arising from development.	Developer City of Swan MRWA DPLH
	Preparation of management plans for wetlands, public open space and conservation areas, including the Ellen Brook foreshore.	Management plan/s required to allow identification and assessment of environmental / conservation areas.	Developer DWER DBCA
Subdivision and Development	Endorsed local structure plan	Subdivision and development is required to generally be in accordance with an endorsed local structure plan.	Developer City of Swan WAPC
	Amendment(s) to local planning scheme	Where the land is not appropriately zoned or where required to allow statutory enforcement of a local	Developer City of Swan WAPC

Stage of Planning Process	Requirement	Justification	Key Stakeholders
		structure plan, an amendment to the local planning scheme may also be required.	
	Preparation of management plans	Where identified in the local structure plans, management plans are to be prepared prior to subdivision and development.	Developer Relevant agencies
	Bushfire management plan	A bushfire management plan consistent with the requirements of SPP 3.7. This bushfire management plan is to take into account, where applicable, conservation and environmental outcomes associated with any wetland, environmental and remnant vegetation management plans.	Developer City of Swan DFES
	Urban Water Management Plan	Consistent with Better Urban Water Management Framework, an Urban Water Management Plan is to be prepared to support subdivision and/or development.	Developer Department of Water and Environment Protection City of Swan
	Preparation of Design Guidelines	Design guidelines as identified in local structure plans, to support subdivision and development where the following objectives are desirable: <ul style="list-style-type: none"> <li>○ High quality built-form solutions providing attractive industrial streetscapes</li> <li>○ Ensure that the built form, signage, streetscape and landscaping provide an appropriate interface to more sensitive land uses</li> <li>○ Efficient use of energy, stormwater harvesting and water sensitive design</li> <li>○ Landscaping that complements land uses, integrates with adjoining natural environment areas and demonstrates best practice urban water sensitive design</li> <li>○ Consider other requirements (for example, DoD operating</li> </ul>	City of Swan Department of Defence

Stage of Planning Process	Requirement	Justification	Key Stakeholders
		restrictions).	

## 11.1 Staging

The Bullsbrook freight and industrial area is likely to take several decades to be complete as identified within the industrial land demand and market analysis conducted by Macroplan (refer Appendix G). Whilst the protracted timeframes associated with the delivery of the Strategy area may delay investment across the Bullsbrook freight and industrial area, it does allow time to resolve the various infrastructure constraints which have been identified. Consequently, progressing along the requisite studies and detailed planning and keeping a planning framework that is adaptable and flexible to accommodate a range of industrial land uses is pertinent in the short to medium term.

The initial stages of development is expected to occur within Precinct A where the land is already zoned for industrial purposes. The urbanisation of the North Ellenbrook area will provide demand for population driven industry which could result in the early delivery of light and service industries in Precincts B and C.

Planning for the remaining precincts within the Strategy area will progressively be refined through future scheme amendment proposals (under both the MRS and LPS 17) and the preparation local structure plans.

Ultimately, the staging and development of the Bullsbrook freight and industrial area will be a decision for the WAPC as part of future MRS amendments. In submitting requests to the WAPC to amend the MRS, developers will be required to demonstrate that:

- comprehensive local structure plan(s) have been prepared
- there is a strategy for the efficient provision and staging of infrastructure
- the area represents frontal development in terms of servicing and development fronts
- appropriate servicing capacity is identified
- that water management has been satisfactorily and sustainably addressed across the Strategy area
- the development of the area will not prejudice the broader objectives of Bullsbrook freight and industrial area or orderly and proper planning
- there is satisfactory access from the existing road network
- environmental impacts have been satisfactorily addressed
- satisfactory arrangements have been made for developer contributions towards district and local level infrastructure

Following rezoning of the land, the timing of industrial subdivision and development will largely be dependent on:

- provision of key services and infrastructure
- ability and willingness of individual landowners/developers to address road construction/upgrades, environmental, drainage and water management issues
- demand and development take-up rate for industrial land

# Appendices