



Department of Planning,
Lands and Heritage



North-East Sub-regional Planning Framework

March 2018



The Department of Planning, Lands and Heritage acknowledges the traditional owners and custodians of this land. We pay our respect to Elders past and present, their descendants who are with us today, and those who will follow in their footsteps.

Disclaimer

This document has been produced by the Department of Planning, Lands and Heritage on behalf of the Western Australian Planning Commission. Any representation, statement, opinion or advice expressed or implied in this publication is made in good faith and on the basis that the Government, its employees and agents are not liable for any damage or loss whatsoever which may occur as a result of action taken or not taken, as the case may be, in respect of any representation, statement, opinion or advice referred to herein. Professional advice should be obtained before applying the information contained in this document to particular circumstances.

© State of Western Australia

Published by the
Western Australian Planning Commission
Gordon Stephenson House
140 William Street
Perth WA 6000

Locked Bag 2506
Perth WA 6001

Published March 2018

website: www.dplh.wa.gov.au
email: info@dplh.wa.gov.au

tel: 08 6551 8002
fax: 08 6551 9001
National Relay Service: 13 36 77

The Department of Planning, Lands and Heritage owns all photography in this document unless otherwise stated.

This document is available in alternative formats on application to the Department of Planning, Lands and Heritage Communications Branch.



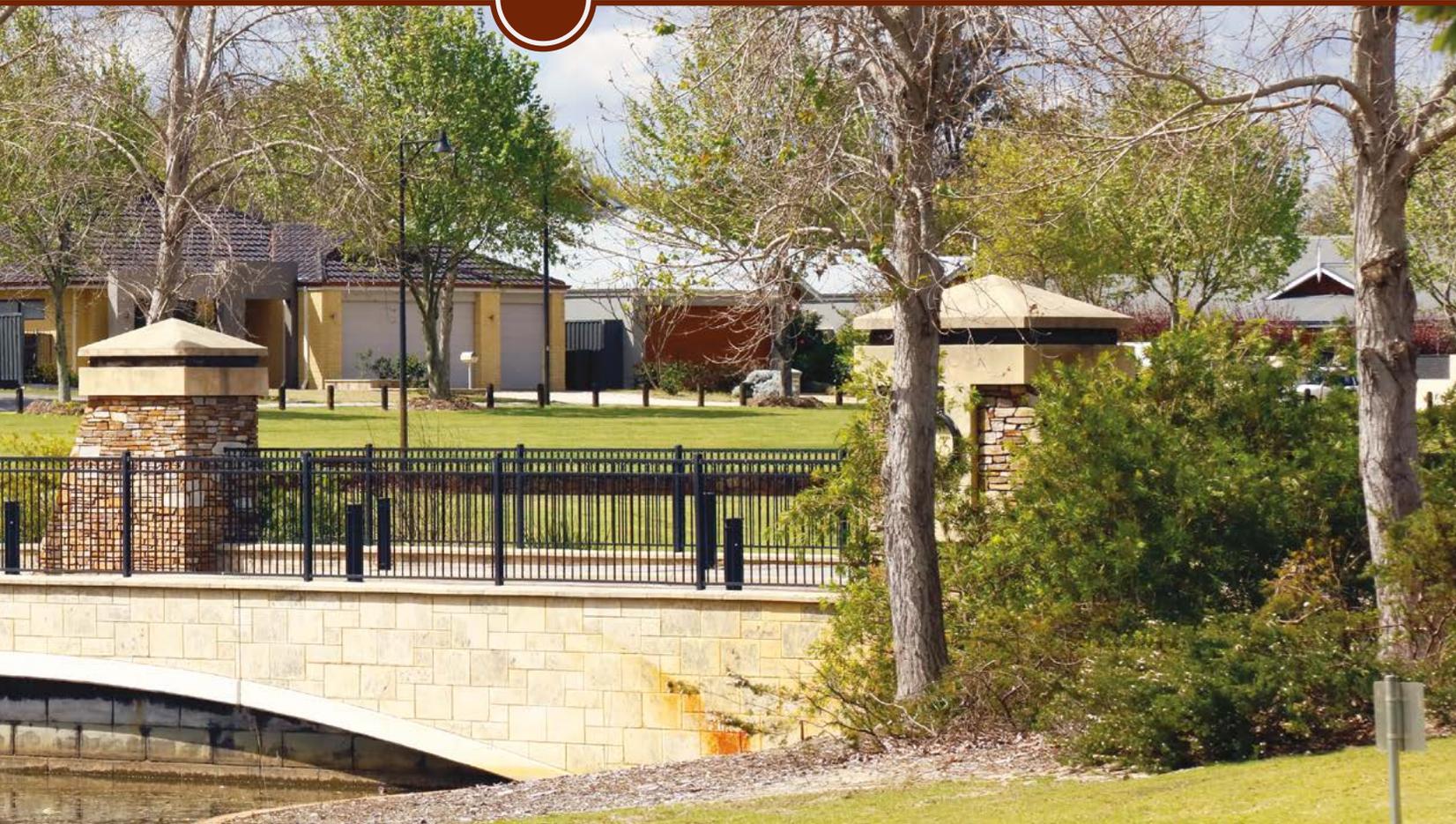
North-East Sub-regional Planning Framework

March 2018



Perth and
Peel@3.5million

www.dplh.wa.gov.au



North-East

Sub-regional Planning Framework

FOREWORD

by the Minister for Transport;
Planning; Lands

iv

MESSAGE

from the Western Australian
Planning Commission Chairman

v

1 INTRODUCTION

vi

1.1 Framework for a city of
3.5 million people

1

1.2 North-East Sub-regional
Planning Framework

2

2 PLANNING CONTEXT

4

2.1 Western Australian
Planning Framework

5

2.2 *State Planning Strategy 2050*

6

2.3 *Directions 2031 and Beyond*

6

2.4 Metropolitan Region Scheme

7

2.5 Swan Valley planning
legislation

7

2.6 Metropolitan Redevelopment
Authority - Midland

7

2.7 Preceding sub-regional
structure plans and strategies

9

2.8 Aboriginal heritage
and native title

9

2.9. The spatial plan for *Perth
and Peel@3.5million*

10

2.10 Other regional initiatives

12

3 SUB-REGIONAL PLANNING FRAMEWORK

14

Introduction

15

3.1 Key planning framework
principles

16

3.2 Consolidated urban form

18

3.3 Economy and employment

30

3.4 Community and social
infrastructure

37

3.5 Movement and access

40

3.6 Service infrastructure

48

3.7 Environment and landscape

52

3.8 Natural resources

55

4 IMPLEMENTATION

58

Introduction

59

4.1 Implementation
mechanisms and actions

59

4.2 Staging and sequencing

65

4.3 Infrastructure coordination

71

4.4 Monitoring and review

71



North-East Sub-regional Planning Framework

5 GLOSSARY, REFERENCES AND APPENDICES

Appendix 1 – Consolidated urban form	81
Appendix 2 – Economy and employment	83
Appendix 3 – Environment and landscape	86

LIST OF TABLES, FIGURES AND PLANS

Table 1: Planning framework timeframes	15	Table 6: Industrial Investigation areas – key considerations	36	Plan 1: The planning framework	17
Table 2: Urban Investigation areas – key considerations	22	Table 7: Implementation actions	60	Plan 2: Consolidated urban form	21
Table 3: Planning Investigation areas – key considerations	24	Table 8: Anticipated staging and average urban land demand	65	Plan 3: Employment opportunities	33
Table 4: Urban infill dwelling targets by local government	26	Table 9: Infrastructure staging	69	Plan 4: Community and social infrastructure	39
Table 5: 10 Principles for urban consolidation	27	Figure 1: North-East sub-region	3	Plan 5: Public transport	43
		Figure 2: Western Australian Planning Framework	5	Plan 6: Regional roads	45
		Figure 3: Metropolitan Region Scheme	8	Plan 7: Freight and aviation	47
		Figure 4: <i>Perth and Peel@3.5million</i> – a spatial plan	11	Plan 8: Service Infrastructure	49
		Figure 5: Employment and economic network 2050	31	Plan 9: Environment and natural resources	53
				Plan 10: Urban staging	66
				Plan 11: Infrastructure staging	67



Foreword by the Minister



Hon Rita Saffioti, MLA
Minister for Transport;
Planning, Lands

I am pleased to release the final *Perth and Peel@3.5million* suite of land use planning and infrastructure frameworks. The Central, North-West, North-East and South Metropolitan Peel frameworks guide the future growth of the Perth and Peel regions as a compact, consolidated and connected city that can accommodate a population of 3.5 million by 2050.

These documents seek to enable the creation of liveable and vibrant communities – suburbs, spaces and places where people want to live, work and socialise.

Where you can go to work close to where you live.

Where you can send your children to a school close to home.

Where you can visit a national park and enjoy our native fauna and flora.

Where you can buy groceries at the local shops, kick a footy at an oval or play in the park, a short walk, drive or bus ride from home.

The frameworks propose an urban footprint to ensure the Perth and Peel regions grow into the communities of tomorrow. They aim to strike a balance between the factors that make a community, from identifying enough land for residential, commercial and industrial development to how to best use proposed and existing social, community and physical infrastructure. This has all been achieved while protecting the regions' significant environmental attributes.

While a substantial volume of work underpins these documents, there is a need for further development of transport networks, including METRONET, and an increased focus on infrastructure-led planning. In this respect, these are not static documents; they will grow and evolve, as the State will, to ensure they continue to be relevant and respond to our changing landscape. They will be continually monitored with an initial review to be undertaken after three years.

Some 800,000 new homes are required to accommodate the projected population growth of 3.5 million by 2050 and this will be delivered through a mix of infill and greenfield development with targets of 47 per cent and 53 per cent respectively.

Good design and amenity is of the utmost importance to creating liveable communities. The State Government is taking a leading role through the development of a new suite of policies that will make sure design is at the forefront of all planning decisions.

Over the next four years, my key priority will be the delivery of METRONET, an integrated and coordinated land use and public transport plan that will connect our suburbs, reduce our chronic road congestion and give Perth the rail system it needs for the future. It will ensure land use outcomes are at the forefront of the design of new infrastructure and lay the groundwork for vibrant new communities.

METRONET will also guide the structural evolution of our city, linking diverse urban centres together for the first time and providing opportunities for greater density and infill development through multiple key suburban centres. It provides tangible form to the sub-regional land use planning and infrastructure frameworks as we prepare for the future.

I would like to thank the Western Australian Planning Commission and the Department of Planning, Lands and Heritage for the hard work involved in developing these documents, as well as everyone who contributed. Your participation will ensure that Perth and Peel will offer dynamic, vibrant and liveable communities that we can be proud of.



Message from the Chairman



Eric Lumsden, PSM
Chairman, Western Australian
Planning Commission

Today we live in a city that was largely planned more than 60 years ago.

The once-in-a-generation *Plan for the Metropolitan region Perth and Fremantle* (1955) - the Stephenson-Hepburn Plan - set out to accommodate 1.4 million people by 2005. This landmark plan provided the basis for the city's current spatial form and introduced many of the elements that define living in Perth and Peel including establishing regional national parks and securing river foreshores and coastal zones for the benefit of all Western Australians. It also initiated a 'corridor' approach for strategic land use planning from the 1970s to the turn of the century.

However, an increasing population has required different land use planning responses, reflected in

strategies such as *Metroplan* in 1990 and *Directions 2031 and Beyond* in 2010. Importantly, assumptions that urban development corridors, fragmentation of rural land and impacts on the natural environment could continue in a 'business-as-usual' approach have been challenged. These elements cannot be considered as economically, socially or environmentally responsible.

The Perth and Peel regions are now going through another critical period of transition. This rapid evolution is clearly evident through significant urban renewal across our capital city and development within the Peel region, home to some of Western Australia's fastest-growing communities.

Now a new strategy will provide guidance for future homes and jobs for an estimated 3.5 million people by 2050; the *Perth and Peel@3.5million* sub-regional land use planning and infrastructure frameworks are the next step in the process towards securing future sustainable, compact and connected development of the Perth and Peel regions.

The frameworks offer an integrated land use and movement network; they provide certainty over land provision and classification; they guide the timing and location of the physical and social infrastructure needed to support new communities; they seek to avoid and protect important

environmental assets; and they reaffirm the need to redress the balance between residential infill and greenfield development.

The frameworks are a comprehensive whole-of-government response to accommodate this unprecedented population increase within a consolidated urban form, informed by extensive collaboration with all relevant State Government agencies, local governments and other key stakeholders. In particular, they align with other key initiatives such as the critical METRONET initiative.

The frameworks are a first step in the ongoing process of refining and detailing planning proposals for Perth and Peel. They will be reviewed after three years and ongoing refinement will continue through local planning schemes and strategies, structure planning, subdivision and development.

The challenge now is to implement the frameworks effectively.

While Government, in conjunction with local government, will take the lead, effective implementation can only be achieved through a whole-of-community commitment. This is critical, as plans are only as good as the will to implement their vision on behalf of communities, now and into the future.



INTRODUCTION

The North-East Sub-regional Planning Framework aims to **establish** a long-term, **integrated** planning framework for **land use** and **infrastructure** to guide **future growth** across the sub-region



1.1. Framework for a city of 3.5 million people

Western Australia's Perth and Peel regions boast an abundance of physical attributes and offer numerous economic and social opportunities which have combined to provide an enviable lifestyle and quality of life which is recognised internationally. Central to this success has been careful planning that has provided housing and employment opportunities and protection of environmental attributes. Perth and Peel are expected to experience considerable population growth with a population of 2.9 million expected by 2031 and 3.5 million expected by 2050.

To accommodate the projected population growth and to protect lifestyle values into the future, new approaches to planning and development will be required, focussed on creating a connected city, which is liveable, prosperous and collaborative, linking metropolitan hubs with priority transport proposals.

The *North-East Sub-regional Planning Framework* (the framework) is one of three frameworks prepared for the outer sub-regions of Perth and Peel: North-West, North-East and South Metropolitan Peel

(including Metropolitan South-West, Metropolitan South-East and Peel sectors). Combined with the Central Sub-regional Planning Framework, these establish a long-term and integrated planning framework for land use and infrastructure provision.

The frameworks build upon the principles of *Directions 2031 and Beyond: Metropolitan Planning Beyond the Horizon* and are key instruments for achieving a more consolidated urban form that will reduce dependence on new urban greenfield developments to accommodate the anticipated



population growth by increasing residential density and urban infill development targets. The frameworks take account of economic modelling and subsequent refinements following community consultation based on the overall urban growth scenario for a city of 3.5 million.

The frameworks provide guidance for:

- the preparation of amendments to the Perth metropolitan and Peel region schemes, local planning strategies/schemes, district and local structure plans, and activity centre plans; and
- the staging and sequencing of urban development to inform public investment in regional community, social and service infrastructure.

1.2 North-East Sub-regional Planning Framework

Covering a total area of approximately 2,010 square kilometres, the North-East sub-region (Figure 1) comprises the cities of Swan and Kalamunda, and the Shire of Mundaring.

This framework sets out proposals to:

- achieve a more consolidated urban form and development;
- meet long-term housing requirements;
- strengthen key activity centres and employment nodes to meet the future needs of industry, commerce and the community;
- identify requirements for key community and social infrastructure such as those required for health and tertiary education;
- provide transport linkages that connect people with key centres of activity and employment, and access to areas beyond the Perth and Peel regions;
- facilitate and support a future regional transportation network and facilitate the provision of service infrastructure;
- identify sites to meet the growing requirements for regional sport and recreation facilities;
- protect areas with regional conservation, environmental or landscape value;
- establish the elements and functions of the green network in supporting an active and healthy community;
- encourage and guide increased connectivity between areas of open space or conservation through an integrated green network;
- protect areas with basic raw materials for timely extraction;
- provide ongoing consideration of water supply and protection of public drinking water source areas;
- retain land for rural and agricultural purposes; and
- guide the staging and sequencing of future urban development.



FIGURE 1: North-East Sub-region



PLANNING CONTEXT

The framework provides strategic guidance to government agencies and local governments on all aspects of land use and infrastructure provision in the North-East sub-region



2.1 Western Australian Planning Framework

The sub-regional planning frameworks will be recognised under *State Planning Policy 1 State Planning Framework* and should be taken into account when strategies, policies and plans that apply to the sub-region are prepared or reviewed (Figure 2).

The frameworks provide strategic guidance to government agencies and local governments on land use, land supply, land development, environmental protection, infrastructure investment and the delivery of physical and community/social infrastructure for each sub-region.

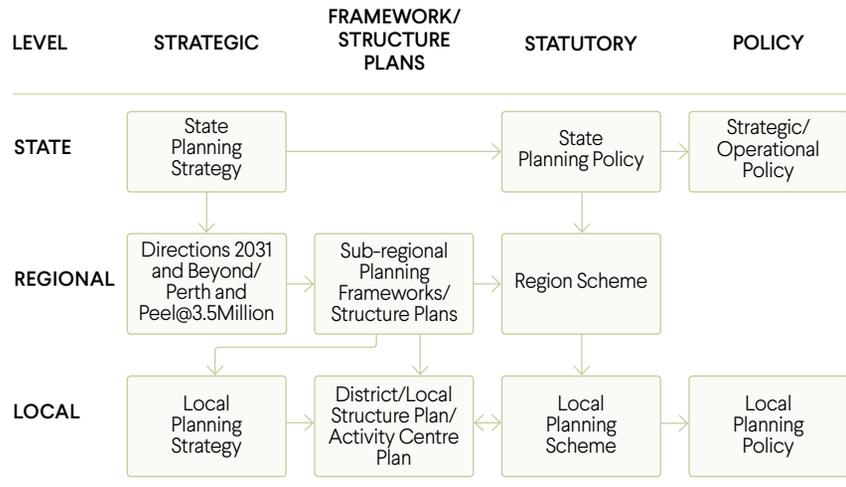
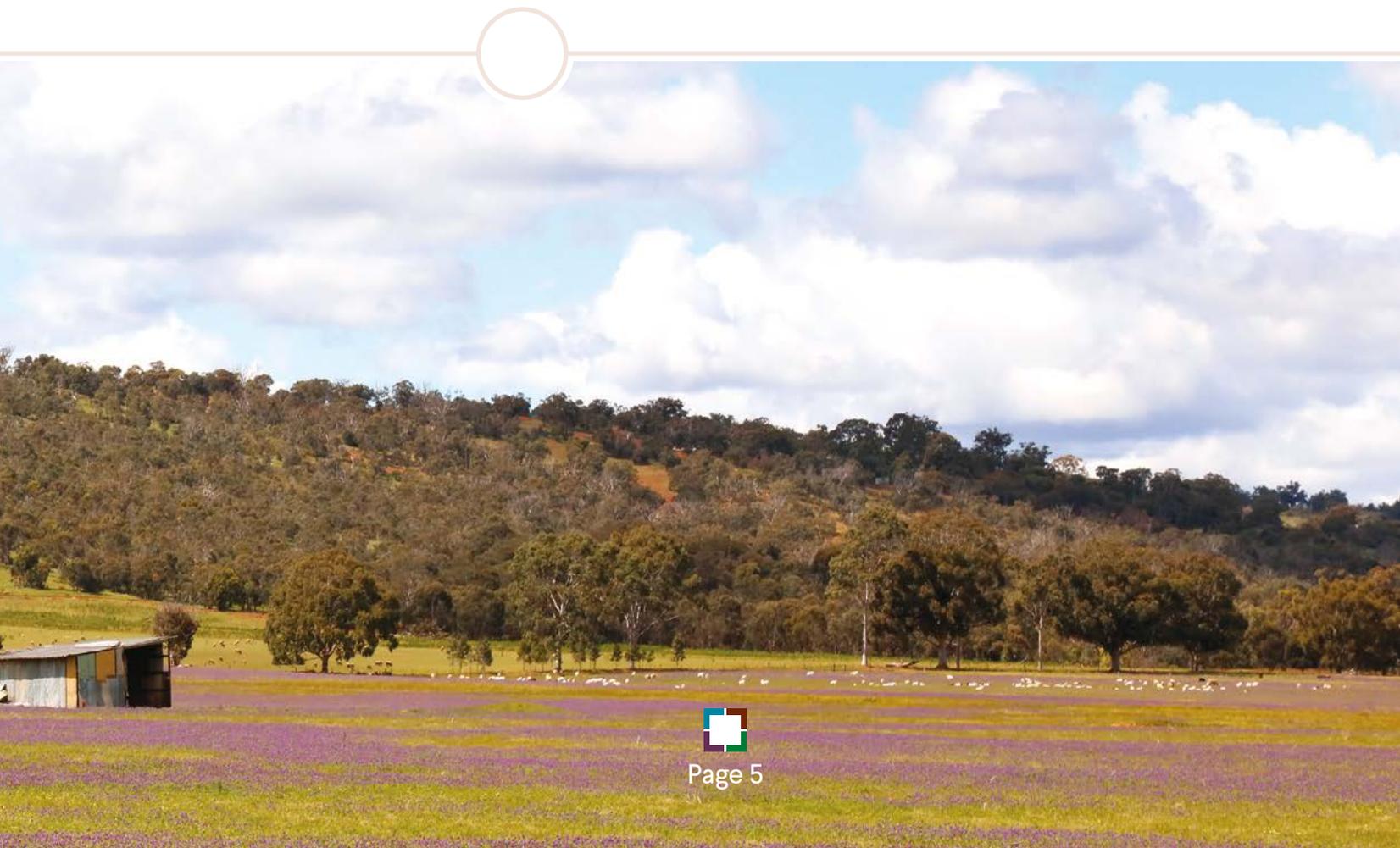


FIGURE 2: Western Australian Planning Framework



2.2 State Planning Strategy 2050

The *State Planning Strategy 2050* is the lead strategic integrated land use planning document for Western Australia, providing the strategic context and basis for the coordination and integration of land use planning and development across State, regional and local jurisdictions. It contemplates a future in which high standards of living, improved public health and an excellent quality of life are enjoyed by present and future generations of Western Australians. The strategy proposes that diversity, liveability, connectedness and collaboration must be central to achieving the vision of sustained growth and prosperity, and establishes principles, strategic goals and directions to ensure the development of the State progresses towards this vision. Population projections in the document indicate that Western Australia's current population could double to 5.4 million by 2056 and the Perth metropolitan region could be home to around 4 million people based on a high-growth scenario.

2.3 Directions 2031 and Beyond

Released in 2010, *Directions 2031 and Beyond* is a high-level strategic plan for the Perth and Peel regions that establishes a vision for future growth — creating a world-class city that is green, vibrant, more compact and accessible and with a unique sense of place.

Directions 2031 and Beyond highlights the benefits of a more consolidated city that accommodates future population growth while aiming to protect the environment and achieve a more sustainable pattern of urban development and effective transportation networks. It also:

- sets a target for a 50 per cent increase from the then current average residential density of 10 dwellings per gross urban zoned hectare in new residential areas, to 15 dwellings per gross urban zoned hectare; and

- sets a target for a 50 per cent increase from the then current 30-35 per cent level of urban infill development, to 47 per cent, within the Perth and Peel regions.

Additionally, the plan seeks to address the relationship between where people live and where they work with the aim of reducing commuting time and cost through the delivery of improved employment self-sufficiency across the outer sub-regions.

The key principles of *Directions 2031 and Beyond* formed the basis for the development of the *Perth and Peel@3.5million* spatial plan (the spatial plan). In the event of any inconsistency between *Directions 2031 and Beyond* and the frameworks, the frameworks prevail.



2.4 Metropolitan Region Scheme

The *Metropolitan Region Scheme* (MRS) is the region planning scheme for the Perth metropolitan area and is the principal statutory mechanism for the implementation of strategic land use and infrastructure proposals (Figure 3). The MRS provides for the acquisition of land (and waterways) where reserved for public purposes including regional open space, public uses and infrastructure.

Local government planning, including local planning schemes and policies are, or will be, required to be consistent with the broad land uses assigned under the MRS.

2.5 Swan Valley planning legislation

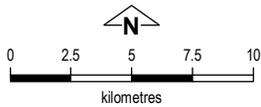
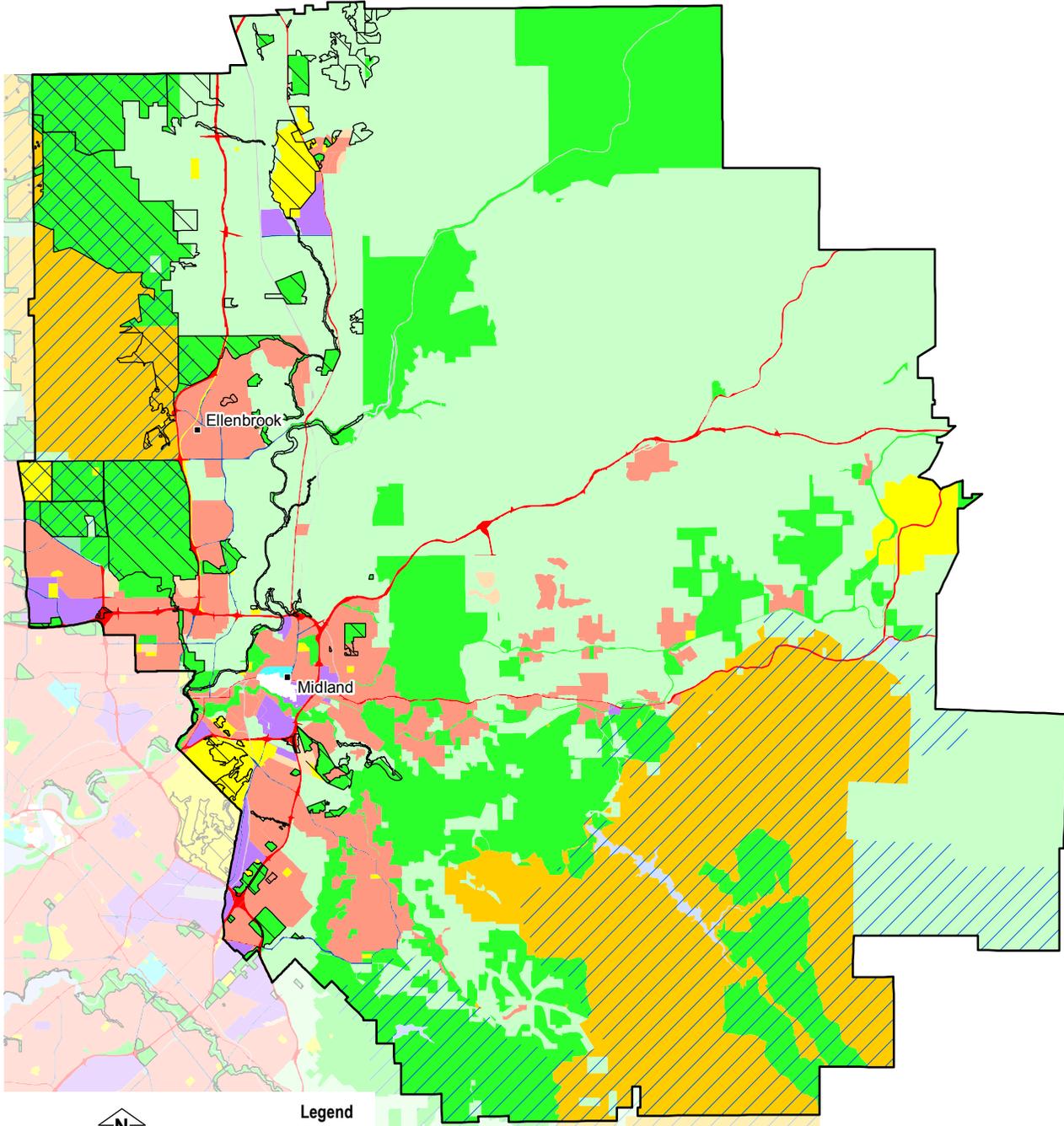
The *Swan Valley Planning Act 1995* was enacted to protect the environment and rural character of the Swan Valley, encourage traditional agricultural and other productive uses and appropriate tourism. The Act was reviewed and amended in 2006 and its boundaries are shown in Plan 1.

The Swan Valley is under increasing pressure from incompatible land use and development, which is putting its unique rural character and attributes at risk. The Act is currently being reviewed and a new planning framework is being developed. The new framework will set out the strategic planning, development and land use vision for the Swan Valley and provide policy guidance and controls to ensure future development and land use are aligned with that vision.

2.6 Metropolitan Redevelopment Authority – Midland

Under the provisions of the *Metropolitan Redevelopment Authority Act 2011*, the Metropolitan Redevelopment Authority (MRA) is responsible for administering the *Midland Redevelopment Scheme*. Within the MRA area, the MRS and the City of Swan local planning scheme do not apply and the MRA has planning responsibility to ensure that development is consistent with the MRA redevelopment objectives and vision of creating a thriving regional centre that attracts businesses, residents and tourists.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\Nts-per\magsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast
 Figure3_NESRSP_MRSPRS.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

Metropolitan Region Scheme

- | | | |
|--|---|--|
|  Central city area |  Rural - water protection |  Primary regional roads |
|  Civic and cultural |  Rural |  Other regional roads |
|  Industrial |  Special industrial |  Railways |
|  Parks and recreation |  State forests |  Bush Forever |
|  Port installations |  Urban |  Water catchments |
|  Public purposes |  Urban deferred | |
|  Private recreation |  Redevelopment Scheme/Act area | |

FIGURE 3: Metropolitan Region Scheme

2.7 Preceding sub-regional structure plans and strategies

High-level strategic documents that have guided the planning of the sub-region include the *North-East Corridor Structure Plan* (1994), *North-East Corridor Extension Strategy* (2003), *Swan Urban Growth Corridor Sub-Regional Structure Plan* (2009), *Foothills Structure Plan* (1992), draft *Outer Metropolitan Perth and Peel Sub-regional Strategy* (2010) and *Economic and Employment Lands Strategy: non-heavy industrial* (2012).

Land use and infrastructure proposals and planning principles within these documents have been refined and, where necessary to account for the current planning context, reviewed within the framework which will now guide land use planning strategies and policy development in the sub-region.

2.8 Aboriginal heritage and native title

The frameworks acknowledge the traditional owners of the land, past and present. The recognised traditional owners for the Perth and Peel regions are the Whadjuk and Gnaala Karla Booja people – see the Noongar (Koorah, Nitja, Boordahwan) (Past, Present, Future) *Recognition Act 2016*. Broadly, the Whadjuk regions includes the coastal areas from Two Rocks south to Garden Island including Perth, Fremantle and Rottnest Island and extending inland including the area of Jarrahdale, Mundaring and Toodyay. The Gnaala Karla Booja region includes the coastal areas from Kwinana to Capel, including Mandurah and Bunbury and also includes inland areas extending beyond the Perth and Peel regions to just north of Kojonup and just south of Corrigin.

The State Government and South West Aboriginal Land and Sea Council have negotiated the South West Native Title Settlement.

Under the Settlement, native title is proposed to be exchanged for a negotiated package of benefits, including formal recognition of the Noongar people as traditional owners, land, investments and the establishment of Noongar Regional Corporations.

The South West Native Title Settlement is not yet finalised. Until the Settlement is finalised, the *Native Title Act 1993* (Commonwealth) continues to apply in the Settlement Area. Within the Settlement Area, the *Aboriginal Heritage Act 1972* (WA) applies at all times and will continue to do so after the commencement of the Settlement.

Land users must always consider Aboriginal heritage in their planning processes. The Department of Planning, Lands and Heritage is able to provide advice in relation to the application of the Aboriginal Heritage Act in the sub-regions.



2.9 The spatial plan for *Perth and Peel@3.5million*

The spatial plan for the Perth and Peel regions has been developed with the aim of delivering a more consolidated urban form and achieving a more efficient and cost-effective urban structure that minimises environmental impacts (Figure 4). This plan has been prepared in collaboration with the Strategic Assessment of the Perth and Peel Regions (SAPPR), which is a holistic response to environmental approval requirements under State and Commonwealth legislation.

The spatial plan has been prepared through an all-of-government approach, taking account of social, economic and environmental considerations including:

- the relationships between future urban land and existing development and infrastructure;
- existing key planning commitments such as previously-approved sub-regional and district structure plans;
- fundamental geographic and related considerations that confine most urban development to the coastal plain;
- bushfire risk;
- containment of urban development to minimise further sprawl;
- an assessment of the capacity of existing urban land to meet future requirements for housing and population growth and the amount of additional urban land required;
- a systematic analysis of urban values by rating the potential of all land in the Perth and Peel regions to contribute to, and capitalise on, an efficient urban form;
- a detailed examination of significant environmental values, as set out under State and Commonwealth environmental legislation and policies;
- a review of land requirements for economic and employment opportunities;
- an examination of the capacity of regional infrastructure to add value to existing infrastructure while minimising future costs to service future growth;
- the expectation that servicing agencies will work collaboratively to maximise future shared infrastructure corridors and sites;
- investigations of cost considerations in relation to urban form; and
- investigations into the demand and supply of basic raw materials.

The spatial plan identifies the need to:

- recognise existing regional open space areas and identify those that will be required in the future;
- avoid development within regionally-significant vegetation areas, wetlands and other high-value environmental areas;
- protect regionally-significant landscape values;
- safeguard high-priority groundwater resources;
- ensure the appropriate use of scarce basic raw materials;
- retain options for long-term infrastructure corridors and installations;
- avoid land use conflicts by taking into account buffer requirements such as those required for industry, airports and wastewater treatment plants; and
- exclude development from floodways and other low-lying areas.



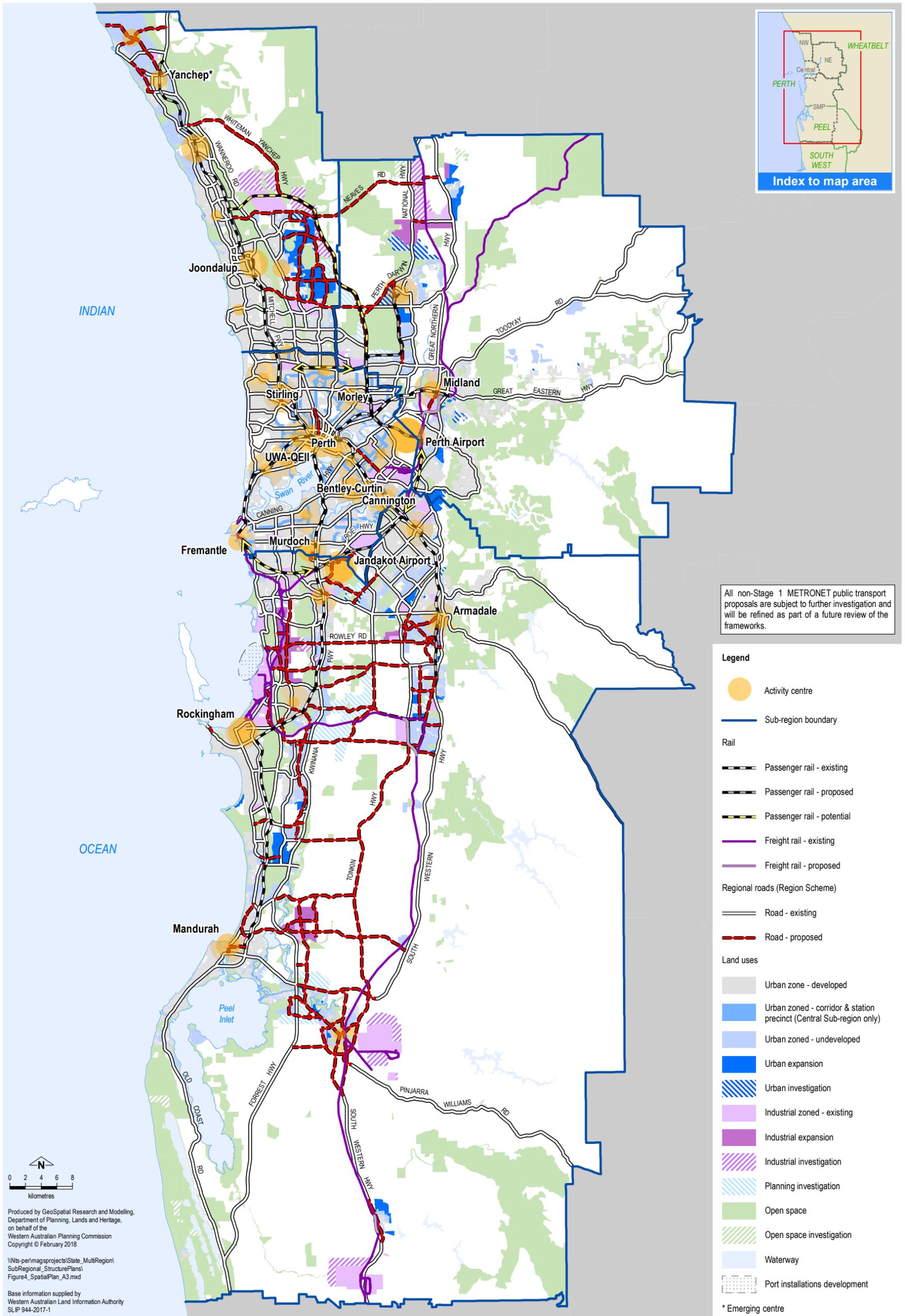


FIGURE 4: Perth and Peel@3.5million – spatial plan

At the time the spatial plan was prepared, more than 16,000 hectares of remnant native vegetation was identified and excluded from future urban, industrial and rural residential development sites, and sites for the extraction of basic raw materials. This involved the exclusion of some sites previously identified as having development potential in preceding sub-regional plans, structure plans and/or local planning strategies.

Sites identified for development within the spatial plan may still contain environmental attributes that need to be identified, avoided and protected at subsequent stages of planning through a variety of mechanisms.

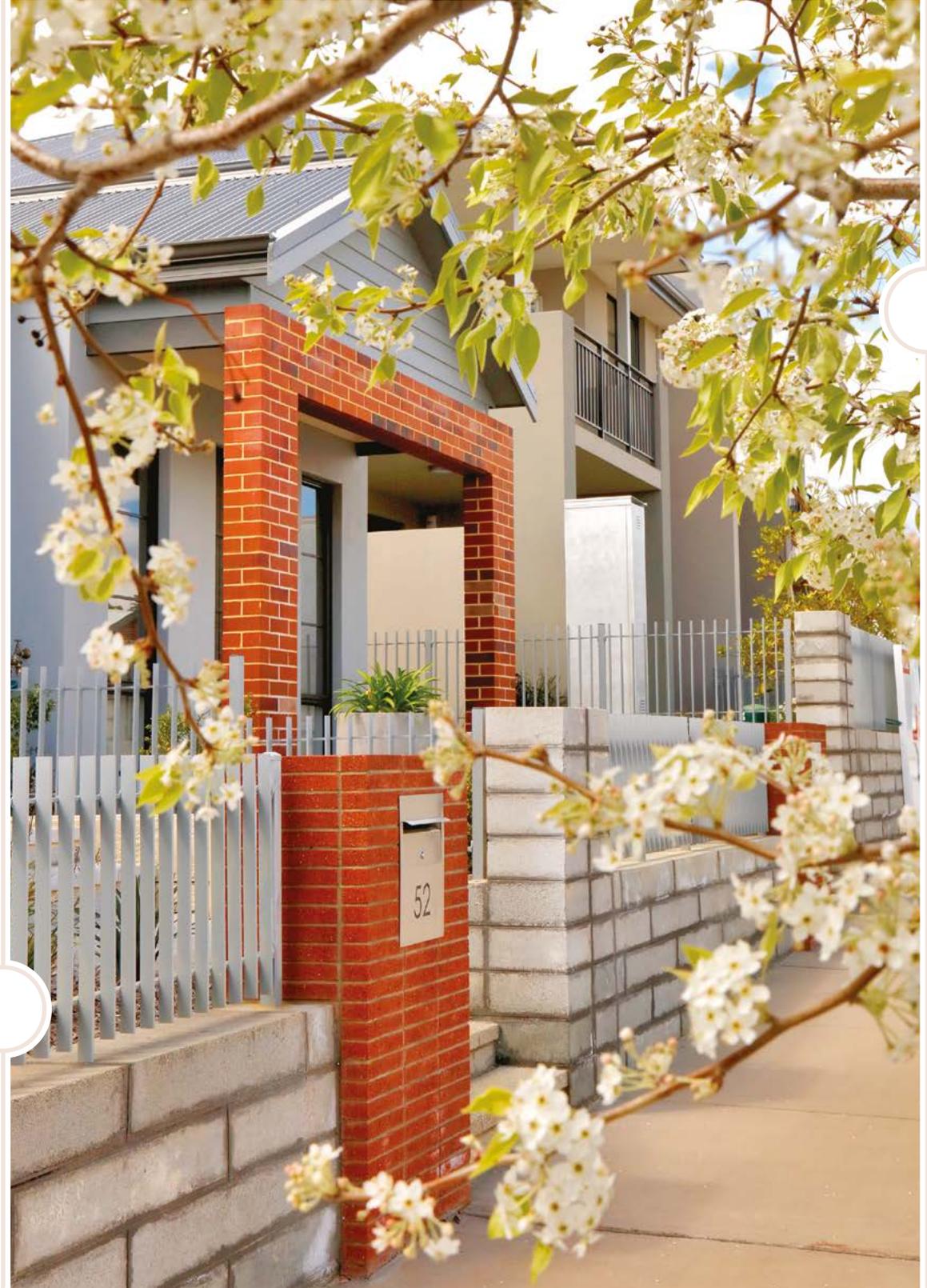
The implementation of the frameworks in accordance with the requisite environmental approvals will enable the Perth and Peel regions to accommodate a population of 3.5 million while meeting the requirements of relevant environmental legislation.

2.10 Other regional initiatives

The framework has been developed in collaboration with other State Government agencies and takes into consideration and reflects, where appropriate, a number of important initiatives such as:

- long-term transport planning for Perth and Peel to provide a network of strategic road and public transport linkages (including METRONET) to support a city of 3.5 million and beyond;
- *Future Perth Airports Technical Study* (Department of Planning, Lands and Heritage in conjunction with Department of Transport), which investigates potential sites for a new aviation facility to serve the Perth and Peel regions;
- review of *State Planning Policy 2.2 Gnangara Groundwater Protection* (Department of Planning, Lands and Heritage and Department of Water and Environmental Regulation);
- review of *State Planning Policy 2.4 Basic Raw Materials* (Department of Planning, Lands and Heritage), which includes a review of basic raw material mapping;
- the identification of high quality, priority agricultural land and primary production precincts across Perth and Peel by the Department of Primary Industries and Regional Development;
- *Perth and Peel Regions Water Supply Strategy* (Department of Water and Environmental Regulation) which will identify demand gaps, viable alternative supply options and provide direction for future sub-regional planning; and
- *the Future State Administered Roads Project* (Mains Roads Western Australia), which is a review of future State road classifications.





SUB-REGIONAL PLANNING FRAMEWORK

The framework aims to ensure that a comprehensive approach is taken to planning for residential development, local employment, infrastructure provision and protecting natural resources and environmental attributes



Introduction

This framework provides high-level strategic guidance for the future development of the North-East sub-region to accommodate part of the long-term growth of the Perth and Peel regions to approximately 3.5 million people by 2050.

The framework aims to ensure a comprehensive approach to planning is undertaken by:

- providing opportunities for residential development and local employment;
- facilitating good accessibility for all modes of transport;
- ensuring the conservation of regionally- significant environmental attributes; and
- protecting natural resources.

The framework has been developed to provide general guidance and inform future amendments to the MRS and to provide a framework for further investigations and detailed planning. The framework is divided into the following three sections:

- objectives;
- strategic direction and priorities; and
- appendices that provide further technical detail supporting the framework.

The framework provides guidance on anticipated timeframes and sequencing for the delivery of urban development sites and key infrastructure, while recognising that the delivery of these sites will depend on a number of factors including demand for land, progress of detailed planning and provision of infrastructure. The timeframes referenced in the framework are outlined in Table 1.

TABLE 1: Planning framework timeframes

Timing	Timeframe
Short-term	up to 2021
Medium-term	2022 to 2031
Long-term	post 2031



3.1 Key planning framework principles

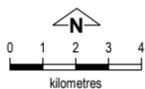
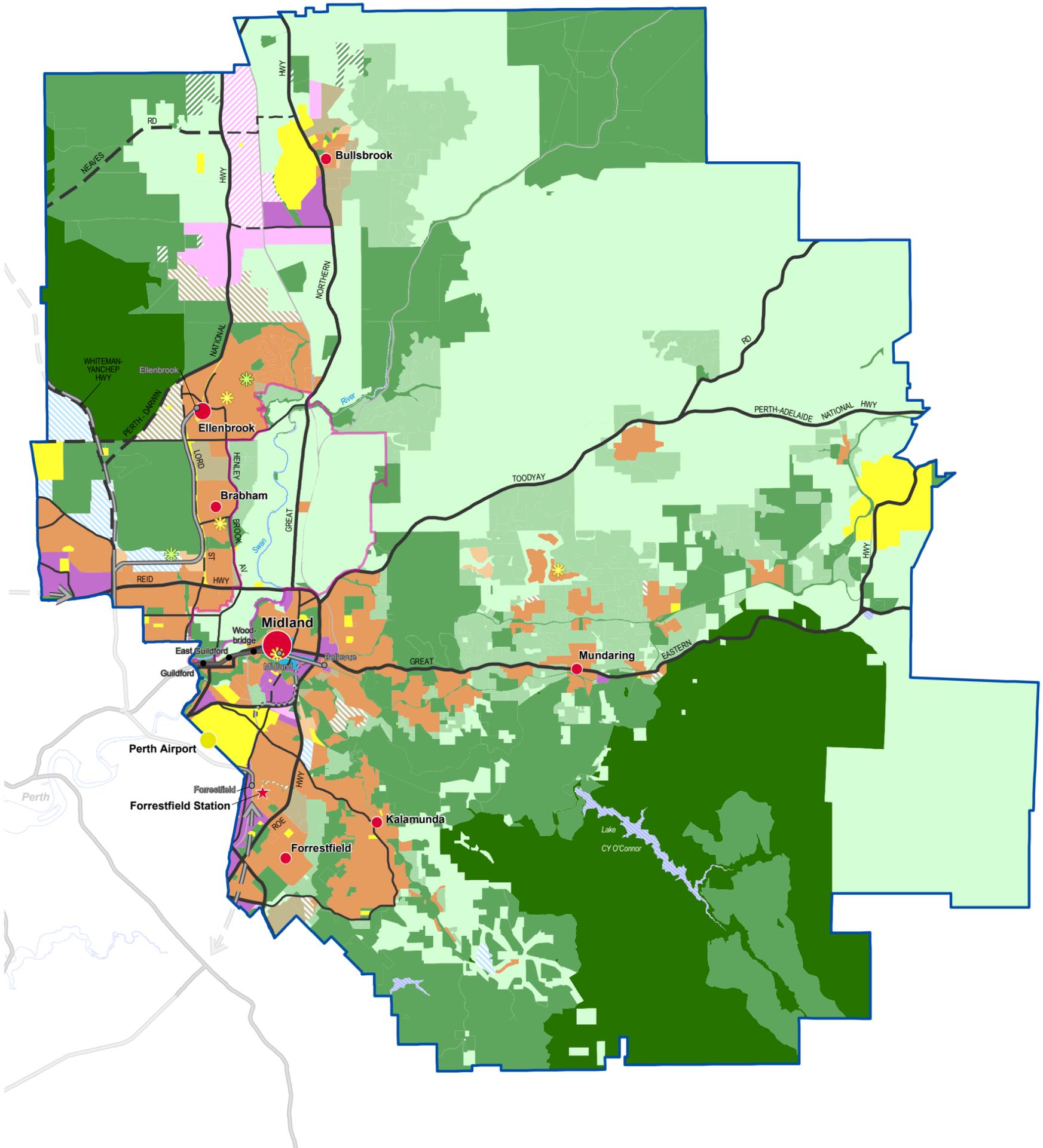
There is a wealth of environmental attributes within the sub-region including the Swan Valley, Darling Scarp and Range, a number of national and regional parks encompassing banksia woodlands and extensive areas of jarrah forest providing habitats for flora and fauna. The protection of these attributes from the potential impacts of population growth will require careful consideration and planning at each stage of the planning process.

The following key principles have been fundamental to the development of the framework culminating in a multi-faceted planning response to avoid, protect and mitigate the sub-region's environmental attributes that are protected under Commonwealth and State environmental legislation.

- Develop a consolidated urban form that limits the identification of new greenfield areas to where they provide a logical extension to the urban form, and that places a greater emphasis on urban infill and increased residential density.
- Avoid areas that are of a high risk of bushfire to manage the potential impact on people, property and infrastructure.
- Limited support for new rural residential development, with the emphasis on areas currently zoned for that purpose.
- Facilitate increasing the number of people living close to where they work with the identification of suitable sites for employment within the sub-region, with a focus on attracting strategic economic and employment land use to the sub-region.
- Protect employment land from competing land uses that could limit its ability to be used for employment purposes.
- Integrate land use and public transport to contribute to maintaining air quality.
- Maximise the use of and add value to existing infrastructure including transport, community/ social and service infrastructure where there is a concentration of urban and employment opportunities.
- Promote shared infrastructure corridors and sites for transport, community/social and service infrastructure (where appropriate).
- Provide effective and sustainable management of water resources including public drinking water source areas, drainage and water allocation to minimise environmental impacts, particularly in a drying climate.
- Avoid, protect and mitigate impacts on environmental attributes (with an emphasis on avoiding and protecting) when allocating proposed land uses, or address impacts through an improved conservation estate where those impacts cannot be avoided or mitigated.
- Identify ultimate land uses for industrial and public purposes sites, while promoting access to finite basic raw materials, through the staging and sequencing of development.
- Retain land for agriculture and food production.

The key land use proposals for the sub-region are shown in Plan 1.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © February 2018

\\Nbs-perlmagsprojects\State_MultiRegion\SubRegional_StructurePlans\WorkingAreas\NorthEast\NESRSP_Plan01_ThePlanningFramework_A3.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

- Sub-region boundary
- Swan Valley Planning Act boundary
- Framework land uses**
- Railway
- Urban
- Urban deferred
- Urban expansion
- Urban investigation (Refer to Table 2 for key considerations)

- City centre
- Industrial
- Industrial expansion
- Industrial investigation (Refer to Table 6 for key considerations)
- Rural residential
- Rural
- State forest
- Open space
- Open space investigation

- Public purposes
 - Waterway
 - Planning investigation (Refer to Table 3 for key considerations)
 - Regional roads (MRS)**
 - Existing
 - Proposed
 - Rail**
 - Passenger rail/station - existing
 - Passenger rail/station - proposed Stage 1 METRONET
 - Passenger rail - further investigation
 - Freight rail - proposed
- NOTE: Transit corridors are shown on Plan 5

- Public purposes - proposed
- Proposed open space - sport
- Activity centres**
- Strategic metropolitan
- Secondary
- District
- Other (Classification to be determined by more detailed planning)
- Specialised

NOTE: This is a conceptual representation of broad planning intentions within the sub-region. Further planning processes and decision-making under relevant legislation will need to be undertaken, including with reference to amendment of statutory instruments and detailed planning.

3.2 Consolidated urban form

Objective

To create sustainable communities that are attractive places to live and work. The consolidation of urban areas will provide for more efficient use of urban land and infrastructure with improved access to public transport, sport and recreation, community and commercial facilities, while minimising impacts on significant environmental attributes.

Strategic direction and priorities

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

The consolidated urban form identified in the framework has been determined within the context of the overall spatial plan for the Perth and Peel regions. The spatial plan is designed to accommodate a population of 3.5 million people in a more consolidated urban form that focuses on the use of existing infrastructure and minimises environmental impacts.

The framework builds upon the key principles and structural elements of *Directions 2031 and Beyond* specifically concerned with increasing urban infill development, facilitating higher densities in undeveloped areas already zoned for urban use and limiting additional greenfield development – the aim of which is to accommodate sustainable future growth.

A significant amount of future development will occur on land already zoned for urban purposes. This includes continuing development within Caversham, Brabham, Bennett Springs, Dayton, Ellenbrook, Upper Swan and Bullsbrook, as well as new development at Gidgegannup, Stoneville, Parkerville and various smaller areas including at Midvale, Forrestfield, Stratton, Bellevue and Hazelmere. The proposed development at Parkerville (north) will need to demonstrate that the

site can be adequately serviced and can mitigate bushfire risk to an acceptable level.

To provide the capacity to accommodate predicted population growth, vacant and under-utilised urban land that can be serviced with the required infrastructure and that is located in proximity to activity centres, transit corridors and/or areas of high amenity should be identified as a priority for increased density. Planning instruments guiding the development of new urban areas are to use a minimum average residential density target of 15 dwellings per gross hectare of urban zoned land, where appropriate.



It is critical that planning for the anticipated population growth focuses on making the most efficient use of transport networks, service infrastructure, employment and key community/social infrastructure facilities.

A foundation of the proposed consolidated urban form is to concentrate the majority of the population within reasonable proximity of key public transport networks, as well as a wide range of services and activities with high-quality built form, public spaces and green networks. There are large amounts of existing zoned land available and some new areas are proposed to accommodate

consolidated population growth. These areas are well-located and will deliver sustainable communities that are well integrated with the existing urban form.

Strategic metropolitan centres provide regional-level services and facilities, service population catchments of up to 300,000 people, and are the key element of the network of activity centres. Focusing on opportunities that build on existing and proposed infrastructure within these centres can provide a catalyst for a mix of land uses, employment opportunities and housing choice and diversity. Within the sub-region, access to the Midland

strategic metropolitan centre and the Ellenbrook secondary centre, as well as to major activity centres outside of the sub-region such as the Morley and Cannington strategic metropolitan centres, will be important.

The framework seeks to optimise the use of land in close proximity to existing transport infrastructure and key centres of activity and community amenity. To achieve this, a focus for both infill and new urban areas will be the development and evolution of new and existing activity centres into vibrant, mixed-use community hubs that are integrated with high-quality public transport connections.



A number of proposed new urban areas have been identified for potential expansion or investigation. Areas of existing and proposed special residential or similar level of development (e.g. Upper Swan townsite, The Vines and part of Maida Vale) have been classified Urban within the framework in order to reflect the residential nature of development. The classification of these areas as Urban should not however be construed as support for the further development of these areas at a higher density.

The proposed consolidated urban form largely avoids and minimises impacts on significant environmental values. Even so, some land classified Urban/Urban Deferred, Urban Expansion/Investigation or Planning Investigation may contain significant environmental attributes and these classifications should not be construed as support for the development of such land. More detailed planning for these sites will need to prioritise avoidance and/or protection of these attributes. Expanding the tree canopy in developed areas and improving outcomes in new greenfield areas will also contribute to reducing the urban heat island effect and improving urban amenity.

Based on existing development trends, there is sufficient capacity in the proposed consolidated urban form to meet the anticipated demand for additional dwellings beyond 2050. The proposed consolidated urban form for the sub-region is shown in Plan 2.

Urban Expansion/ Investigation

The proposed Urban Expansion areas for residential development include land at Bullsbrook, Henley Brook, Dayton/West Swan, Aveley, North Bennett Springs, Bellevue, Hazelmere, Helena Valley, Maida Vale and Wattle Grove. These proposals, with the exception of Bullsbrook which constitutes a townsite expansion, represent a consolidation and 'rounding off' of existing urban areas. The proposed Urban Expansion area at Bellevue (north of Clayton St) may include some service industrial/bulky goods land use as a transition between industrial and residential areas which will be confirmed by more detailed planning.

Urban Investigation areas are proposed at West Ellenbrook, North Ellenbrook, Helena Valley, Wattle Grove, Parkerville, Mount Helena and Sawyers Valley.

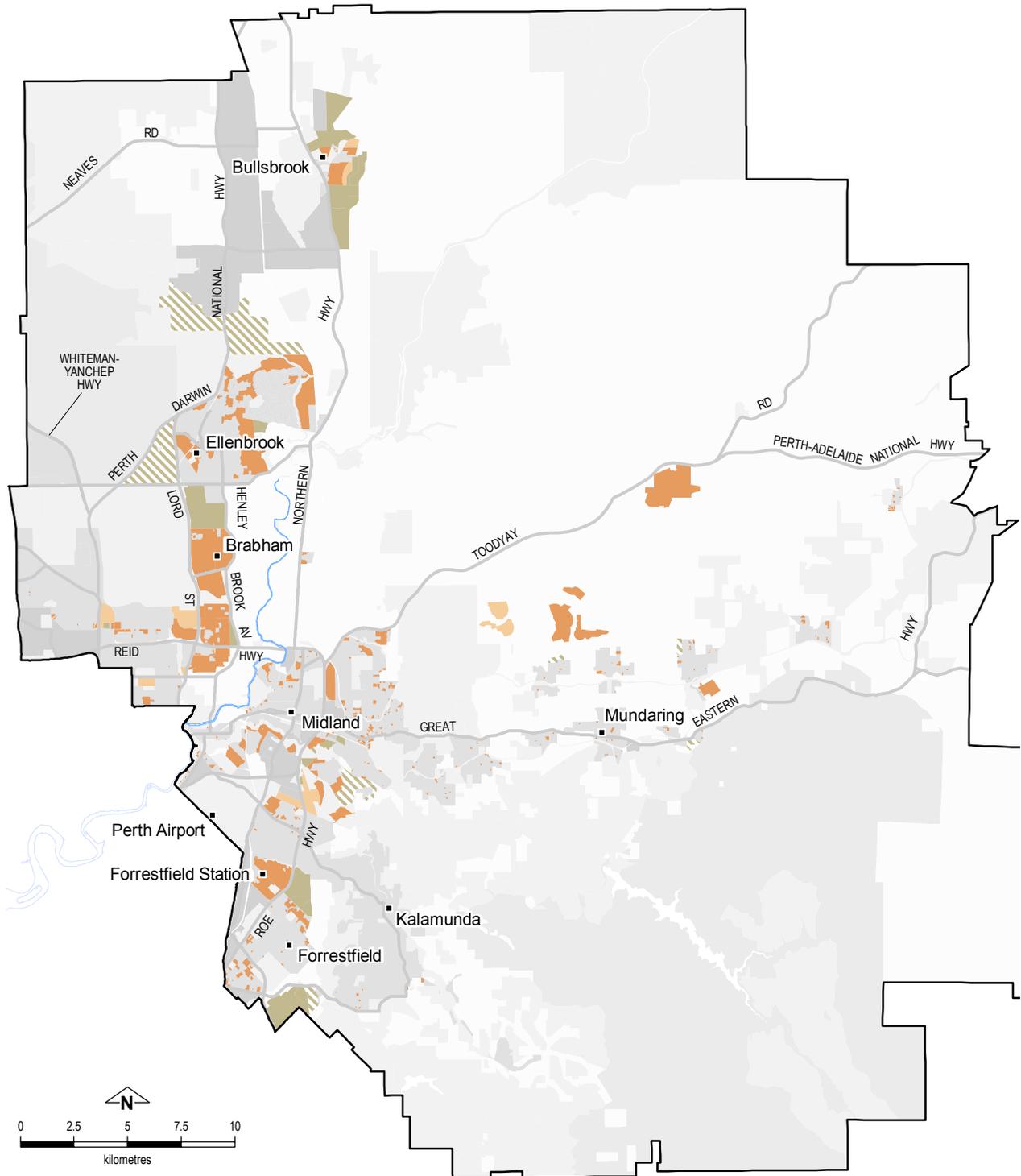
Further detailed planning is required for Urban Expansion/Investigation areas prior to consideration for any rezoning under the MRS and before development can occur including, but not limited to, investigations regarding protection of significant

environmental attributes, basic raw materials, water resources, bushfire risk, servicing, community and social infrastructure, movement networks and employment. These areas may contain significant environmental attributes and further planning for these sites will need to prioritise avoidance and/or protection of the environmental values. Minor refinement of expansion or investigation area boundaries may be required to accommodate more detailed future planning.

The classification of Urban Investigation areas is not to be construed as a commitment by the WAPC to support any rezoning as this will depend upon the outcome of further planning investigations.

The specific matters that need to be addressed for these areas include, but are not limited to, those in Table 2.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\nts-per\magsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast\
 NESRSP_Plan02_ConsolidatedUrbanForm.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

- Urban undeveloped (MRS)
- Urban deferred undeveloped (MRS)
- Urban expansion
- Urban investigation

PLAN 2: Consolidated urban form

TABLE 2: Urban Investigation areas – key considerations

Site	Key considerations
West Ellenbrook	<ul style="list-style-type: none"> Protection of Carnaby's Black Cockatoo roosting habitat Protection of Bush Forever areas Impacts, risks and management of Gnangara groundwater resources (existing Priority 1 Source Protection Area) Bushfire risk Basic raw materials extraction – sequential land use allowing for extraction of sand resources
North Ellenbrook	<ul style="list-style-type: none"> Protection of Bush Forever areas and conservation category wetlands Protection of high value Carnaby's Black Cockatoo habitat and vegetation with 10-30% remaining in Perth and Peel regions Protection of threatened ecological communities and flora populations Offsite impacts on Western Swamp Tortoise habitat (EPP) Best practice drainage and nutrient management Impacts, risks and management of Gnangara groundwater resources (existing Priority 3 Source Protection Area) Pearce Airbase operations (Department of Defence) Transition/interface with regional open space areas Bushfire risk Access to the regional road network Basic raw materials – sequential land use allowing for extraction of sand resources
Helena Valley	<ul style="list-style-type: none"> Protection of Bush Forever areas including the Helena River, and other significant remnant vegetation Bushfire risk The ability of the sites north of the Helena river to be connected to reticulated wastewater services
Wattle Grove (also see Orange Grove in South Metropolitan Peel sub-region)	<ul style="list-style-type: none"> Geotechnical analysis/land suitability to provide connections to reticulated wastewater services Bushfire risk Protection of significant environmental attributes
Parkerville	<ul style="list-style-type: none"> Bushfire risk Protection of significant environmental attributes (including Carnaby's Black Cockatoo habitat) Suitable effluent disposal Availability of reticulated water supply
Mount Helena	<ul style="list-style-type: none"> Bushfire risk Protection of significant environmental attributes (including Carnaby's Black Cockatoo habitat) Suitable effluent disposal Availability of reticulated water supply
Sawyers Valley	<ul style="list-style-type: none"> Bushfire risk Protection of significant environmental attributes (including Carnaby's Black Cockatoo habitat) Suitable effluent disposal Availability of reticulated water supply

Note: Detailed planning considerations may include additional matters and/or matters not identified at this time.

Planning Investigation

The framework classifies some limited areas of land in Maida Vale, Pickering Brook, East Gngara, North Ballajura and North Bennett Springs that require further planning investigations, regarding a range of key planning considerations, as part of the strategic reconsideration of land use in the sub-region. These investigations will determine whether it is possible and/or appropriate to rezone the land. The investigations will be required to be undertaken prior to any related MRS amendment process.

The Planning Investigation classification of these sites should not, however, be construed as WAPC support for a change from the existing land use/zoning, as this will depend upon the outcome of further investigations. The specific matters that are intended to be investigated for these sites include, but are not limited to, those listed in Table 3.



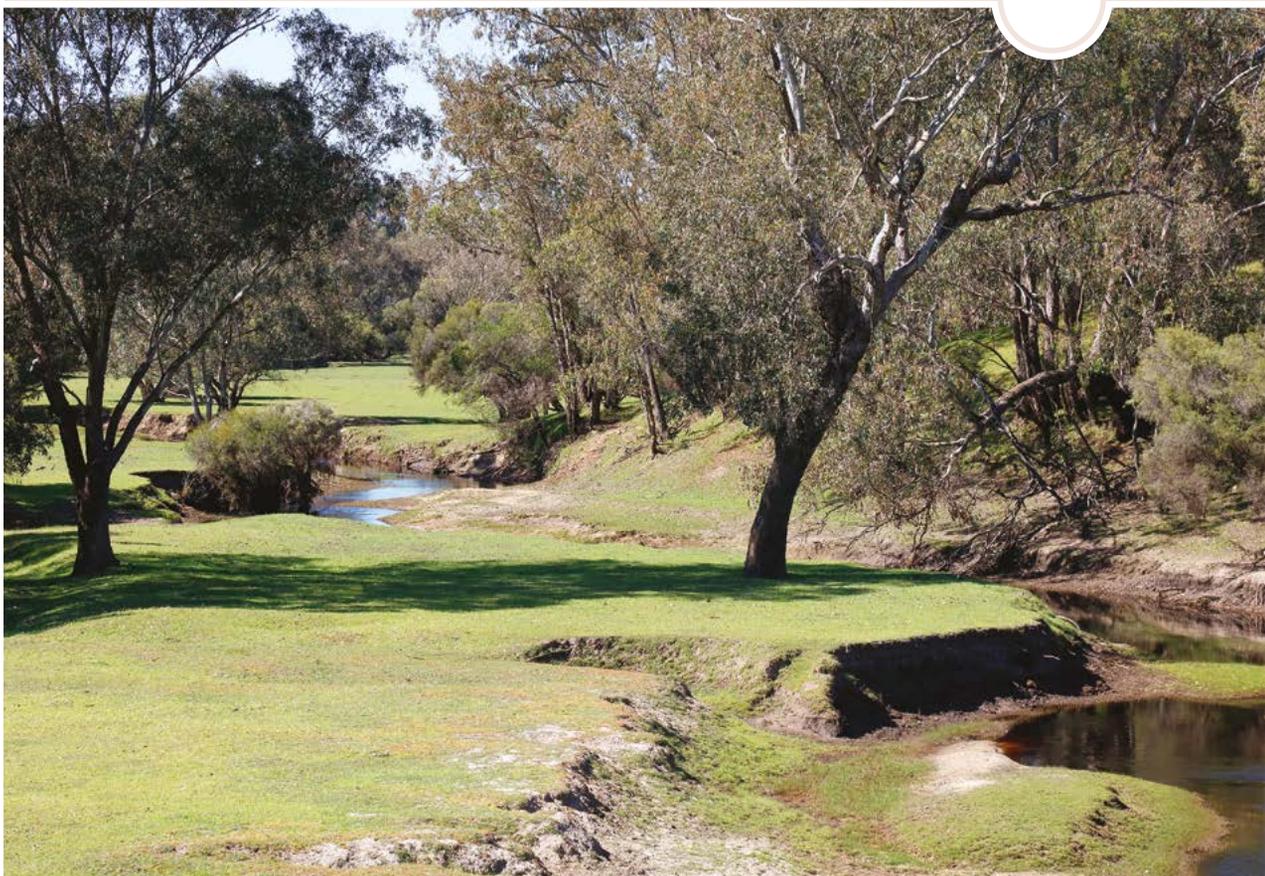
TABLE 3: Planning Investigation areas – key considerations

Site	Key considerations
Maida Vale	Regional recreation needs analysis Land tenure
Pickering Brook	Identification and protection, where appropriate, of priority agricultural land Impacts on public drinking water resources (Middle Helena Catchment – Priority Area 2) Bushfire risk Availability of reticulated water and wastewater infrastructure
East Gngangara	Potential East Wanneroo Rail Link (to be investigated as part of METRONET Stage 2) Proposed Whiteman-Yanchep Highway Protection of significant environmental values including high value Carnaby's Black Cockatoo and Redtail Cockatoo feeding habitats, vegetation with 10-30% remaining in Perth and Peel regions, resource enhancement wetlands and threatened ecological communities Impacts, risks and management associated with Gngangara ground water resources (Priority 1 Source Protection Area) Impacts on adjacent Commonwealth telecommunications infrastructure and operations Bushfire risk Land use transition/interface with regional open space areas Coordination/integration with adjoining Planning Investigation area in North-West sub-region
North Ballajura (Hepburn Avenue - West)	Impacts, risks and management associated with Gngangara ground water resources (Priority 1 Source Protection Area) Impacts on adjacent Commonwealth telecommunications infrastructure and operations Bushfire risk Regional recreation needs analysis Land use transition/interface with regional open space areas
North Ballajura (Hepburn Avenue - East)	Impacts, risks and management associated with Gngangara ground water resources (Priority 1 and 2 Source Protection Areas) Proposed Perth-Darwin National Highway Potential East Wanneroo Rail Link (to be investigated as part of METRONET Stage 2) Protection of significant environmental values including high value Carnaby's Black Cockatoo and Redtail Cockatoo feeding habitats, vegetation with 10-30% remaining in Perth and Peel regions, conservation category wetlands and threatened ecological communities Protection of Bush Forever areas Bushfire risk Land tenure Regional recreation needs analysis Land use transition/interface with regional open space areas

TABLE 3: Planning Investigation areas – key considerations (continued)

Site	Key considerations
North Bennett Springs (Marshall Road)	<p>Impacts, risks and management associated with Gnangara ground water resources (Priority 1 and 2 Source Protection Areas)</p> <p>Protection of significant environmental values including high value Carnaby's Black Cockatoo and Redtail Cockatoo feeding habitats, vegetation with 10-30% remaining in Perth and Peel regions, conservation category wetlands, resource enhancement wetlands and threatened ecological communities</p> <p>Integration with proposed Morley-Ellenbrook Rail Line/stations (METRONET Stage 1)</p> <p>Protection of Bush Forever areas</p> <p>Bushfire risk</p> <p>Bennett Brook linear reserve</p> <p>Regional recreation needs analysis</p> <p>Land use transition/interface with regional open space areas</p> <p>Proposed regional sporting facility (refer to Plan 4)</p>

Note: Detailed planning considerations may include additional matters and/or matters not identified at this time.



Urban infill

Infill development within established urban areas has the potential to contribute to housing diversity and respond to ongoing changing demographics and community aspirations. It is expected that infill development will also contribute to maximising the use of existing infrastructure and economies of scale for provision of transport and service infrastructure. This will assist in delivering innovative housing typologies and provide opportunities for more affordable living within vibrant and revitalised neighbourhoods characterised by mixed land uses, reduced car dependency, more-efficient public transport and increased opportunities for social interaction.

Table 4 sets out the minimum infill dwelling targets to 2050 that have been established to guide local governments in the preparation of more detailed planning, including local planning strategies and structure plans.

Local governments shall have regard to the principles for urban consolidation in Table 5 when identifying locations for future infill development. These principles include a focus on infill within areas with proximity to transit corridors and stations, within activity centres and urban corridors, and areas with high-quality open space. This will often align with planning for METRONET and METRONET precincts that deliver quality infill

TABLE 4: Urban infill dwelling targets by local government

Local government	Dwelling target	Estimated population
Swan	25,690	56,510
Kalamunda	11,450	25,190
Mundaring	2,760	6,090
Total	39,900	87,790

with amenity by creating a mix of open space, housing, workplaces and entertainment venues.

The aim is for these locations to accommodate the majority of the infill dwellings required for the sub-region by 2050, while the remaining infill dwellings may occur within suburban areas outside of the identified locations.

The *Central Sub-regional Planning Framework* identifies the specific location of future urban corridors. However, these are yet to be extended into, or identified for, the outer sub-regions. Local governments in the outer sub-regions will need to consider the logical continuation of these urban corridors when preparing local planning strategies and schemes.



TABLE 5: 10 principles for urban consolidation

Principle	Description
1. Housing	Provide well-designed higher-density housing that considers local context, siting, form, amenity and the natural environment, with diverse dwelling types to meet the needs of the changing demographics.
2. Character and heritage	Ensure the attractive character and heritage values within suburbs are retained and minimise changes to the existing urban fabric, where appropriate.
3. Activity centres	Support urban and economic development of the activity centres network as places that attract people to live and work by optimising land use and transport linkages between centres; protecting identified employment land from residential encroachment, where appropriate, and avoiding contiguous linear or ribbon development of commercial activities beyond activity centres.
4. Urban corridors	The focus for higher-density residential development. Where appropriate, located along transit corridors and promoted as attractive places to live by optimising their proximity to public transport while ensuring minimal impact on the surrounding urban fabric and the operational efficiency of the regional transport network.
5. Station precincts	Where appropriate, focus development in and around station precincts (train stations or major bus interchanges as set out under the METRONET initiative) and promote these precincts as attractive places to live and work by optimising their proximity to public transport while ensuring minimal impact on the operational efficiency of the regional transport network.
6. Industrial centres	Promote the current and proposed supply and/or development of industrial centres as key employment nodes and prevent incompatible residential encroachment on these areas.
7. Public transport	Ensure that most transit corridors are supported by quality higher-density residential land uses and identify where new or improved public transport services will be needed to meet long-term growth, especially current and future train station precincts.
8. Infrastructure	Ensure more efficient use of and add value to existing and planned infrastructure to achieve a more sustainable urban environment. Protect existing and proposed infrastructure from incompatible urban encroachment to promote a system where land use developments and infrastructure are mutually compatible.
9. Green network	Preserve, enhance and consolidate the green network of parks, rivers, sport/recreation areas, facilities for active open space, conservation and biodiversity areas, and areas with a high level of tree canopy coverage, considered important for the health and wellbeing of the community.
10. Protection	Avoid, protect and mitigate environmental attributes and promote development that contributes to maintaining air quality and minimises risks of inundation from sea-level rise, flooding or storm surge events and bushfire damage.

Heritage

The sub-region contains some heritage places and landscapes, such as the Midland Railway Workshops and Guildford townsite, where future development needs to be carefully planned to protect heritage values.

These places represent the sub-region's heritage and provide the community with a strong sense of place. Opportunities exist within urban consolidation areas to add new development in under-utilised spaces that can benefit from existing heritage value and character.

The framework acknowledges there are benefits and opportunities that come with the adaptive reuse of heritage places, including sustainability benefits through retention of existing buildings and reduced demolition waste. A number of design incentives and bonuses are also available to encourage the revitalisation of heritage places. Adaptive reuse, where it can be achieved while respecting the heritage values of a place, is actively supported by the Heritage Council of Western Australia. The proposed consolidated urban form also minimises encroachment into rural places that also represent an important component of the sub-region's historic heritage.

Rural residential

Rural residential areas provide alternative lifestyle and housing opportunities and may also provide a transition between urban and rural areas. However, rural residential development is a relatively inefficient form of development, places additional demand on community and service infrastructure that is difficult to meet and can prejudice other future planning options.

State Planning Policy 2.5: Rural Planning states that within the Perth and Peel regions opportunities for rural living, including rural residential development, will become more limited with rural living proposals being considered by exception. On



this basis, the creation of new rural residential lots/areas beyond those identified within the framework is unlikely to be supported by the WAPC.

Rural residential land is characterised by lot sizes that are predominantly between one and four hectares. Areas where permitted lots sizes are predominantly larger than four hectares are considered to have a 'small holdings' character and are classified Rural, even if some lots smaller than four hectares in size are permitted.

The framework does not propose any additional areas for rural residential development within the sub-region. Notwithstanding,

approximately 16,000 hectares of land is available for existing and future rural residential use within the sub-region. This land provides for a range of opportunities for rural residential lifestyles.

Bushfire management

In Western Australia bushfire is a natural part of the ecosystem, however, with a drying climate the intensity of bushfires and associated risk to life and property has increased, particularly for urban and rural residential development.

The need to appropriately plan land use and development within areas adjacent to bushfire risks has

become increasing prominent over recent years, particularly within the eastern hills areas. The effects upon individuals and the community of bushfires can be devastating and close attention must be paid to the application of measures that prevent or mitigate bushfire risks. Accordingly, further development or intensification of land uses where there is a lack of sufficient certainty that bushfire risks can be satisfactorily mitigated will not be supported.

Any proposal for urban development will need to ensure that it has considered, and where applicable applied, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. This policy includes reference to designated bushfire-prone areas to assist in reducing the risk to people, property and infrastructure by encouraging a risk-based approach to strategic planning, subdivision, development and other planning decisions proposed in bushfire-prone areas. Further investigations are currently being undertaken to review the bushfire planning framework.

The cities of Swan and Kalamunda and Shire of Mundaring have undertaken bushfire hazard assessment mapping to assist with the introduction of suitable town planning scheme provisions for housing developments within identified bushfire-prone areas.



3.3 Economy and employment

Objective

To promote employment opportunities and increase the number of people who live and work within the sub-region, with a focus on attracting strategic economic and employment land uses within the Midland strategic metropolitan centre and key industrial centres, while maximising use of existing and proposed infrastructure.

Strategic direction and priorities

The population of the sub-region is expected to grow strongly from a relatively small population base. Most of this population growth will occur in the City of Swan, increasing the importance of providing sufficient employment land and infrastructure to serve this population. It is projected that the number of jobs within the sub-region will more than double from 82,380 in 2011 to nearly 193,000 in 2050, an increase of more than 110,500 jobs.

Key employment areas within the sub-region include the well-established strategic metropolitan centre at Midland (which is readily accessible by the Perth–Midland

passenger rail line), the Ellenbrook secondary centre, Perth Airport (north precinct), industrial centres at Malaga, Forrestfield and Hazelmere and attractors such as the Swan Valley and the Avon Valley. In addition, the sub-region is in proximity to, and has well established linkages to, employment nodes at the Perth Airport specialised activity centre, Kewdale and the Morley and Cannington strategic metropolitan centres.

The types of employment that are expected to increase most within the sub-region are in the sectors relating to construction, healthcare and social assistance, manufacturing, transport, distribution and warehousing and retail. The growth in these sectors will be driven by factors including the strategic location of the sub-region relative to key road and rail freight transport infrastructure with access to the proposed Outer Harbour (within Cockburn Sound), proximity to Perth Airport, and increased demand for population-based services. The sub-region will also provide an employment base for the North-West sub-region workforce given that some industrial areas in the North-West sub-region are affected by various constraints, including the presence of environmental attributes and basic raw materials.

The mix of employment types is also predicted to shift towards higher proportions of service and white-collar workers. In particular, an increase in the proportion of workers within the community and service sectors is expected. The ageing population will contribute to additional demand for healthcare and social assistance.

Future focus should be on providing a greater diversity and intensity of land uses within activity centres and industrial areas (while protecting employment land from competing uses) and strengthening key transport linkages to the North-West sub-region, eastern mining and agricultural areas and port facilities south of Perth, including strategic freight routes. This framework facilitates sustainable growth of the sub-region economy by identifying locations for the expansion of industry and commerce, including supporting the agglomeration of employment-generating land uses in strategic areas such as the Bullsbrook/North Ellenbrook industrial areas where there is the potential to achieve an economic trade cluster focused on existing and proposed freight transport infrastructure.

An overview of the economy of the Perth and Peel regions, showing key existing and proposed employment centres and economic infrastructure, is shown in Figure 5.



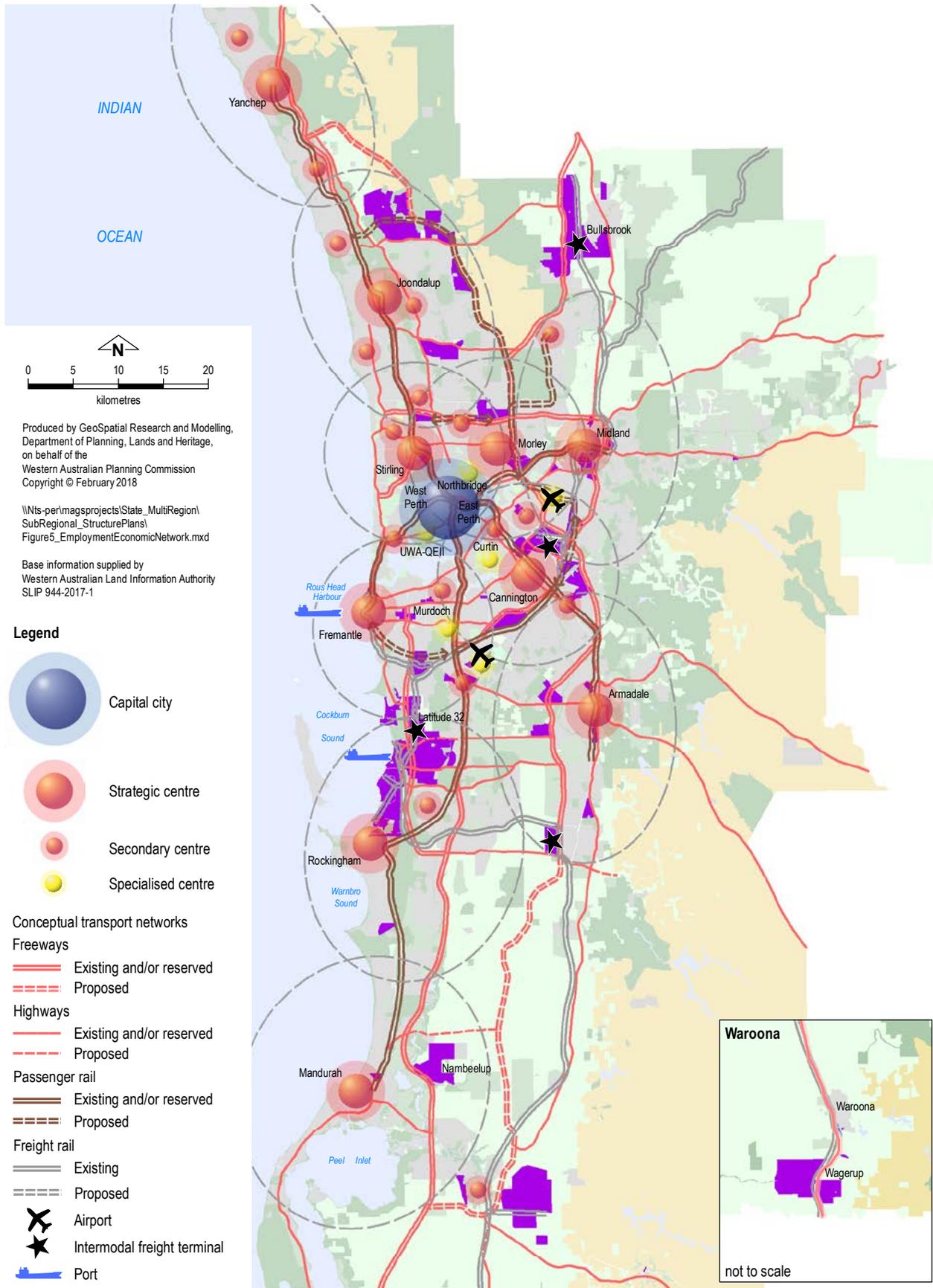


FIGURE 5: Employment and economic network 2050

North-East Sub-regional Planning Framework

The framework includes a hierarchy of existing and new activity centres and a number of existing and proposed industrial centres within the sub-region that will serve as key locations for employment. These centres provide district and regional employment, services and amenities with a view to reducing travel distances to work and therefore promoting a sustainable urban form.

Collaboration across government and with the private sector is required to facilitate economic development and improved employment self-sufficiency within the sub-region, particularly to attract strategic economic and employment land uses and maximise the use of existing infrastructure. *Perth and Peel@3.5million* has identified an overarching vision and key objectives for the future growth of the Perth and Peel regions, including its economic development. Local government has an important role in facilitating economic development within the sub-region through the preparation of local economic development strategies that:

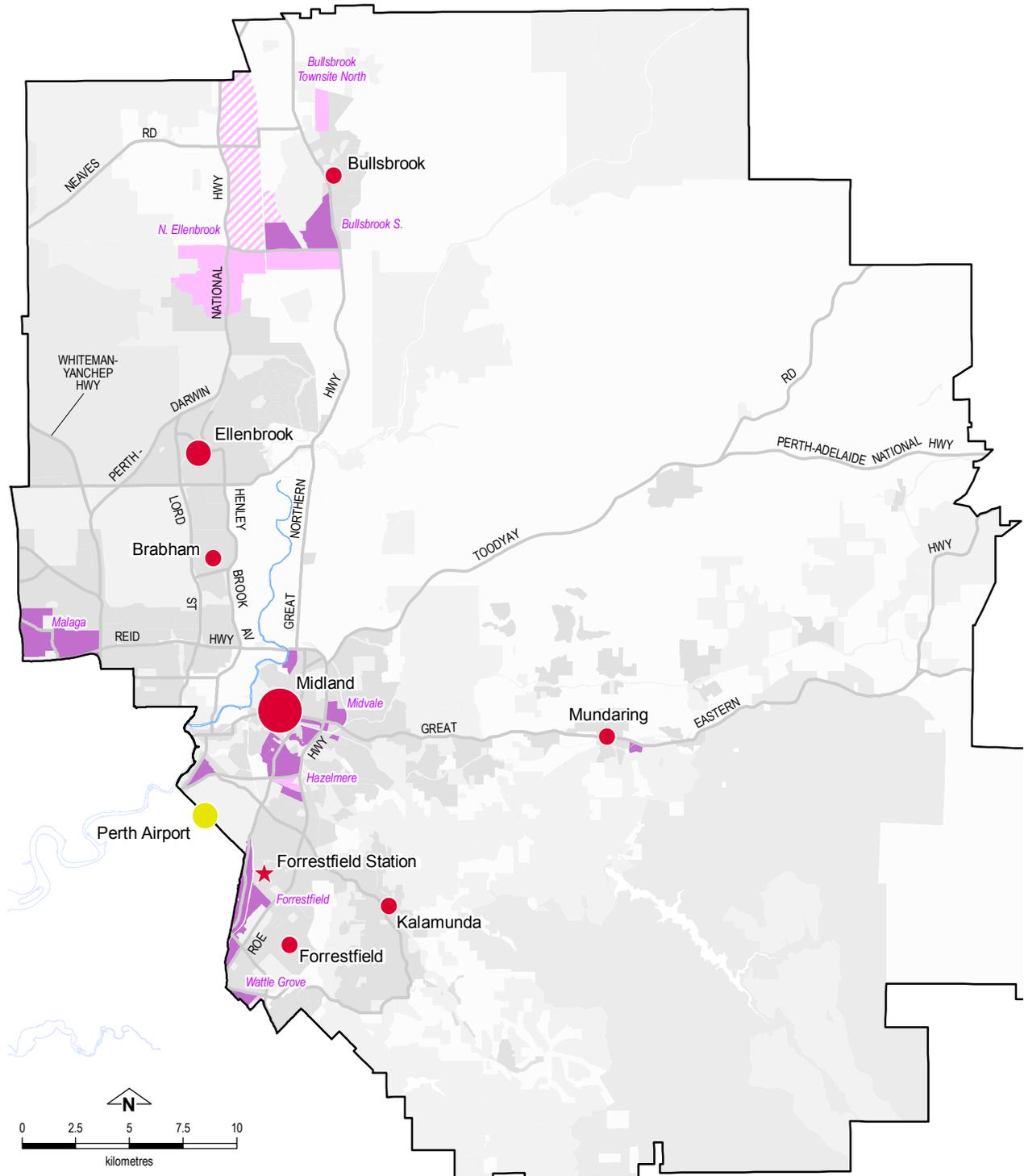
- encourage and facilitate the growth of activity and industrial centres for the purpose of delivering employment opportunities;
- protect employment-generating land from the encroachment of competing land uses;

- create employment opportunities which utilise local labour force skills to increase employment self-sufficiency;
- maximise and encourage further growth of the area's key economic sectors and/or clusters;
- cultivate and strengthen relationships with key stakeholders; and
- provide targeted services and support to businesses to facilitate economic growth.

The framework provides job growth projections for the sub-region to 2050. However, local governments are encouraged to maximise job growth opportunities for employment nodes in the preparation of local economic development strategies that may result in jobs growth that exceeds these projections.

The existing and proposed employment centres within the sub-region are shown in Plan 3.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\Nts-per\magsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast\
 NESRSP_Plan03_EmploymentOps.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

Activity centres

- Strategic metropolitan
- Secondary
- District

- Specialised
- Other
 (Classification to be determined
 by more detailed planning)

- Existing industrial
- Industrial expansion
- Industrial investigation

PLAN 3: Employment opportunities

Activity centres

A network of activity centres will be a key focal point for commercial and social activity and the delivery of services to residents living nearby and will be a major driver of new jobs located within communities. These aim to allow more people to live closer to where they work with the aim of reducing overall commuting distances. Some will build on existing infrastructure such as universities and hospitals to leverage community assets into innovative job creating activity centres.

Strategic metropolitan centre

Midland

Strategic metropolitan centres provide the main focus for regional activity and service catchment populations up to 300,000 people. These centres are therefore required to be multipurpose and provide for a diversity of uses. There is a need to focus on opportunities that build on and maximise the use of existing and proposed infrastructure within these centres that can provide a catalyst for a mix of land uses, strategic economic and employment opportunities, and housing choice.

The City of Swan and the Metropolitan Redevelopment Authority are continuing to undertake planning that seeks to significantly revitalise the centre to provide an enhanced and diversified level of employment activity, intensified residential densities and infrastructure improvements that will support increased access to jobs and services. The State Government has provided considerable investment in Midland through the MRA and has achieved high-quality mixed use including higher density residential, retail and commercial development, within and adjacent to the centre. A proposed new alignment for the freight rail line to bypass the centre will reduce rail noise impacts, improve north-south access across the centre and potentially provide urban consolidation opportunities along the existing freight line.

The new Midland Public Hospital is located in a central location within Midland and is a significant employment generator that may have agglomeration benefits for allied health and related support services, potentially resulting in the creation of a health and education-based 'knowledge hub'. Additionally, the proposed upgrading of existing infrastructure, including the proposed relocation of the Midland Rail Station adjacent to the hospital and increased pedestrian connections will improve connectivity and increase the attractiveness of the centre.

Secondary centre

Ellenbrook

The Ellenbrook secondary centre is progressively being developed in step with population growth within the surrounding residential areas and the nearby Swan Urban Growth Corridor located generally between Caversham and Henley Brook. Ellenbrook will accommodate a range of retail, commercial and institutional uses to support the emerging population growth within this northern part of the sub-region. Employment densities within the Ellenbrook centre should increase as a greater diversity of commercial uses are established.

Specialised and other activity centres

Specialised centres focus on regionally-significant economic or institutional activities that attract substantial numbers of people. These activities will be centred on key uses and include complementary activities. The clustering of complementary activities can deliver additional economic benefits.

Perth Airport is classified as a specialised activity centre and provides significant employment opportunities to the surrounding areas. While primarily providing activities related to the aviation and logistics services sectors, there has been considerable growth in non-aviation development at the airport in recent years.



Land use planning associated with Perth Airport takes advantage of the airport infrastructure and supports the agglomeration of economic clusters of related employment generating land uses. Planning for the airport not only aims to consolidate existing activities but also, over time, to achieve a greater diversity of industrial, commercial and office land uses.

Existing and emerging district activity centres within the sub-region, including Forrestfield, Kalamunda, Brabham and Mundaring, are expected to continue to expand in response to local population growth providing employment opportunities that will contribute to improving overall employment self-sufficiency. The existing Bullsbrook townsite, currently a neighbourhood centre, is planned to accommodate a significant population increase over the medium-to-longer term, which will potentially elevate its status to a district centre. A proposed new activity centre at Forrestfield Station will also provide employment opportunities in accordance with transit-oriented development principles. The hierarchy of the Forrestfield Station activity centre will be determined by more detailed planning having regard to the relationship to nearby activity centres.

Industrial centres

A significant amount of future employment within the sub-region will be located within existing and proposed industrial centres. The majority of existing and appropriately-zoned industrial centres are substantially developed and full development is generally expected by 2031. It is estimated that there is approximately 760 hectares of undeveloped industrial zoned land available within the sub-region.

The proposed industrial area in Bullsbrook (South) is partly zoned for industry in the MRS and City of Swan local planning scheme and therefore amendments to both schemes to rezone the remainder of the land are required. Local structure planning is also required to be undertaken and approved prior to land becoming available for development.

Locations within the sub-region that have been identified for potential future general industrial use include land at Bullsbrook (incorporating North Ellenbrook), Hazelmere South and Wattle Grove. These areas total more than 2,800 hectares and are classified either Industrial Expansion or Industrial Investigation.

The amount of additional land identified for industry is based on projections in the draft framework scenario which indicate an

overall demand of approximately 2,810 hectares to 2050. The proposed Industrial Expansion and Investigation areas are shown in Plan 3.

The most significant industrial proposal is located at Bullsbrook and North Ellenbrook (generally to the south and west of the Pearce Airbase) and expands upon the Bullsbrook (South) industrial centre that is zoned industrial in the MRS. This additional area comprises over 2,500 hectares, is strategically located and has efficient connections to the regional freight movement network. A portion of this land is classified Industrial Investigation in the framework as further planning is required to confirm its suitability for industrial use in the longer term.

A proposed future intermodal (road-rail) freight terminal at Bullsbrook in the medium to long-term, to facilitate related strategic employment and optimise the use of transport infrastructure, has also been identified and will need to be considered as part of future investigations. This inter-modal terminal will be well positioned in relation to the population and industrial centres in the North-West sub-region. Neaves Road and Gnangara Road will provide strategic east-west links ensuring good access between the North-West and North-East sub-regions and facilitating economic development.



A new Industrial Expansion area has been identified at Bullsbrook North which contains a strategic mineral resource (Titanium-Zircon) that may affect the timing for future development of this land.

Land classified Industrial or Industrial Expansion/Investigation may contain significant environmental attributes and these classifications should not be construed as support for the development of land with these attributes. More detailed planning for these sites will need to prioritise avoidance and/or protection of these attributes. Minor refinement of expansion or investigation area boundaries may be required to accommodate more detailed future planning.

Industrial Investigation areas will require further detailed planning to be undertaken prior to consideration for rezoning under the MRS. The identification of these areas is not to be construed as a commitment by the WAPC to support any rezoning as this will depend upon the outcome of further detailed planning investigations. The specific matters that need to be addressed for these areas include, but are not limited to, those in Table 6.

TABLE 6: Industrial Investigation areas – key considerations

Site	Key considerations
North Ellenbrook Extension and South Bullsbrook Extension	Land supply should be aligned with the timing for development of the planned Bullsbrook intermodal freight terminal
	Best practice drainage and nutrient management
	Protection of Bush Forever areas and conservation category wetlands
	Protection of remnant native vegetation of a complex with less than 30% of its original Perth and Peel regions extent remaining
	Protection of threatened flora populations
	Offsite impacts on Western Swamp Tortoise habitat (EPP)
	Proposed Rutland Road regional road alignment
	Land use interface issues relating to adjacent land in Shire of Chittering (North Ellenbrook Extension only)

Note: Detailed planning considerations may include additional matters and/or matters not identified at this time.

Other employment opportunities

Tourism is also an important component of the Western Australian economy. The viticulture and tourism-related industries in the Swan Valley should be promoted to continue to grow and contribute to employment provision and economic growth within the sub-region. The framework recognises the importance of retaining the rural character of the Swan Valley and acknowledges that the review of the *Swan Valley Planning Act 1995* will include consideration of related economic factors.

In addition to supplying food for consumption, agriculture and related industries provide local employment and support

economic activity. Proximity to the local market and labour force is important for food processing and value-adding and it is important that land is retained for these agriculture uses.

The Muchea employment node, within the Shire of Chittering, is located immediately north of Bullsbrook, outside of the North-East sub-region. This area comprises more than 1,100 hectares and is being developed for service-based land uses such as transport, livestock, fabrication, warehousing, wholesaling and general commercial use. This employment node will provide additional employment opportunities for people living within the sub-region.

3.4 Community and social infrastructure

Objective

To provide a wide range of community and social infrastructure to enhance the health and wellbeing of the community and meet the community's needs including health, education, sport and recreation, while promoting infrastructure co-location and optimising the use of existing facilities and infrastructure.

Strategic direction and priorities

Community and social infrastructure required for the provision of health, education, sport and recreation services in the sub-region will need to accommodate a growing and ageing population. The focus for the sub-region will be the co-location of key community and social infrastructure to promote better use of existing infrastructure and facilities, reduce traffic movements and establish a sense of social cohesion by creating a key focal point for activity and the delivery of services to nearby residents.

Key community and social infrastructure proposals for the sub-region are represented in Plan 4. The provision of this infrastructure will be coordinated with the development of urban land and resultant population growth.

Further identification and/or refinement of key social and community infrastructure requirements are possible as part of the review of Planning Investigation areas.

Education

Tertiary education facilities should ideally be located within strategic metropolitan centres or within activity centres with proximity to quality public transport, amenity and uses that allow for synergies with industry and business hubs and other educational facilities. The Midland strategic metropolitan centre will be the focus for new regional tertiary education facilities, such as the proposed Curtin University Medical School, and training centres.

The existing Polytechnic West training centre in Midland will require expansion in the future to accommodate increasing demand for courses. The existing site on Lloyd Street can accommodate the expansion required for the foreseeable future. However, its location is outside of the Midland central area and therefore public transport connections to the facility will remain an important consideration in ensuring efficient access for students.

Future high school sites have been identified in the localities of Brabham, Ellenbrook and Stoneville to meet the needs of the growing population. One additional high school will be required to service proposed urban development in North Ellenbrook and its location will be determined as part of district structure planning and in accordance with Liveable Neighbourhoods principles. The existing Bullsbrook High School (Bullsbrook College) site contains significant environmental attributes (Bush Forever Site 88) which requires protection and restricts expansion of the school to service the future population in the Bullsbrook area. This may result in the need to identify a new site for the high school as part of more detailed planning.

Future infill residential development will also place further demand on existing school sites within established urban areas. As such, further consideration needs to be given to the quantum of school facilities required to serve the populations within these growing urban catchments.



Regional health facilities

The new Midland Public Hospital provides the main regional health facility for both the sub-region and the western Wheatbelt into the future.

While population growth over time will result in increased demand for regional health facilities, the future focus will be to optimise the use of existing sites in preference to the development of facilities on new sites within the sub-region.

Sport and recreation

The sub-region has several State-level sporting facilities including the Speed Dome (cycling) in Midland, the International Shooting Complex at Whiteman Park and the State Equestrian Centre in Brigadoon. There are also a number of large government-owned sites that accommodate

regional and district sport and recreation activities including:

- Midland Sports Complex, Midvale;
- Mundaring Recreation Complex, Mundaring;
- Hartfield Park, Forrestfield;
- Maida Vale Reserve, Maida Vale;
- Altone Park, Beechboro;
- Lightning Swamp, Noranda; and
- Lilac Hill Park, Caversham.

The predicted population growth will result in increased demand for additional regional and district-level sporting facilities within the sub-region that will be met through a combination of existing and new sports sites. The future use of existing sites and facilities will be maximised to cater for some of this additional demand. However, it is recognised that in some instances these sites include areas with environmental attributes that need to be protected and conserved.

Recognising that existing sites are already well utilised, the provision of new sites will be a priority. New open space areas requiring irrigation will need to investigate non-potable water supply options guided by relevant water management strategies.

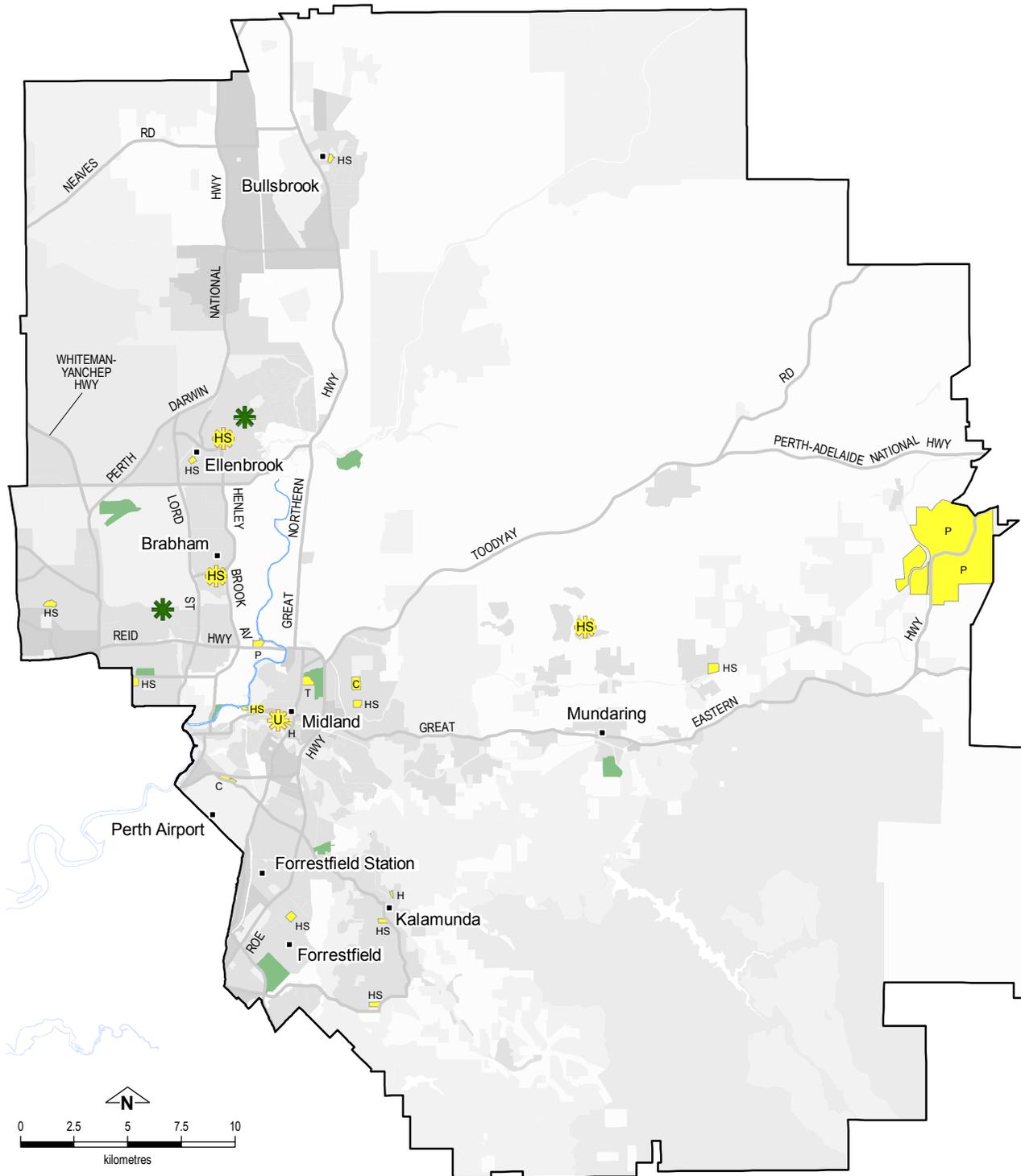
It is acknowledged that a new district open space facility, approximately 18 hectares in area, is being developed in Ellenbrook. This facility will provide additional active sport and recreation opportunities for the growing catchment population.

A potential new site for regional sporting activities has been identified in North Bennett Springs and is being investigated by the Department of Planning, Lands and Heritage on behalf of the WAPC. The site is approximately 100 hectares in size and, if confirmed suitable, will accommodate a major portion of the additional demand for sporting space in the sub-region to 2050.



Cemeteries

The two main existing cemeteries within the sub-region - located at Midland and Guildford - have limited capacity for expansion due to environmental constraints. In addition to these existing sites, a new cemetery site is required to meet predicted requirements in the medium-term. Options for a site of approximately 100 hectares are being investigated by the Department of Planning, Lands and Heritage on behalf of the WAPC.



Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\nts-per\magsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast\
 NESRSP_Plan04_SocialInfrastructure.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

- | | | | |
|---|-----------------------------|----|--------------------------|
|  | Open space - sport | HS | High school |
|  | Proposed open space - sport | T | Technical school |
|  | Public purposes | H | Hospital/Health facility |
|  | Proposed public purposes | P | Prison |
| | | C | Cemetery |
| | | U | University |

PLAN 4: Community and social infrastructure



3.5 Movement and access

Objective

To provide an efficient and effective regional movement network for people and freight that is integrated with land uses, links key economic and employment opportunities and connects the sub-region to the greater Perth and Peel regions, and the Wheatbelt.

Strategic direction and priorities

Projected population growth will place additional pressures on all levels of the existing road and rail transport network within the sub-region for the movement of people and freight. Accordingly, the framework has been developed in close consultation with the Transport portfolio.

To accommodate population growth and ensure efficiency of the movement system is not compromised, the framework recognises the need to integrate urban and employment nodes with transport infrastructure and services. The framework also proposes upgrading and adding new transport infrastructure to the network.

The movement network within the sub-region will continue to have a significant function within the Perth and Peel context, and be important to the Western Australian economy, by facilitating the movement of people and freight at the metropolitan, state and national levels. This network also links the sub-region with other key parts of the Perth and Peel regions including the Kewdale/Forrestfield freight hub, Perth Airport and strategic port infrastructure located in the South-West sector.

Congestion is increasing on the regional road network, particularly during peak periods, and mainly affects the roads that connect the outer areas of the sub-region to the Central sub-region including Lord Street, Great Northern Highway, Reid Highway, Roe Highway (East of Kwinana Freeway), and Gnaragara Road connecting to the North-West sub-region.

A challenge for the sub-region is to ensure that key roads are appropriately managed and upgraded over time to facilitate future efficiency. It is also necessary to ensure that public transport services are improved and feasible additions to public transport infrastructure and services are provided to assist with alleviating future road congestion and to support urban consolidation.

The integration of key centres with high-quality public transport networks is a key principle of the framework. Public transport infrastructure has been prioritised through METRONET to support activity centres and deliver sensitive, sustainable and vibrant communities. METRONET also proposes to remove some level crossings to improve traffic movements, safety and amenity. This strategic infrastructure investment will provide additional opportunities for infill.

The provision of transport infrastructure will be coordinated with the development of urban/ industrial land and activity centres based on the anticipated timing shown in Table 9 (p69) and Plan 11 (p67).

Further refinement of networks may be required as part of the review of Planning Investigation areas.



Public transport

An effective and adaptable public transport network will be a key mechanism for achieving greater sustainability. Improved public transport will be required to meet the transportation needs arising from population growth and to meet the need to connect people to key employment nodes. Additionally, good public transport will be necessary to reduce congestion in the shorter term and increase road capacity for other transport functions reliant on the regional road system, especially freight movement.

The proposed public transport network for the sub-region includes an integrated network of passenger rail lines and transit corridors.

Passenger rail infrastructure proposed for the sub-region includes the following Stage 1 METRONET proposals:

- a new rail line connecting the Midland rail line to the Airport and Forreestfield – with stations at Redcliffe, Airport Central and Forreestfield (also forms part of a proposed future Circle Line);
- a new rail line extending from the Midland rail line to the Ellenbrook town centre – with additional stations including at Morley, Malaga and Ellenbrook;
- extending the Midland rail line to a new station at Bellevue; and
- relocating the Midland rail and bus integrated station eastwards (Cale Street) to be in proximity to the Midland Public Hospital and main retail precinct.

Further investigation is required for the following proposed rail lines:

- East Wanneroo Rail Link – a potential additional rail line connecting the Joondalup and Ellenbrook Rail Lines; and
- Circle Line that connects the Joondalup, East Wanneroo (potential), Ellenbrook, Midland, Armadale, Mandurah and Fremantle rail lines – including extending the Forreestfield-Airport rail line to connect to the Thornlie rail line and connecting the Joondalup rail line to the integrated East Wanneroo/ Ellenbrook rail lines.



North-East Sub-regional Planning Framework

In light of the capital investment required to provide rail stations, it will be necessary to maximise land use opportunities in areas adjacent to this infrastructure. This may include providing car parking options that deliver improved land use integration.

All non-Stage 1 METRONET public transport proposals are subject to further investigation and will be refined as part of a future review of the frameworks.

The sub-region's passenger rail network will be supported by a network of High-Priority Transit Corridors (HPTC) and High Frequency Transit Corridors (HFTC) that will provide public transport connections between activity centres, population catchments, rail stations and local bus services. Both corridor types feature a high frequency of services, with HPTCs featuring infrastructure that will facilitate priority over other traffic.

The transit corridors will provide efficient public transport service connections between the Ellenbrook and Mundaring hills population catchments to the Midland strategic metropolitan centre and to the passenger rail network and local bus services.

The integration of the transit corridors with the broader transport network will support access to, and employment generation within, key centres and the delivery of higher-density urban form outcomes. However, urban development should not impact on the capacity of the transit corridor network which is essential for effective transport functions.

Key components of the network include the following transit corridors:

- Midland station to Ellenbrook;
- Ellenbrook to Bassendean station; and

- Midland station to urban settlements and related catchment populations within the Shire of Mundaring.

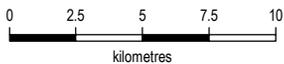
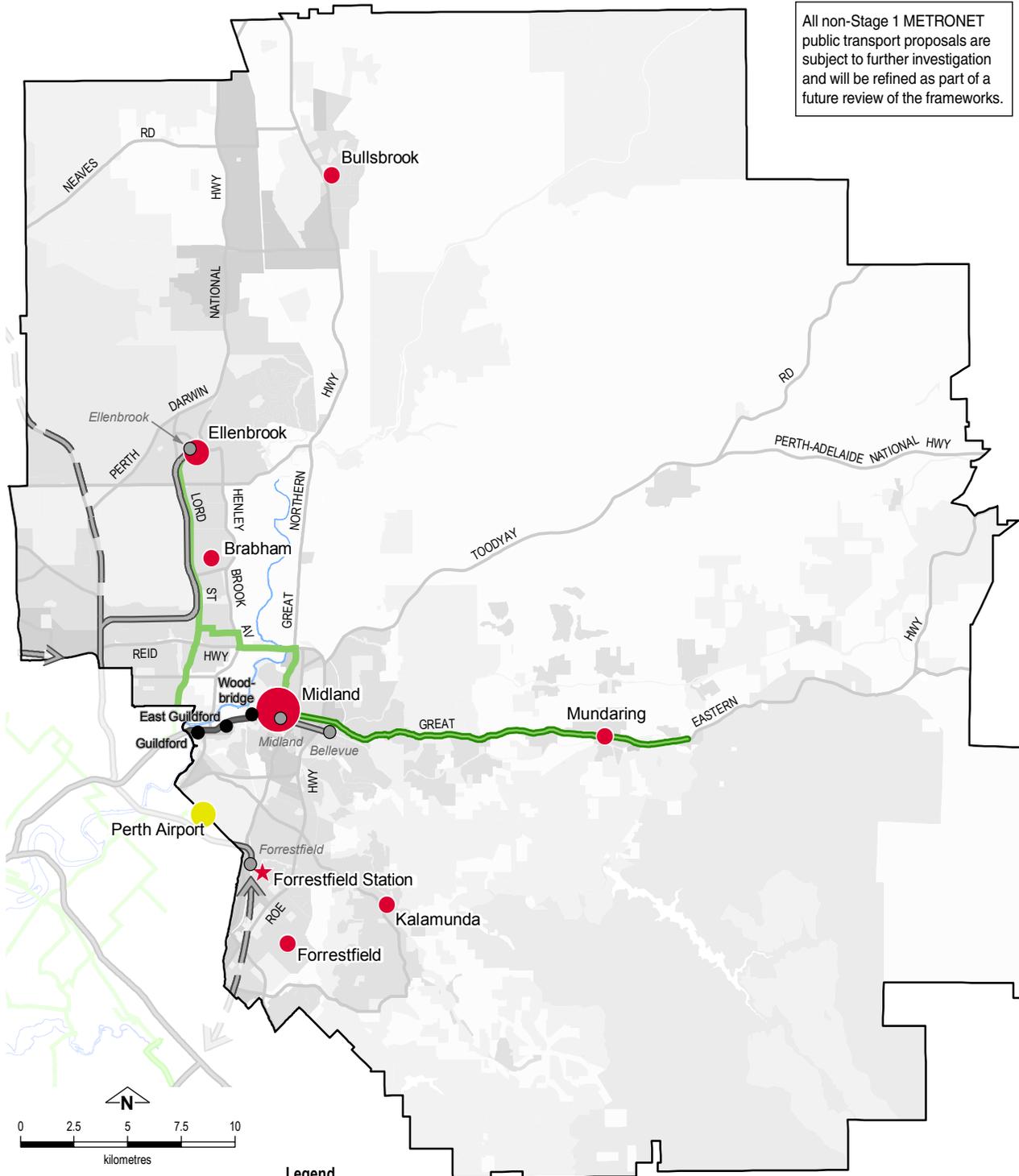
Future planning investigations and/or transport modelling may identify the need for new or upgraded transit corridors.

Bus services are an important part of a comprehensive and integrated public transport network. Improving connectivity between bus and rail networks will increase accessibility to the CBD and key centres and reduce commuting times.

The dispersed urban areas and settlements within the shires of Mundaring and Kalamunda will continue to be served primarily by the bus network. Further investigations are also proposed for the provision of bus services linking the eastern urban areas within the City of Kalamunda to the proposed Forrestfield Station, which may



All non-Stage 1 METRONET public transport proposals are subject to further investigation and will be refined as part of a future review of the frameworks.



Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © February 2018

\\NTs-per\magsprojects\State_MultiRegion\SubRegional_StructurePlans\WorkingAreas\NorthEast\NESRSP_Plan05_PublicTransport.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

- Passenger rail/station - existing
- Passenger rail/station - proposed stage 1 METRONET
- Passenger rail - further investigation
- Proposed high-priority transit corridor
- Proposed high-frequency transit corridor

Activity centres

- Strategic metropolitan
- Secondary
- District
- Other (Classification to be determined by more detailed planning)
- Specialised

PLAN 5: Public transport



require some priority infrastructure associated with access roads close to the station.

These key public transport initiatives are shown in Plan 5.

Regional roads

The planned regional road network for the sub-region includes new and upgraded primary distributor and integrator arterial roads as shown in Plan 6. The road classifications are currently under review by Main Roads WA which may result in future changes.

Perth–Darwin National Highway

The proposed Perth–Darwin National Highway is a new primary distributor which will connect Tonkin Highway with the Great Northern Highway at Muchea via Ellenbrook and improve freight transport and general traffic capacity through the northern part of the sub-region, diverting some traffic from Great Northern Highway, West Swan Road and Lord Street.

Perth–Adelaide National Highway

The Perth–Adelaide National Highway is a new primary distributor road which will connect Roe Highway at Midland to Great Eastern Highway east of Wooroloo, diverting a significant amount of regional traffic from Great Eastern Highway.

Whiteman–Yanchep Highway

The Whiteman–Yanchep Highway is a new north–south primary distributor road that will connect the North–West sub-region to the North–East and Central sub-regions and broader regional road network.

Neaves Road

Neaves Road is an important east–west link road that connects the North–West sub-region to the North–East sub-region and provides access to the proposed Perth–Darwin National Highway, the Bullsbrook/North Ellenbrook and Muchea employment nodes, and the planned Bullsbrook intermodal terminal. Neaves Road will form part of the freight network and will be upgraded to a primary distributor road to improve capacity and efficiency for freight and general traffic. It is also proposed to extend this regional road alignment east of the proposed Perth–Darwin National Highway as an integrator arterial road to connect to Great Northern Highway via Rutland Road.

Gnangara Road

Gnangara Road is also an important east–west link road for general and freight traffic that is proposed to be upgraded to a primary distributor road to improve traffic capacity and efficiency.

Cooper Road

The framework recognises the potential longer-term opportunity to provide an additional and more direct east–west road connection between the North–West Sub-region and the North Ellenbrook/

Bullsbrook industrial centre utilising the Cooper Road reserve alignment. This would connect directly to Stock Road (East) at the proposed interchange with the Perth–Darwin National Hwy, potentially form part of the future freight network and enhance access to the planned Bullsbrook intermodal terminal and Bullsbrook/North Ellenbrook and South Bullsbrook employment nodes. Future investigations to determine the feasibility of this road connection will need to include consideration of efficiency benefits for the broader regional transport network in this area and the potential impacts on the Gnangara Priority 1 Water Protection Area, adjacent bushland and other environmental attributes.

Lord Street

Lord Street, between Reid Highway and Ellenbrook, is an integrator arterial road and transit corridor. The Transport portfolio is investigating the design of Lord Street and the adjacent MRS Public Purpose (transit) reserve to determine future infrastructure requirements for general traffic and public transport.

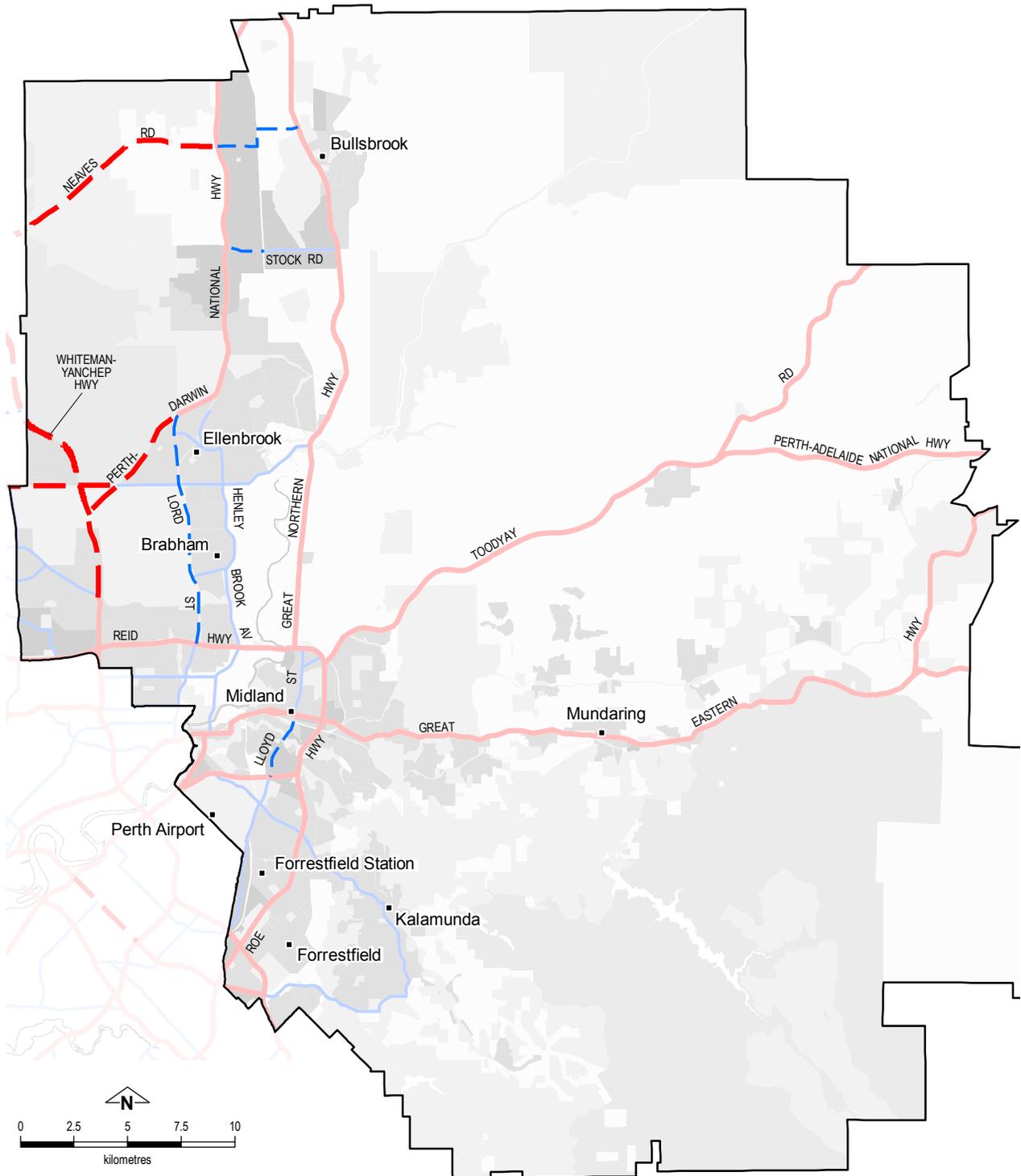
Henley Brook Avenue

Henley Brook Avenue is an integrator arterial road that will progressively be constructed to support development within the Swan Urban Growth Corridor.

Lloyd Street

The proposed Lloyd Street extension through Hazelmere will provide improved access from the south to the Midland strategic metropolitan centre.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\nts-per\magsprojects\State_MultiRegion\SubRegional_StructurePlans\WorkingAreas\NorthEast\NERSRP_Plan06_RegionalRoads.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

- | | |
|----------------------------|----------------------------|
| Primary distributor | Integrator arterial |
| Existing (MRS reservation) | Existing (MRS reservation) |
| Proposed | Proposed |

PLAN 6: Regional roads

Freight

The volume of freight movement on the regional road and rail networks will 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. Overall, the proportion of freight on rail is expected to increase.

The 2050 freight network is shown in Plan 7. The Perth-Adelaide National Highway will be the primary freight road linking Perth to the Eastern States, replacing the section of Great Eastern Highway between Midland and Wooroloo.

The proposed Bullsbrook intermodal freight terminal connected to the Perth-Geraldton regional freight line is planned for a location within the North Ellenbrook Industrial Investigation area in the vicinity of Stock Road. The terminal will have an important role in the freight network having rail connections to the Fremantle Port and proposed Kwinana Outer Harbour, as well as to regions in the north of the State. Rail and road access to the potential intermodal terminal requires detailed planning and protection from encroachment by incompatible development. It is anticipated this facility will not be required prior to 2031.

The WAPC, with the assistance of the Department of Planning, Lands and Heritage and Public Transport

Authority, has also identified a proposed new alignment for the section of the interstate and intrastate freight haul rail line between High Wycombe and Bellevue to bypass the Midland strategic metropolitan centre. This would reduce associated rail freight noise impacts for adjacent residential areas, potentially provide urban consolidation opportunities along the existing freight rail line (especially for the Midland strategic metropolitan centre) and improve north-south access across the Midland central business district.

The freight network is important to the Western Australian economy. Where practicable, these transport corridors should be protected from the encroachment of sensitive and incompatible land uses and is an important consideration when identifying locations for infill housing development. Similarly, the design, construction, upgrade and operation of the infrastructure within these corridors should seek to minimise impacts on surrounding land uses.

Aviation

The sub-region contains a portion of Perth Airport that will continue to facilitate domestic and international air services.

In the event that the existing general and civil aviation airports may not be adequate to meet the needs of the Perth and Peel regions by the time the population reaches 3.5 million people or more,

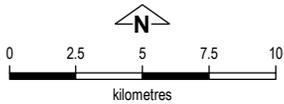
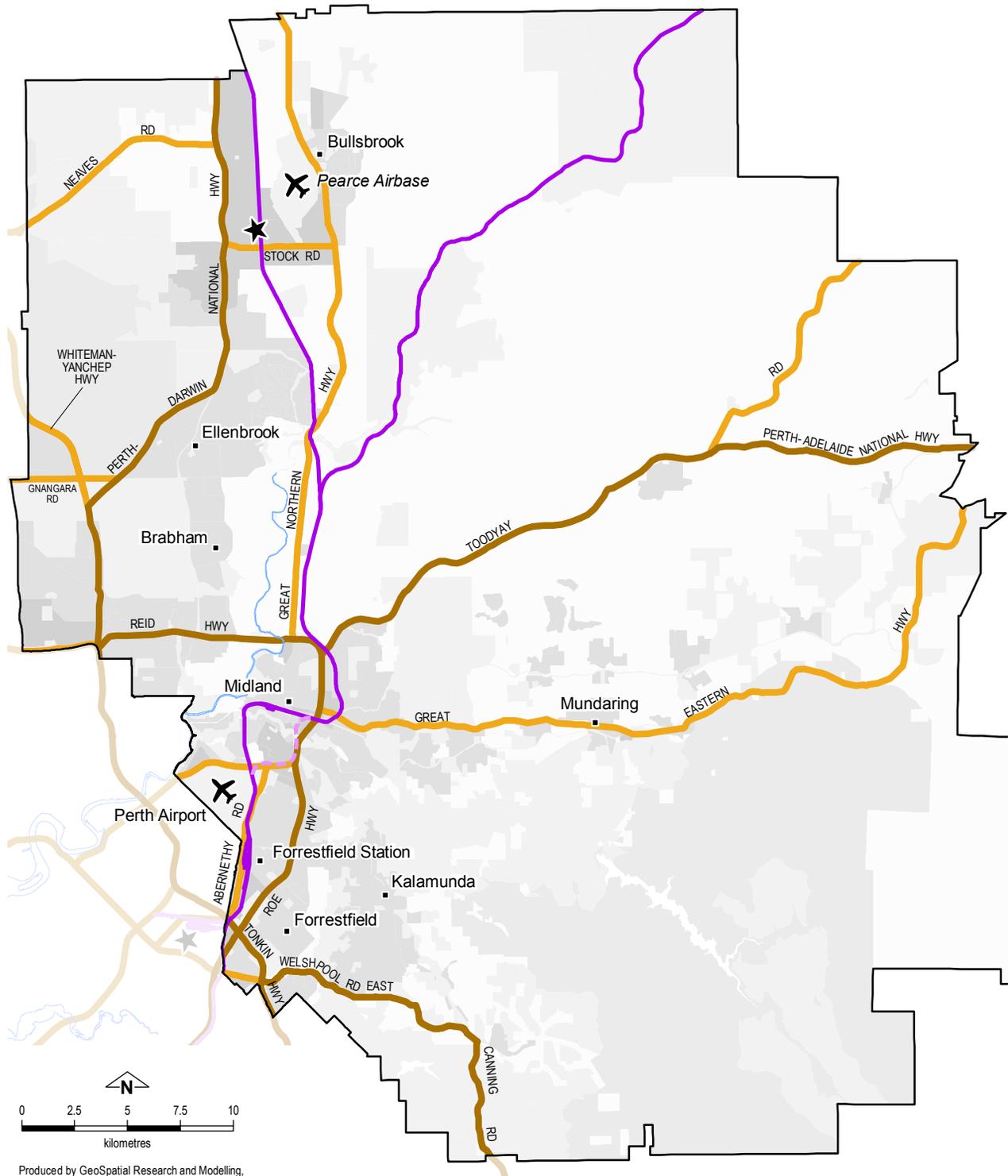
additional aviation infrastructure will be required. Planning studies to identify suitable locations for future aviation infrastructure, should these be needed, are currently being undertaken.

Pearce Airbase, located at Bullsbrook, is owned by the Commonwealth Government (Department of Defence) and operates as a key military air training facility and flight training base.

Active transport

The provision of a network of on-road and off-road paths for cyclists and pedestrians provides commuters with an alternative to private car trips as well as providing recreational opportunities and health benefits. At the regional level, it is intended that principal shared paths be provided along major transportation reserves. More detailed arrangements for integrating a comprehensive pedestrian and cycling network throughout urban areas, including connections to rail stations, will be determined through district and local structure plans and in consultation with local government.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\Nts-perlmagsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast\
 NESRSP_Plan07_FreightAndAviation.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

Airport

Intermodal freight terminal

Freight rail - existing

Freight rail - proposed

Freight roads

Primary

Secondary

PLAN 7: Freight and aviation



3.6 Service infrastructure

Objective

To ensure the timely, efficient and cost-effective delivery of electricity, water, wastewater and other service infrastructure that is aligned with the staging of development and to encourage the shared use of infrastructure corridors by the various service providers.

Strategic direction and priorities

Development of new urban and industrial sites in the sub-region, in addition to the intensification of established urban areas, may require significant upgrades and additions to the network of essential service infrastructure. It is important that new and infill development avoids and minimises (where necessary) encroachment upon this infrastructure to ensure the safe and reliable provision of essential services.

The framework seeks to maximise the use of, and add value to, existing infrastructure in order to minimise ongoing maintenance and operational costs. Alignment between the development industry and servicing authorities will be necessary to ensure that the release

of land for housing and employment purposes is commensurate with anticipated population growth. In this regard, servicing of growth areas will be expected to occur through the progressive extension of development fronts. The delivery of infrastructure will be staged and coordinated with the supply of urban and industrial land to improve coordinated service delivery and ensure the timely and cost-effective supply of serviced land.

The future provision of transport and other service infrastructure within the sub-region has, where possible, been planned within shared corridors contributing to the efficient use of land. The shared corridors have avoided and, where necessary, minimised the impact upon environmental attributes, landscapes and conflicting land uses.

Improved technology may provide servicing efficiencies which may impact on demand for, and the need to supply, future infrastructure. It will be necessary to identify and/or protect sites for regional service infrastructure provision.

Existing and proposed service infrastructure is shown in Plan 8. Further refinement of service infrastructure may occur if required as part of the review of Planning Investigation areas.

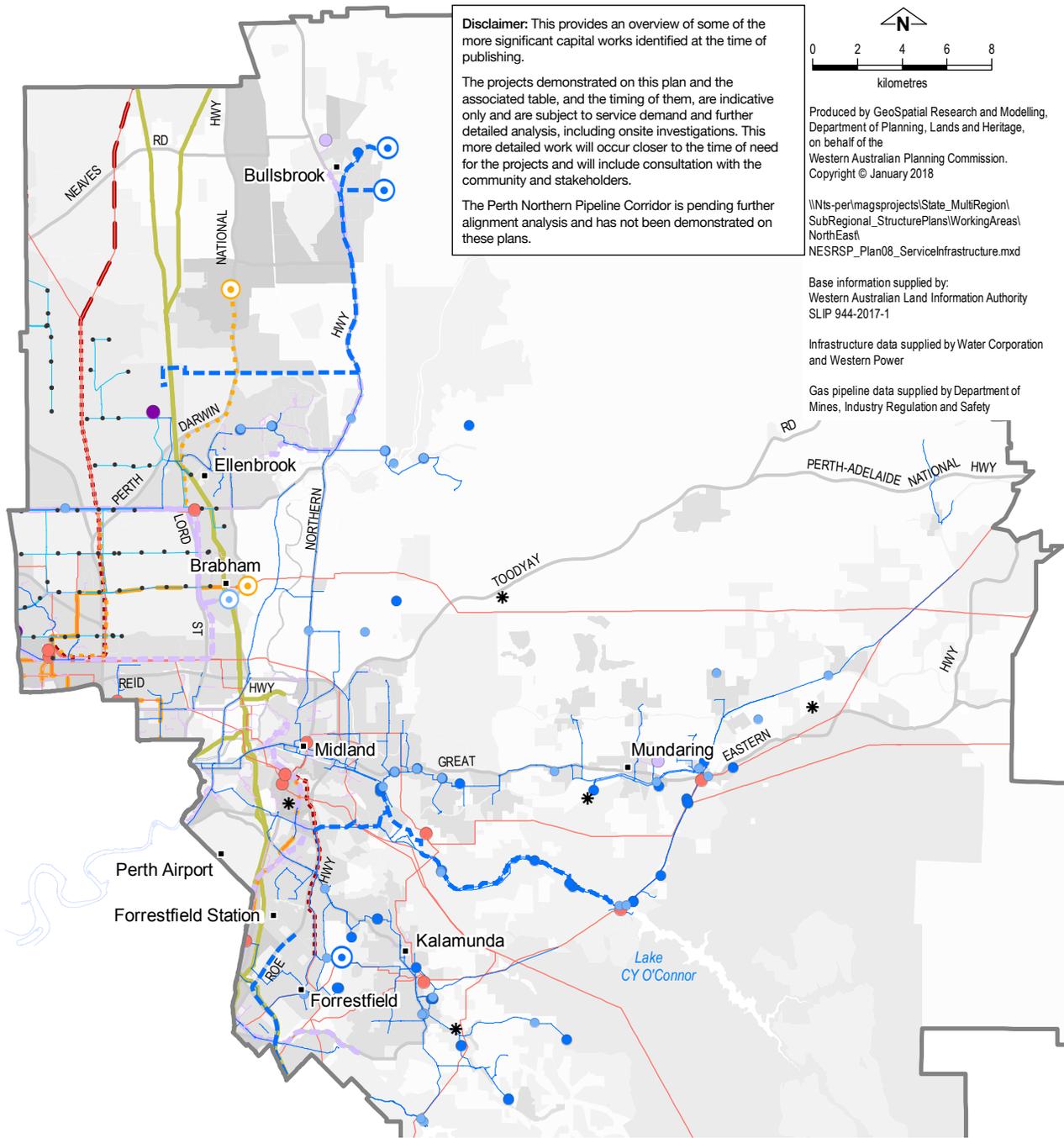
Electricity supply

Electricity is distributed to the sub-region through a network of 132 kV and 330 kV bulk transmission power lines that connect to the local power distribution network via transition terminals and sub-stations. The future supply of electricity will require the upgrading of the existing electricity network including extensions to transmission lines and construction of new terminals and sub-stations as shown in Plan 8.

Traditional electricity infrastructure may be complemented by more innovative electricity supply models such as microgrids, embedded renewable energy generation and energy storage systems.

The need for, timing and delivery of these services will require further investigation through more detailed planning.





Legend

Water Corporation - Existing	Water Corporation - Proposed	Western Power - Existing	
• Bore	⊙ Bore	● Existing substation or terminal	⋯ New 132 kV transmission line
● Pump station	⊕ Pump station	— Transmission overhead	— Replace/rebuild 132 kV transmission line
● Water tank/reservoir	⊕ Water tank/reservoir	— Transmission underground	⋯ New 330 kV transmission line
● Water resource precinct	⊕ Treatment plant	Western Power - Proposed	— Replace/rebuild 330 kV transmission line
● Water treatment plant	— Indicative water main	○ Terminal expansion or relocation	
— Water main	— Indicative wastewater main	⊕ New terminal	
— Wastewater pressure main	— Indicative treated wastewater	○ Substation expansion	Major gas pipelines
— Water pipeline unpotable	■ Water resource precinct	● New substation/investigation	— Dampier to Bunbury; Parmelia mainline

PLAN 8: Service infrastructure

Water supply and wastewater

Existing water supply infrastructure that serves the sub-region includes several key water sources including the Mirrabooka groundwater and Greenmount reservoir systems, with some areas in the south-east being supplied from other sources from the south. Water is transferred from sources to treatment and storage facilities by trunk mains. Water supplies for the proposed new urban areas in the eastern part of the sub-region at Parkerville, Stoneville and Gidgegannup will require further investigation by landowners and developers including the potential provision of supplies by an alternative service provider.

Planned improvements to the existing water supply system include the provision of new water tanks north-west of Ellenbrook. The Ellenbrook reservoir will be the primary water storage facility to support future urban and industrial development in the northern parts of the sub-region. Bullsbrook will also require several new water tank sites positioned in elevated areas, development of which will need to be staged over time to serve the proposed expansion of the townsite.

The sub-region does not accommodate any large water resource precincts however there are two small precincts at Bullsbrook and Mundaring. Further consideration of the ongoing management of wastewater for the proposed Bullsbrook area will

be required as part of detailed planning, particularly as the existing Bullsbrook water resource precinct will be decommissioned. Wastewater from Ellenbrook and surrounding urban areas is discharged through a transfer main to the Beenyup water resource precinct in the North-West sub-region, and this facility will require significant upgrading in future years. The long-term intention for this part of the sub-region is that wastewater will ultimately be transferred via new pressure mains to the Alkimos water resource precinct.

Wastewater from parts of Midland, Greenmount, Helena Valley, Hazelmere and Maida Vale is also transferred westwards to the Beenyup water resource precinct. This is an interim arrangement until the Maida Vale main sewer is extended from Welshpool northwards through Forrestfield and Maida Vale to allow discharge from the Midland area to be diverted to the Woodman Point water resource precinct in the south-west sector. Wastewater from Forrestfield, Perth Airport, Wattle Grove and Kalamunda is currently discharged to the Woodman Point water resource precinct.

The hills areas (generally to the east of Greenmount) are not connected to the metropolitan reticulated wastewater system (with the exception of the small local water resource precinct in the Mundaring activity centre that has very limited coverage and capacity). Future urban development in the hills areas, such as proposed settlements in

Stoneville and Parkerville, will need to consider options to provide a sustainable form of wastewater treatment and/or disposal.

The Water Corporation has previously considered water and wastewater servicing for all land currently zoned urban and urban deferred under the MRS. The proposed Urban and Industrial Expansion/Investigation areas will be required to be connected to services within the timeframe of the framework subject to the staged provision of new and/or upgraded infrastructure to increase capacity. However, these areas will require more-detailed investigation prior to zoning to ensure the orderly and financially sustainable provision of water and wastewater services. The majority of the hills settlement areas to the east will continue to be served by on-site wastewater disposal systems.



Drainage

Areas identified for future urban and industrial development in the framework will be required to address the management of drainage systems to ensure that biodiversity and ecological functions and water quality of wetlands and river systems are maintained, that people and property are protected from flooding and inundation, and that amenity of public open space is enhanced.

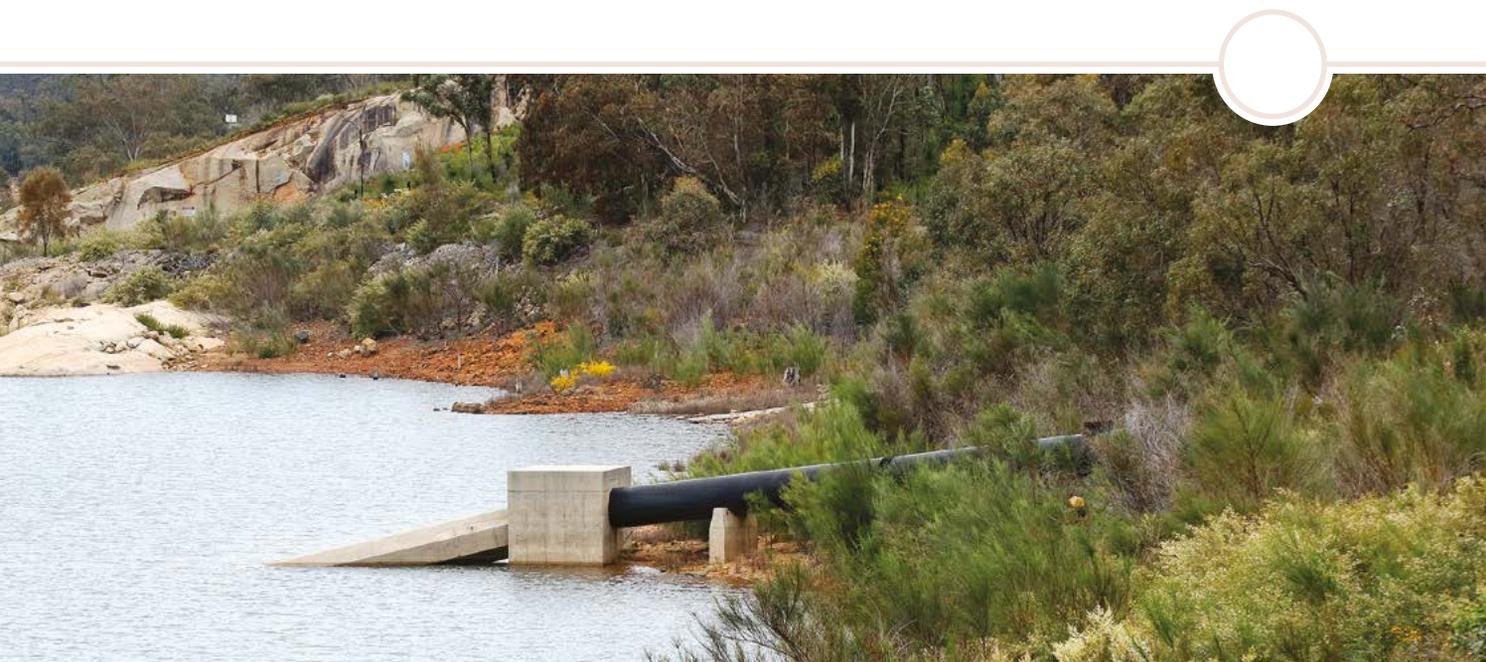
This will require the incorporation of best practice water-sensitive urban design and nutrient management and may be required to include the use of detention basins and nutrient/sediment stripping facilities. Subsequent levels of planning for drainage in the sub-region will be guided by the regional water management strategy prepared to support the framework.

Other services

The sub-region accommodates sections of the Parmelia Gas Pipeline and Dampier to Bunbury Natural Gas Pipeline. These major gas pipelines traverse the sub-region (generally in a north-south direction) and will need to be incorporated into future development in areas such as Henley Brook and West Ellenbrook.

Telecommunications and domestic gas infrastructure will be progressively supplied to the growth areas within the sub-region as development proceeds. Planning decisions regarding telecommunications infrastructure will continue to be guided by *State Planning Policy 5.2 Telecommunications Infrastructure*.

The key regional waste management sites within the sub-region are the waste disposal and recycling site at Red Hill and the Hazelmere Resource Recovery Park. These facilities have capacity to serve the sub-region for the foreseeable future. However, population growth will put pressure on this infrastructure and may create demand for new facilities in the longer term. *The Western Australian Waste Strategy: Creating the Right Environment* identifies long-term waste and recycling infrastructure planning as a key strategic response to the challenges facing waste management in the State. A range of investigations are currently being undertaken to identify strategic waste infrastructure sites required in the long-term.



3.7 Environment and landscape

Objective

To preserve and enhance the environmental and landscape values of the sub-region for future generations to enjoy.

Strategic direction and priorities

The sub-region has significant environmental attributes including a part of the Swan/Avon River system and areas of bushland. Over 80,000 hectares, or 40 per cent, of the sub-region is protected as parks and recreation, State forests or waterways reservations under the MRS, which includes a significant number of Bush Forever sites. Reserved land containing key environmental and landscape features within the sub-region is shown in Plan 9. State forest reservations may contain a variety of uses such as forestry, mining, recreation and heritage. There needs to be a continued focus on balancing these uses with broader environmental outcomes within State forest areas.

Protected environmental features within the sub-region include:

- portions of the Darling Scarp, which forms a prominent backdrop to the coastal plain;
- extensive areas of jarrah forest in the Darling Range, held in State forest;
- areas of banksia woodland on the coastal plain; and
- a number of national and regional parks in the steeper valleys of the western portion of the Darling Range.

The abundance of trees in the hills landscape is an important component of the tree-change lifestyle that attracts people to the area. Future development within the sub-region will need to have careful consideration of these attributes and also address significant bushfire risks.

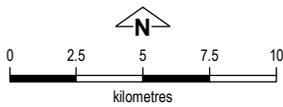
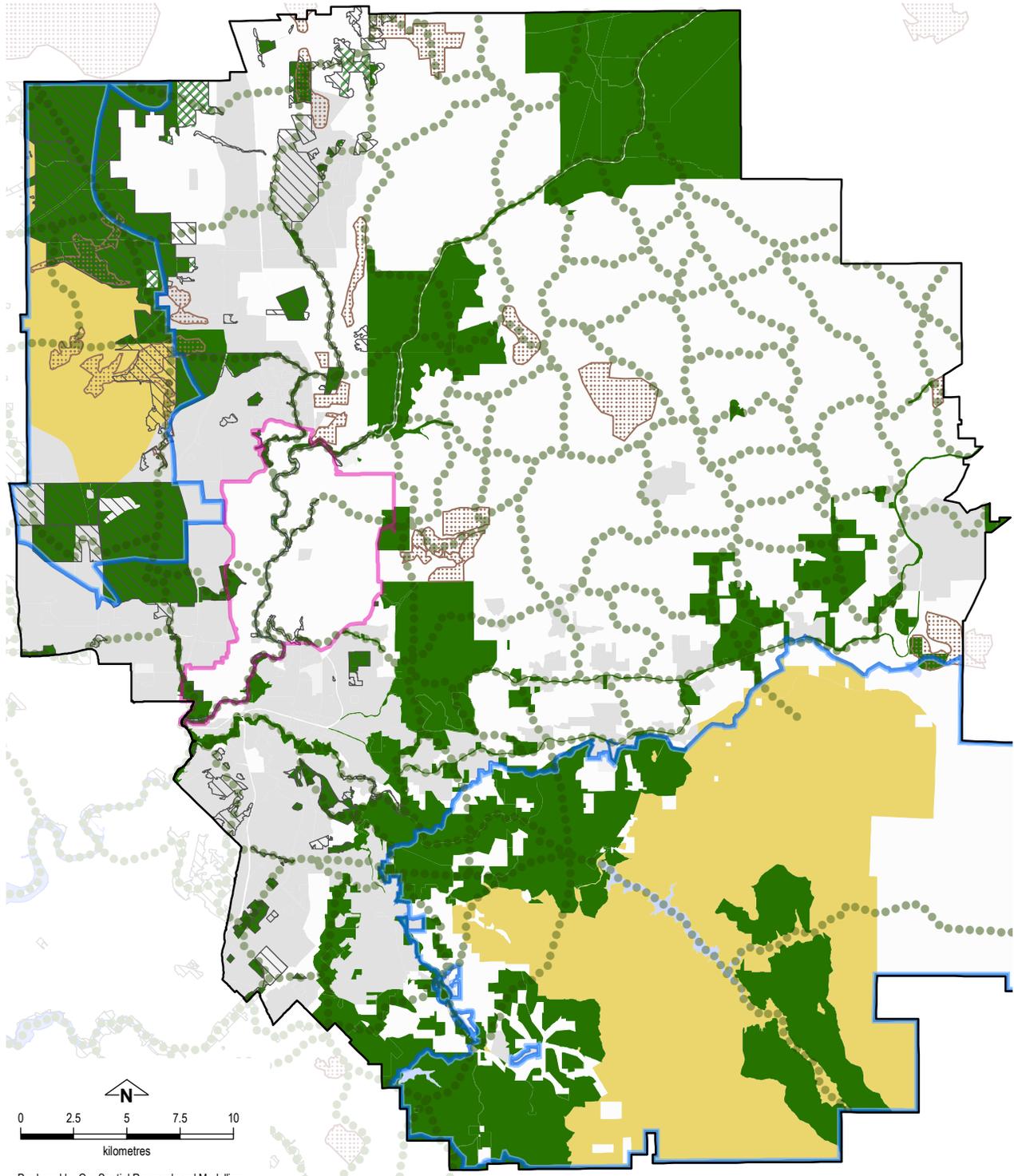
The sub-region also features valued landscapes with both natural and rural character including the Swan Valley vineyards and equestrian properties, the Darling Range, orchard areas contained in narrow valleys and partially-vegetated grazing land across undulating terrain.

Environmental and landscape values have been considered in the identification of new areas for urban and industrial development. This development will result in changes to the existing landscape character of the affected localities, particularly North Ellenbrook, Bullsbrook, Maida Vale, Helena Valley and Wattle Grove. The challenge will be to retain or create a 'sense of place' by maintaining key individual landscape characteristics and vistas in areas that may be subject to large scale landscape change.

Urbanisation and agricultural uses in the sub-region have led to the fragmentation of some natural areas, resulting in small patches of remnant vegetation, reduced habitats and isolated populations of native fauna. To strengthen and increase the capacity of these natural areas, the framework identifies ecological linkages (the connection of these fragmented sites to one another) to assist in the retention of habitat for significant fauna dispersal and migration.

Ecological linkages will be supported by a green network (green spaces, vegetated drainage management systems and green streets) contained within public and private realms to deliver multiple environmental, economic and social benefits. These linkages will support both the general health





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\Nts-perlmagsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast\
 NESRSP_Plan09_EnviroNaturalResource.mxd

Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

- Ecological linkages
- Swan Valley Planning Act boundary
- ▨ MRS - Bush Forever
- ▤ Basic raw materials*
- ▭ Water catchment protection
- Open space - nature/passive recreation
- ▨ Open space investigation - nature/passive recreation
- State forest
- ▭ Waterway

* The basic raw material mapping will be further refined as part of the review of State Planning Policy 2.4 and in conjunction with the Strategic Assessment of Perth and Peel Regions

PLAN 9: Environment and natural resources

of flora and fauna in the sub-region and meet the requirements of Commonwealth and State environmental legislation that protects significant biodiversity values.

The sub-region's natural areas also provide opportunities for recreation and greater involvement and interest in natural areas. Opportunities to further integrate conservation and recreation land uses should be investigated in order to meet the requirements of the sub-region's future population.

A key attractor for population growth in the sub-region is the hills landscape, with its traditional low-density rural settlements set in undulating agricultural areas with a substantial number of large remnant trees and pockets of orchards and other more intensive rural pursuits. These areas will be subject to additional pressure to meet residential, recreation and tourism demands, while the increased risk of bushfire in a drying climate also needs to be considered.

The management of watercourses, wetlands and the drainage management system within the sub-region is required to maintain environmental conditions and associated habitats for fauna and flora, and to protect people, property and infrastructure during extreme rainfall events. The retention of aesthetic, recreational and cultural values is also important.

Expanding the green network

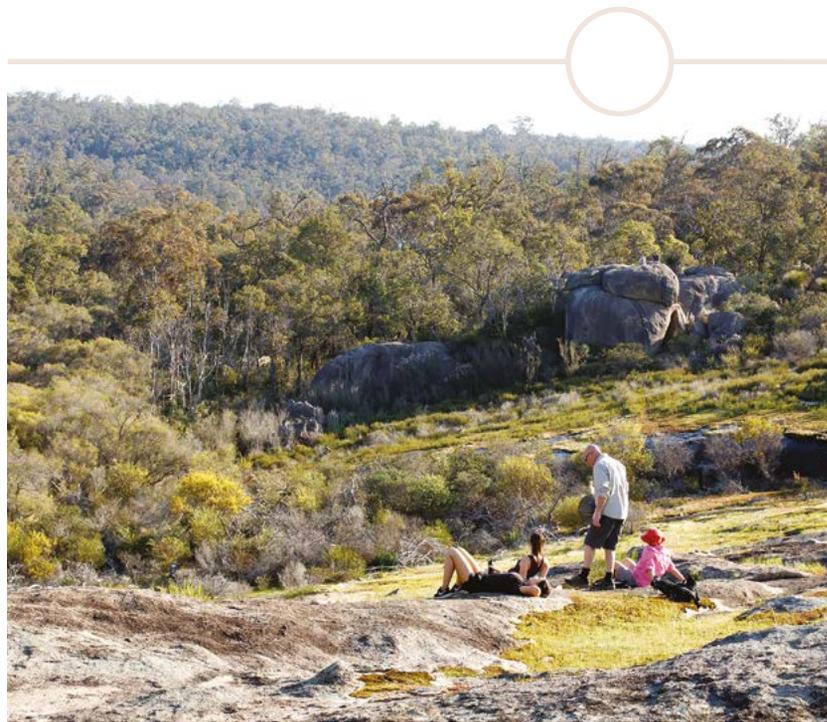
The development of land for housing, jobs and infrastructure will place increased pressure on areas with high environmental values.

Some proposed Open Space/Open Space Investigation areas are identified in conjunction with the identification of land for more intensive development. Where appropriate, this land will be ceded as part of future subdivision. The Open Space classifications in the framework do not necessarily require that the land be reserved for future acquisition.

Other Open Space Investigation areas that do not form part of proposals for more intensive development will require further

investigation of environmental attributes, their strategic importance as part of the green network and/or contribution towards the orderly and proper planning of a locality.

Open Space Investigation areas have been subject to preliminary assessment however require further investigation to be undertaken prior to consideration for future protection and/or reservation under the MRS. The classification of these areas should not be construed as WAPC support for future protection and/or reservation, as this will depend upon the outcome of further investigations.



3.8 Natural resources

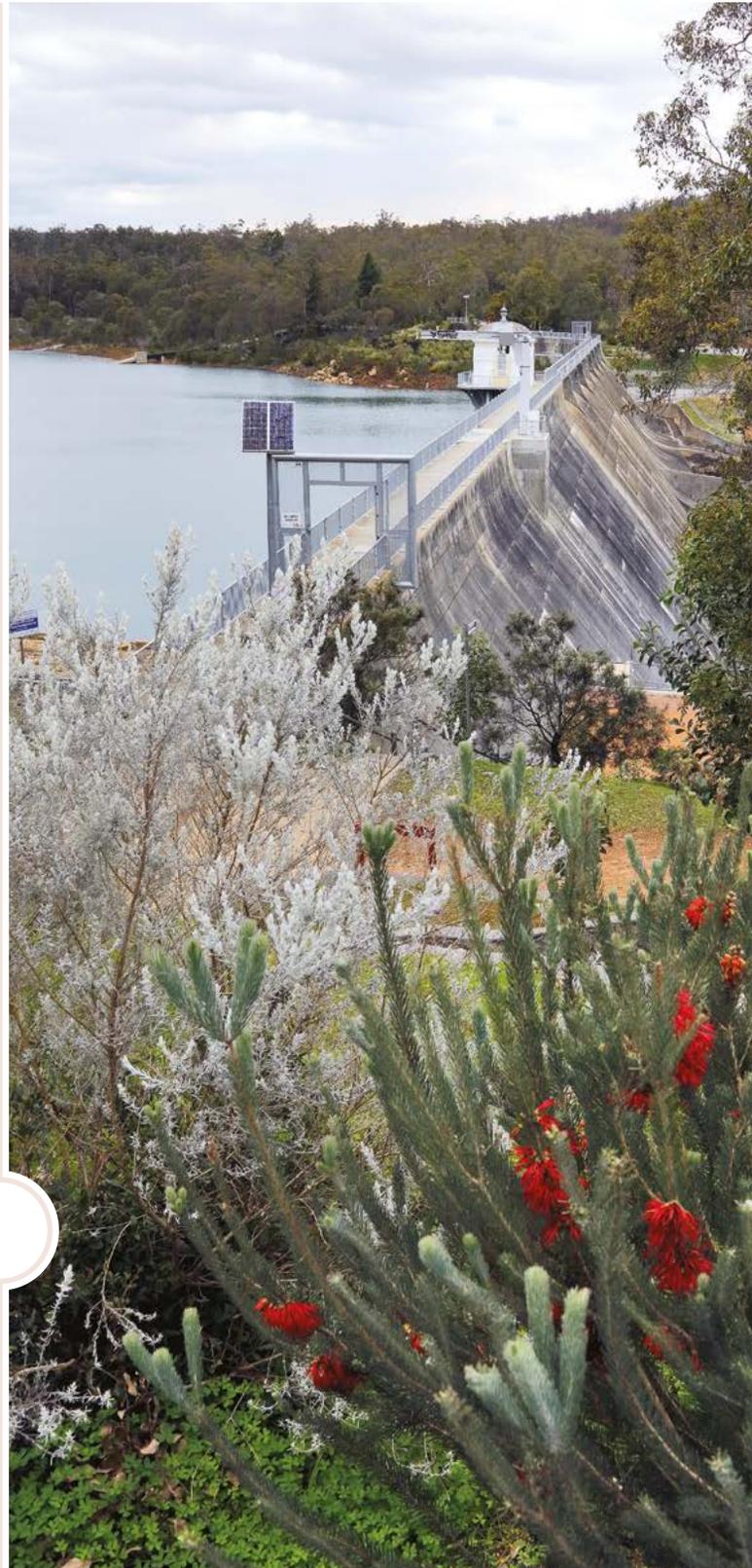
Objective

To manage the availability and use of natural resources to ensure existing and potential land uses can be balanced against broader environmental outcomes.

Water resources

Water sources serve a critical function for supplying private self-supply, public scheme water supply, agriculture and for the environment, including wetlands and ecosystems. Urban landscaping, lakes and wetlands all contribute to the outdoor lifestyle enjoyed by the community and visitors and are important to the sub-region's economic, environmental and social well-being. Water availability is also critical to the significant agricultural industries that exist within the sub-region.

Surface water in the sub-region is an important resource, contributing to the public scheme water supply. A large portion of land in the sub-region's south-east is reserved under the MRS to protect the Mundaring Weir and Middle Helena surface water catchments from inappropriate development. The framework includes some alterations to these



water catchment protection area boundaries that mainly reflect changes already formally proclaimed or abolished.

The Gngangara groundwater mound, partially located in the north-western portion of the sub-region, is the largest source of quality fresh water in the Perth region. To effectively manage this significant water source there needs to be careful consideration of land uses that impact on the quantity and quality of water that enters the underground aquifer, and management of water abstraction is required. *State Planning Policy 2.2 Gngangara Groundwater Protection* guides land use change and development on the Gngangara mound to ensure it is compatible with the long-term use of the groundwater for public consumption.

As a drying climate further limits the sustainable supply from groundwater resources, the focus is turning to more effective ways of using available water and alternative supply options. A regional water management strategy highlighting key water considerations has been developed for the sub-region. This strategy identifies a number of issues including water scarcity, irrigation for public open space and protection of public drinking water source areas. The regional water management strategy will inform subsequent stages of water planning in the sub-region at the district and local levels which will be undertaken in accordance with the WAPC's Better Urban Water Management framework.

Basic raw materials

Basic raw materials are a finite resource and several types are located within the sub-region including clay, sand and rock. During the preparation of the framework, efforts have been made to achieve a suitable outcome between environmental attributes and areas identified for basic raw materials extraction. The majority of these resources are located within rural and State forest areas, except for a clay deposit located within the proposed eastern urban expansion of the Bullsbrook townsite.

Plan 9 includes geological information for basic raw materials. It does not infer support for extraction in any location. The basic raw material mapping is subject to ongoing refinement as part of the review of *State Planning Policy 2.4 Basic Raw Materials*, the Planning Frameworks and in conjunction with the Strategic Assessment of Perth and Peel Regions.

Ongoing access to basic raw materials with cost-effective proximity to future growth areas is important to housing affordability and moderating the cost of future infrastructure projects.

Future development areas that contain basic raw materials will need to implement sequential land use principles, staging of development and land use buffers (where possible) to ensure that the regional value of these resources can be realised and that the materials are available as demand dictates, before any development occurs in these areas.

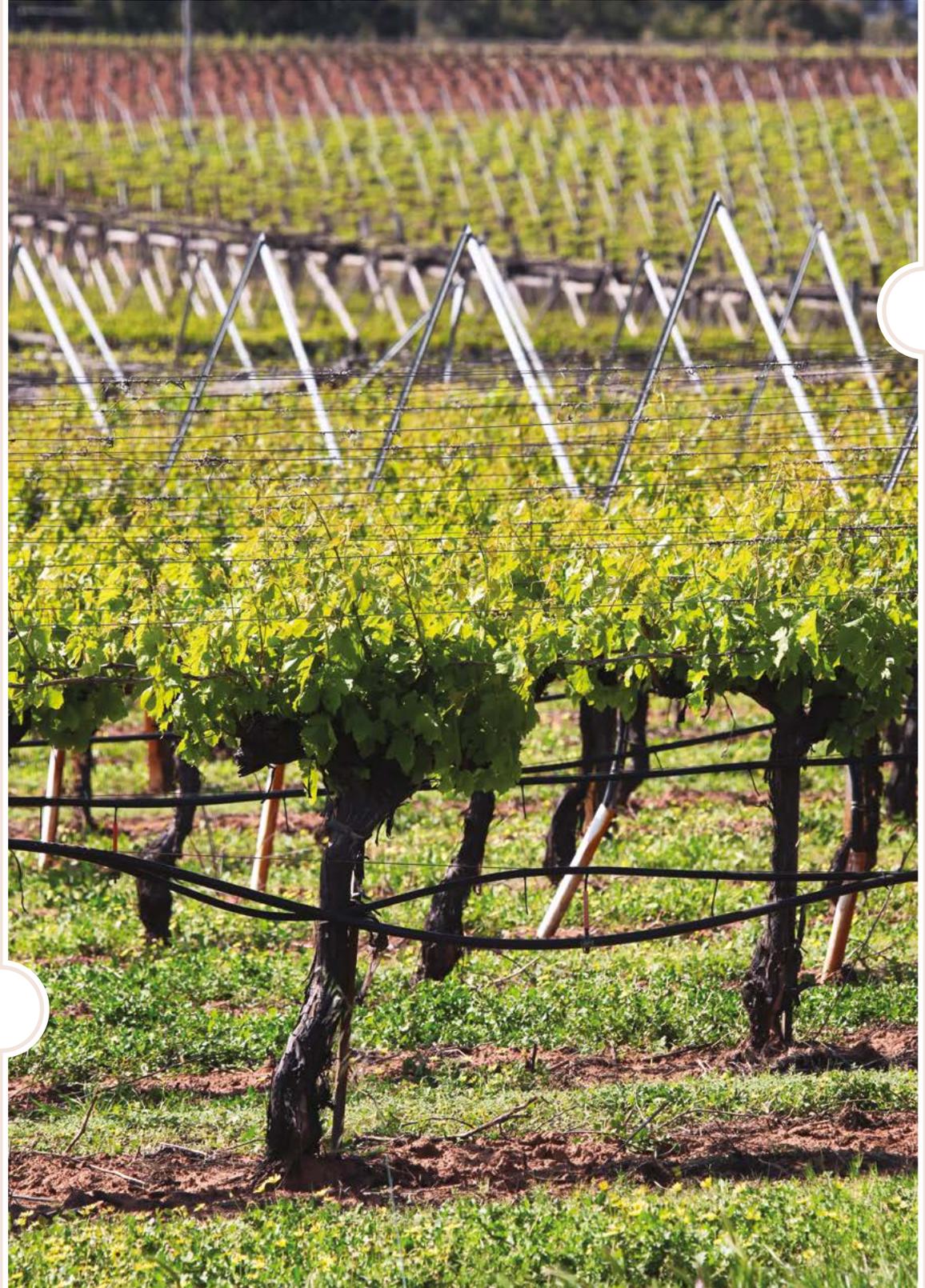
Agricultural land

There is approximately 2,800 hectares of high-value food producing areas within the sub-region. The most productive areas are within the City of Swan, including the vineyards of the Swan Valley. Fertile valleys in the Perth hills within the City of Kalamunda and Shire of Mundaring produce quality stone fruit, apples, citrus and avocados for local and interstate markets.

The importance of protecting agriculture and rural values is recognised in the Swan Valley planning legislation as well as in the City of Swan and City of Kalamunda local planning schemes.

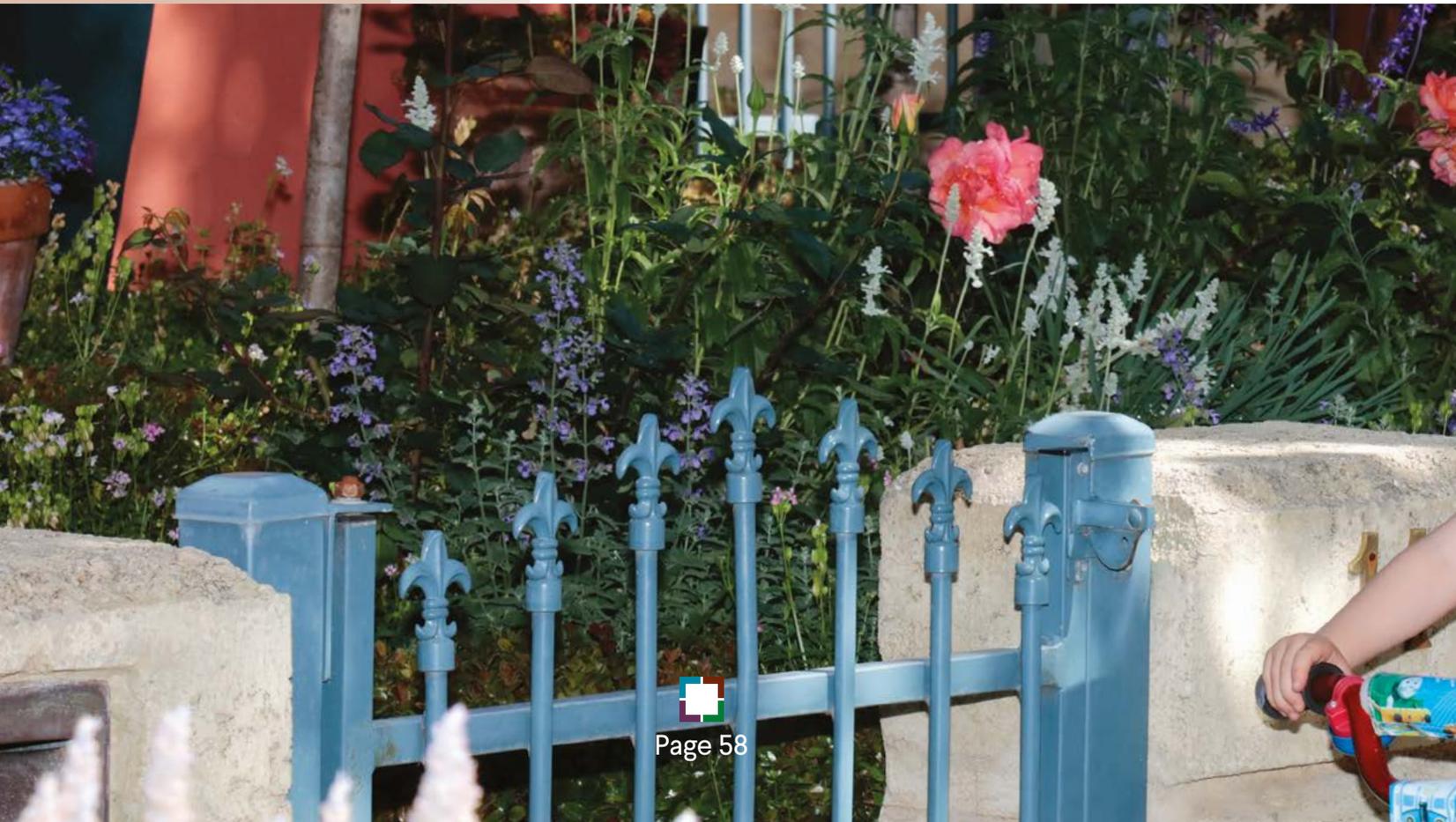
With increased pressure to identify urban land to accommodate a rapidly growing population, there is an urgent need to secure areas for food production close to urban areas. To achieve this, priority agricultural land needs to be identified and protected taking into account the unique combination of soils, climate, water for irrigation and access to services that occur in the sub-region. In the interim there is a presumption against the development and/or subdivision of rural land which is inconsistent with *State Planning Policy 2.5 Rural Planning*.





IMPLEMENTATION

The framework is the first step in the ongoing process of refining and detailing planning proposals for the North-East sub-region



Introduction

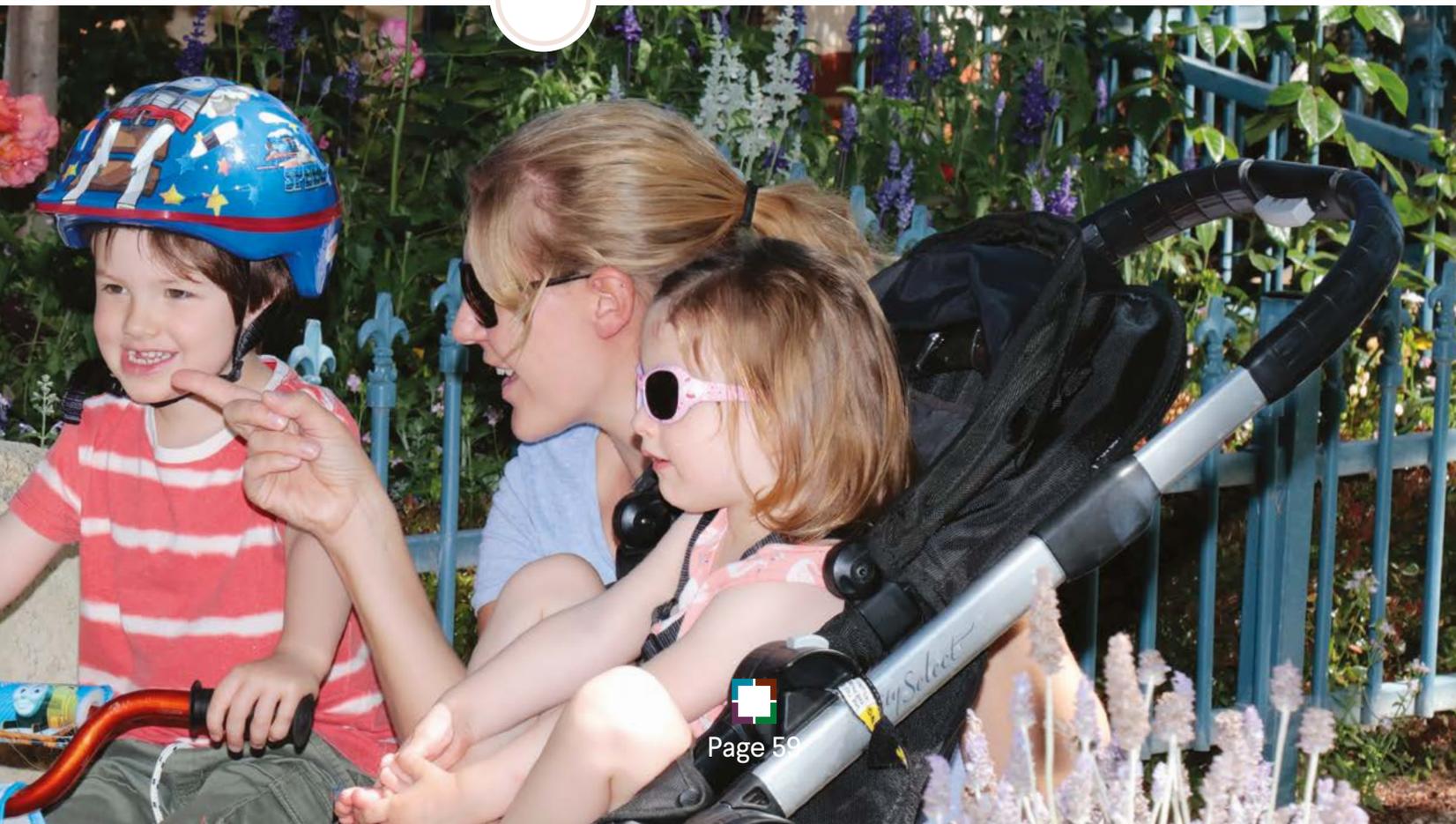
The framework will be incorporated into *State Planning Policy 1 State Planning Framework Policy* and will provide a long-term strategic plan for the sub-region. The framework identifies sufficient land for housing and employment to accommodate anticipated growth, incorporating land use and infrastructure proposals to 2050 and broad principles to guide the future development of the sub-region. It will remain responsive to evolving community expectations, while balancing compliance with the principles of urban consolidation and protection of the substantial environmental attributes within the sub-region.

4.1 Implementation mechanisms and actions

The framework is a strategic planning document and therefore does not change existing zonings or reservations that have effect under statutory region and local planning schemes. Changes to zoning can only occur through formal amendment processes to the relevant statutory region and local planning schemes. The framework is the first step in the ongoing process of refining and detailing planning proposals for an area. This refinement will continue through the MRS, local planning schemes and strategies, structure planning, subdivision and development.

The framework's foundation is a consolidated urban form with an integrated land use and movement network that maximises the use of existing infrastructure and avoids and protects regionally significant environmental attributes where appropriate. It provides a high-level strategic context to guide future development and address key challenges for the sub-region.

The implementation of the framework will require close collaboration across State government agencies, local government and the private sector.



Specific implementation actions and the responsible authority for each are outlined in Table 7. In addition, detailed work programs will need to be established by relevant authorities to ensure the preparation or review of supporting planning instruments are aligned with the principles and objectives of the framework.



TABLE 7: Implementation actions

Consolidated urban form

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To create sustainable communities that are attractive places to live and work. The consolidation of urban areas will provide for more efficient use of urban land and infrastructure with improved access to public transport, sport and recreation, community and commercial facilities while minimising impacts on significant environmental attributes.	Urban	Structure planning	WAPC Local government
	Urban deferred	Lifting of urban deferment in the region scheme	WAPC
		Structure planning	WAPC Local government
	Urban Expansion and Investigation areas	District structure plans (where appropriate), generally prior to region scheme zoning	WAPC Local government
		Relevant investigations (for investigation areas)	WAPC Various
		Region scheme amendments	WAPC
		Local planning strategy/ scheme amendments	WAPC Local government
	Urban Expansion and Investigation areas based on 15 dwelling units per gross hectare of urban zoned land, where appropriate	Local planning strategy/ scheme amendments	WAPC Local government
		Structure planning	
	Planning Investigation areas	Undertake further planning investigations	WAPC, in consultation with relevant agencies, Local government
	Establish minimum urban infill dwelling targets, identification of sites consistent with the principles of urban consolidation	Local planning strategy/ scheme amendments	WAPC Local government
		Structure planning	
Encourage the review of endorsed structure plans to achieve a minimum average density of 15 dwellings per gross urban hectare	Structure planning	Local government	

TABLE 7: Implementation actions (continued)

Economy and employment

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To promote employment opportunities and increase the number of people who live and work within the sub-region, with a focus on attracting strategic economic and employment land uses within the Midland strategic metropolitan centre and key industrial centres, while maximising use of existing and proposed infrastructure.	Promote employment nodes including activity centres, specialised centres, industrial areas, Industrial Expansion areas and Industrial Investigation areas	Structure planning	WAPC Local government
		Relevant investigations (for investigation areas)	WAPC Various
		Region scheme amendments	WAPC
		Local planning strategy/ scheme amendments	WAPC Local government
		Local Economic Development Strategy	Local government
	Protect employment land from uses inconsistent with the employment objective by planning for ultimate development with limited interim uses	Region scheme amendments	WAPC Local government
		Local planning strategy/ scheme amendments	
		Structure planning	
	Improve employment self-sufficiency to reach target	Structure planning	Local government

Community and social infrastructure

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To provide a wide range of community and social infrastructure to enhance the health and wellbeing of the community and meet the community's needs including health, education, sport and recreation, while promoting infrastructure co-location and optimising the use of existing facilities and infrastructure.	Provide land within the sub-region for sport and recreation, regional-level health facilities, education and cemeteries	Structure planning	Local government
		Region scheme amendments	WAPC
	Identify suitable location for future cemetery site	Undertake further investigations	WAPC Metropolitan Cemeteries Board



TABLE 7: Implementation actions (continued)

Movement and access

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To provide an efficient and effective regional movement network for people and freight that is integrated with land uses, links key economic and employment opportunities and connects the sub-region to the greater Perth and Peel regions, and the Wheatbelt.	Undertake ongoing monitoring of the movement network, refine plans as appropriate and implement transportation upgrades/ construction to road, rail, public transport and active transport infrastructure	Ongoing monitoring and upgrade/construction as required	WAPC Department of Transport Main Roads Western Australia Public Transport Authority Local government
		Region scheme amendments	WAPC
		Local planning strategy/ scheme amendment	WAPC Local government
		Structure planning	WAPC Local government
	Confirm the location for the planned intermodal freight terminal in Bullsbrook and protect the land from inappropriate development	Intermodal study	Department of Transport
		Region scheme amendment	WAPC
	Confirm and protect the Perth-Darwin National Highway and Whiteman-Yanchep Highway route alignments	Complete transport Studies	Main Roads Western Australia
		Region scheme amendments	WAPC Main Roads Western Australia
	Confirm and protect new alignment for Midland freight rail	Region scheme amendment	WAPC Department of Transport
	Confirm alignments for proposed Morley to Ellenbrook, and potential East Wanneroo passenger rail links	Region scheme amendments	Department of Transport WAPC Public Transport Authority
	Confirm alignment for extension of passenger rail network from Forrestfield Station to Thornlie line	Undertake further investigations	Department of Transport WAPC Public Transport Authority
	Make provision for transit corridors	Ensure planning for roads includes provision for transit corridors	WAPC Department of Transport Main Roads Western Australia Public Transport Authority Local government
	Identify suitable locations for future general and civil aviation airports together with possible measures for new facilities should they be needed	Complete Future Perth Airports Technical Study	WAPC Department of Transport



TABLE 7: Implementation actions (continued)

Service infrastructure

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To ensure the timely, efficient and cost-effective delivery of electricity, water, wastewater and other service infrastructure that is aligned with the staging of development and to encourage the shared use of infrastructure corridors by the various service providers.	Complete an infrastructure capacity report to accompany urban infill strategies	Structure planning	WAPC Local government
		Local planning strategy/ scheme amendment	Local government
	Optimise use of existing infrastructure, with urban infill and employment opportunities utilising the principles of urban consolidation	Structure planning	WAPC
		Region scheme amendment Local planning strategy/ scheme amendment	Local government
	Facilitate shared infrastructure corridors	Region scheme amendments	WAPC Service providers
		Structure planning	Department of Transport Local government
	Identify and/or protect sites for regional service infrastructure provision	Region scheme amendment	WAPC Service providers
		Structure planning	Department of Transport Local government

Environment and landscape

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To preserve and enhance the environmental and landscape values of the sub-region for future generations to enjoy.	Identify and protect ecological linkages, where appropriate	Structure planning	WAPC Local government Department of Biodiversity, Conservation and Attractions
		Local planning strategy/ scheme amendment	WAPC Local government
	Open Space Investigation areas	Relevant planning and/ or environmental investigations	WAPC Various
	Protect land for additional parks and recreation/regional open space purposes	Region scheme amendment	WAPC
	Undertake various environmental studies including landscape assessment, and develop a flora and fauna management plan, a nutrient management plan and a water and drainage management plan	Structure planning	WAPC Department of Water and Environmental Regulation
Local planning strategy/ scheme amendments		Local government	



TABLE 7: Implementation actions (continued)

Natural resources

Sub-regional planning framework objective	Strategic direction/priority	Actions	By whom
To manage the availability and use of natural resources to ensure existing and potential land uses can be balanced against broader environmental outcomes.	Identify the impact of proposals within public drinking water source areas or within the <i>State Planning Policy 2.2 Gnangara Groundwater Protection area</i>	Region scheme amendments	WAPC, upon the advice of Department of Water and Environmental Regulation
	Identify and protect priority agricultural land	Local planning strategy/ scheme amendment	WAPC Department of Primary Industries and Regional Development Local government
	Determine the more detailed staging and sequencing for development sites with basic raw materials within the framework provided by Plan 10	Structure planning	WAPC Local government
		Local planning strategy/ scheme amendment	
	Prepare and implement water management strategies in accordance with the <i>North-East Sub-regional Water Management Strategy</i> and <i>Better Urban Water Management framework</i>	District, local and urban water management strategies	WAPC Department of Water and Environmental Regulation Local government
Retain, consolidate and rehabilitate vegetation and habitat as required	Rehabilitation/vegetation management plan	Department of Water and Environmental Regulation Department of Mines, Industry Regulation and Safety Local government	

Notes:

1. Strategic directions/priorities are uncommitted projects and a range of issues will require further consideration over time, including further detailed planning, timing and funding. The provision of funding will be a future decision of the State and relevant local governments.
2. Initiatives other than those specified in Table 7 may be required.
3. The type of structure plan (i.e. district or local) or activity centre plan required will depend upon the statutory framework and be subject to further discussion with the Department of Planning, Lands and Heritage and relevant local government.
4. Table 7 refers to State and local government actions only.



4.2 Staging and sequencing

Timing for the delivery of proposals listed in the framework will be guided by a number of factors including demand for urban land, landowner intentions, the capacity of servicing agencies and local government planning within the sub-region.

Based on average consumption rates for urban land within the sub-region, there is sufficient undeveloped land zoned Urban and Urban Deferred available to meet forecast housing requirements for about 32 years. The framework also identifies sufficient land (7,570 hectares) to accommodate projected population growth to 2050.

The framework provides a broad guide for the staging of urban development based on the timeframes provided in Table 8 and shown on Plan 10. Anticipated timeframes for the delivery of required infrastructure to service urban and industrial development are outlined in Table 9 and Plan 11. Developers and local government will need to liaise with relevant authorities and the WAPC at more detailed planning stages in relation to these infrastructure requirements.

TABLE 8: Anticipated staging and average urban land demand

Staging	Timeframe*	Urban land demand**
Short-term	up to 2021	980 hectares
Medium-term	2022–31	1,400 hectares
Long-term	2032–50	2,660 hectares
	2015–50	Total: 5,040 hectares

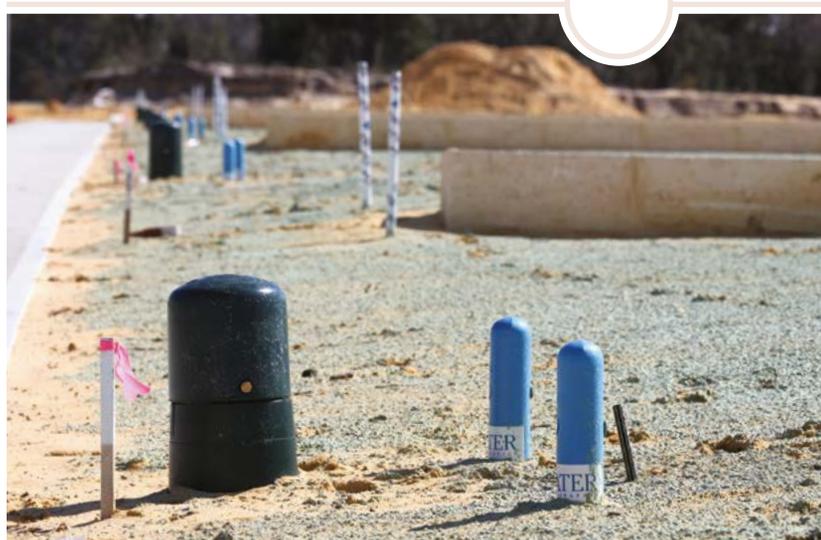
Source: WAPC, 2016

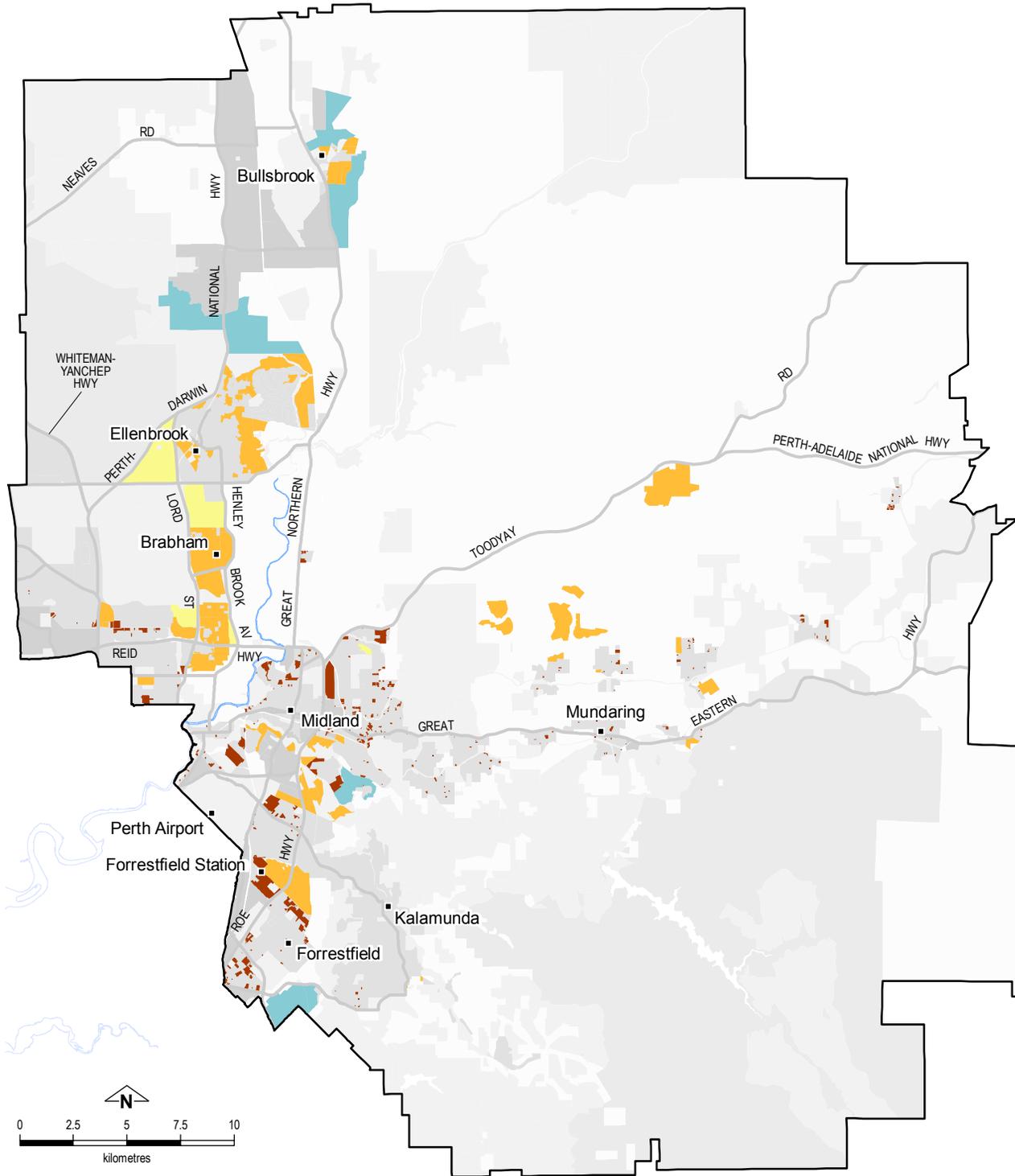
* Urban land demand calculated for the period 2015–50

** Urban land demand based on average consumption of 140ha per year

Development within the sub-region will need to be undertaken in a sequential manner, as logical extensions to existing development fronts to ensure that an adequate supply of land will be continuously available. The timeframes depicted on the urban staging plan (Plan 10) set out the anticipated timing for

commencement of development, aligned with planned service provision and should not be construed as preventing further detailed planning from occurring in the interim. It is expected that local planning strategies will be consistent with these timeframes.





Produced by GeoSpatial Research and Modelling,
 Department of Planning, Lands and Heritage,
 on behalf of the
 Western Australian Planning Commission
 Copyright © January 2018

\\Nts-per\magsprojects\State_MultiRegion\
 SubRegional_StructurePlans\WorkingAreas\
 NorthEast\
 NESRSP_Plan10_UrbanStaging.mxd

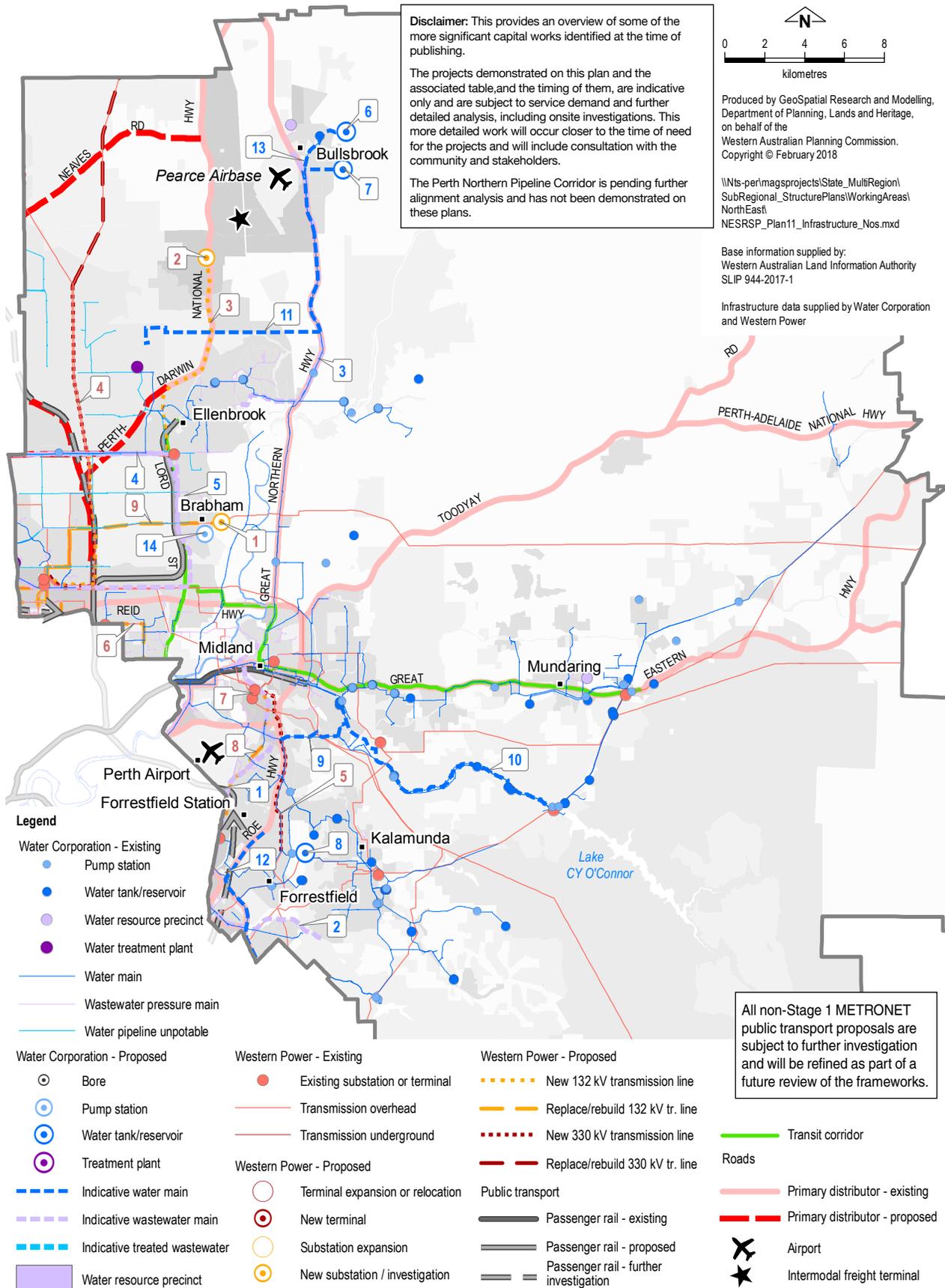
Base information supplied by
 Western Australian Land Information Authority
 SLIP 944-2017-1

Legend

Staging

- | | | | |
|---|----------------------------------|---|-----------------------------|
|  | Short term
(2015-2021) |  | Medium term
(2022-2031) |
|  | Short-medium term
(2015-2031) |  | Medium-long term
(2022+) |

PLAN 10: Urban staging



PLAN 11: Infrastructure staging

The following criteria need to be addressed, as they apply to a proposal, in order to obtain support from the WAPC for any proposal that is not sequential and/or is inconsistent with the timeframe depicted in the staging plan.

- The proposal represents a logical expansion and consolidation of the existing developed urban form.
- The proposal is compatible with the economic development of the area and the planned provision of employment opportunities for the projected population within the sub-region.
- The development can be readily accessed without the provision of additional transport infrastructure, unless that infrastructure is already funded.
- The proposal will not detrimentally impact upon the staging timeframes of other urban land, in terms of the ability to service other land.
- Agreed and finalised funding arrangements are in place with essential service providers, acknowledging that funding is the responsibility of the landowner, unless provided for in a current capital works program of the relevant servicing authority.
- Servicing can be economically provided over its lifespan.



TABLE 9: Infrastructure staging

North-East

Short-term (2015 - 2021)	Water and wastewater	
	3	Bullsbrook to Ellenbrook Wastewater Transfer Pressure Main
	4	Ellenbrook Wastewater Pressure Main Duplication and Extension (staged)
	6	Bullsbrook HL Water Storage Tank Stage 1
	9	Talbot Road to Mundaring Weir Trunk/Transfer Water Main Duplication Stage 1
	13	Bullsbrook Water Distribution Mains Stage 1
Medium-term (2022 - 2031)	Road network	
		Perth-Darwin National Highway - construct to Great Northern Highway, Muchea Tonkin Highway north - upgrade to Freeway Standard
	Public transport	
		Extension of the passenger rail network to Forrestfield via Perth Airport Forrestfield Rail Station (also forms part of the proposed future Circle Line)
	Electricity supply	
	6	Upgrade 132kV Infrastructure Line Route Beechboro to Hadfields
	Water and wastewater	
	1	Maida Vale Main Sewer (staged)
	2	Forrestfield Collection Sewer (staged)
	5	West Swan Wastewater Pressure Main
14	West Swan Wastewater Pump Station	
Medium-term (2022 - 2031)	Road network	
		Whiteman-Yanchep Highway (staged) constructed to link Tonkin Highway with Neaves Road Reid Highway and Roe Highway (East of Kwinana Freeway) - upgrade to freeway standard Upgrade Gnangara Road Upgrade Neaves Road
	Freight	
		Duplicate single-track sections in Forrestfield/Kewdale freight rail Remove Freight rail level crossings at Toodyay Road, Middle Swan and Morrison Road, Midvale
	Public transport	
		Midland Rail Line extended to Bellevue New/relocated Midland Rail Station Bellevue Rail Station Extension of the passenger rail network to Ellenbrook, including stations at Morley, Malaga and Ellenbrook High Frequency Transit Corridor - Midland station to Ellenbrook
	Cycling network	
		Expand off-road network within Perth and Peel regions



TABLE 9: Infrastructure staging (continued)

Long-term (2031 - 2050)	Electricity supply	
	1	New 132kV Infrastructure Substation Brabham
	2	New 132kV Infrastructure Substation North Ellenbrook
	3	New 132kV Infrastructure Line Route Henley Brook to North Ellenbrook
	4	New 330kV Infrastructure Line Route Moora to Muchea to Northern
	5	New 330kV Infrastructure Line Route Guildford to Southern
	7	Upgrade 132kV Infrastructure Line Route Guildford to Hazelmere
	8	Upgrade 132kV Infrastructure Line Route Guildford to Forrestfield
	9	Upgrade 132kV Infrastructure Line Route Northern to Brabham
	Water and wastewater	
	1	Maida Vale Main Sewer (staged)
	2	Forrestfield Collection Sewer (staged)
	4	Ellenbrook Wastewater Pressure Main Duplication (staged)
	7	Bullsbrook Tank Stage 2
	8	Forrestfield Reservoir
	10	Talbot Road to Mundaring Weir Trunk/Transfer Water Main Duplication Stages 2 and 3
	11	Ellenbrook Reservoir to Bullsbrook Trunk/Transfer Main
	12	Canning Trunk Main Duplication
	Road network	
		Perth-Adelaide National Highway - construct between Roe Highway and Great Eastern Highway Whiteman-Yanchep Highway (staged) - extend to Mitchell Freeway
	Freight	
		Bullsbrook Intermodal Terminal
	Public transport	
	Further Investigation – Circle Line – Joondalup Line to Ellenbrook Line connection High Priority/High Frequency Transit Corridor – Ellenbrook to Wangara Further Investigation – extension of the passenger rail network from Forrestfield station to connect with the Thornlie Rail Line (Circle Line) High Priority Transit Corridor – Midland station to urban settlements and related catchments in Shire of Mundaring High Frequency Transit Corridor - Ellenbrook to Bassendean station	
Cycling network		
	Expand off-road network within Perth and Peel regions	

Notes:

- Subject to further review of Planning Investigation areas.
- The projected timing of transport infrastructure will be subject to population growth rates.
The relationship between projected timing and population is as follows:
 - 2031 – 2.9 million people
 - 2050 – 3.5 million people
- Infrastructure item reference numbers correspond to infrastructure proposals in Plan 11.
- Table 9 provides an overview of the more significant capital works identified at the time of publishing. The projects and their timing are indicative and subject to service demand and further detailed analysis.
- All non-Stage 1 METRONET public transport proposals are subject to further investigation and will be refined as part of a future review of the frameworks.
- Traditional electricity infrastructure may be complemented by more innovative electricity supply models such as microgrids, embedded renewable energy generation and energy storage systems.
- Many items listed are yet to be subject to financial analysis and business case development as part of the annual Budget process.

4.3 Infrastructure coordination

Fundamental to the delivery of land for development within the sub-region is the need for the coordinated and planned provision of infrastructure. Improvements to the coordination of infrastructure delivery are reflected by the recently developed Infrastructure Coordination Framework (ICF) administered through the WAPC's Infrastructure Coordinating Committee (ICC).

The ICF has been developed to assist the ICC to bring about greater alignment of strategic land use and infrastructure plans. This mechanism will encourage collaboration among infrastructure agencies and result in greater coordination outcomes including asset colocation opportunities, synergies, and economies of scale.

The ongoing monitoring of land supply and infrastructure provision, including review of the anticipated timing for infrastructure delivery (as specified in Table 9 and Plan 11 of the framework) will ensure that land use and infrastructure data remains current and responsive to urban and employment land consumption.

Identification of infrastructure supply opportunities which provide the basis for improved demand forecasting and network optimisation will facilitate greater responsiveness and adaptability to changing population and demographic and social trends, with a focus on the development and application of new technologies and innovation.

Concurrent with these initiatives, the State Government has committed to establishing Infrastructure WA to focus on strategic infrastructure planning, which will provide advice to Government in the form of a 20 year infrastructure strategy that will set out infrastructure priorities that will guide State Government decision-making.

4.4 Monitoring and review

The framework will be reviewed after three years to ensure that it remains responsive to changes, challenges and community expectations as the sub-region develops.

The delivery of additional infill housing opportunities associated with METRONET services that are currently being developed may lead to the need to revise infill targets and/or the staging of greenfield development through the review process.

Monitoring and reporting on progress towards delivering the framework will inform government, industry and the wider community about the progress of delivering the framework. It will be integral to the practice of evidence-based policy interventions that can respond to the challenges of a rapidly changing and growing city.



GLOSSARY, REFERENCES AND APPENDICES



Glossary

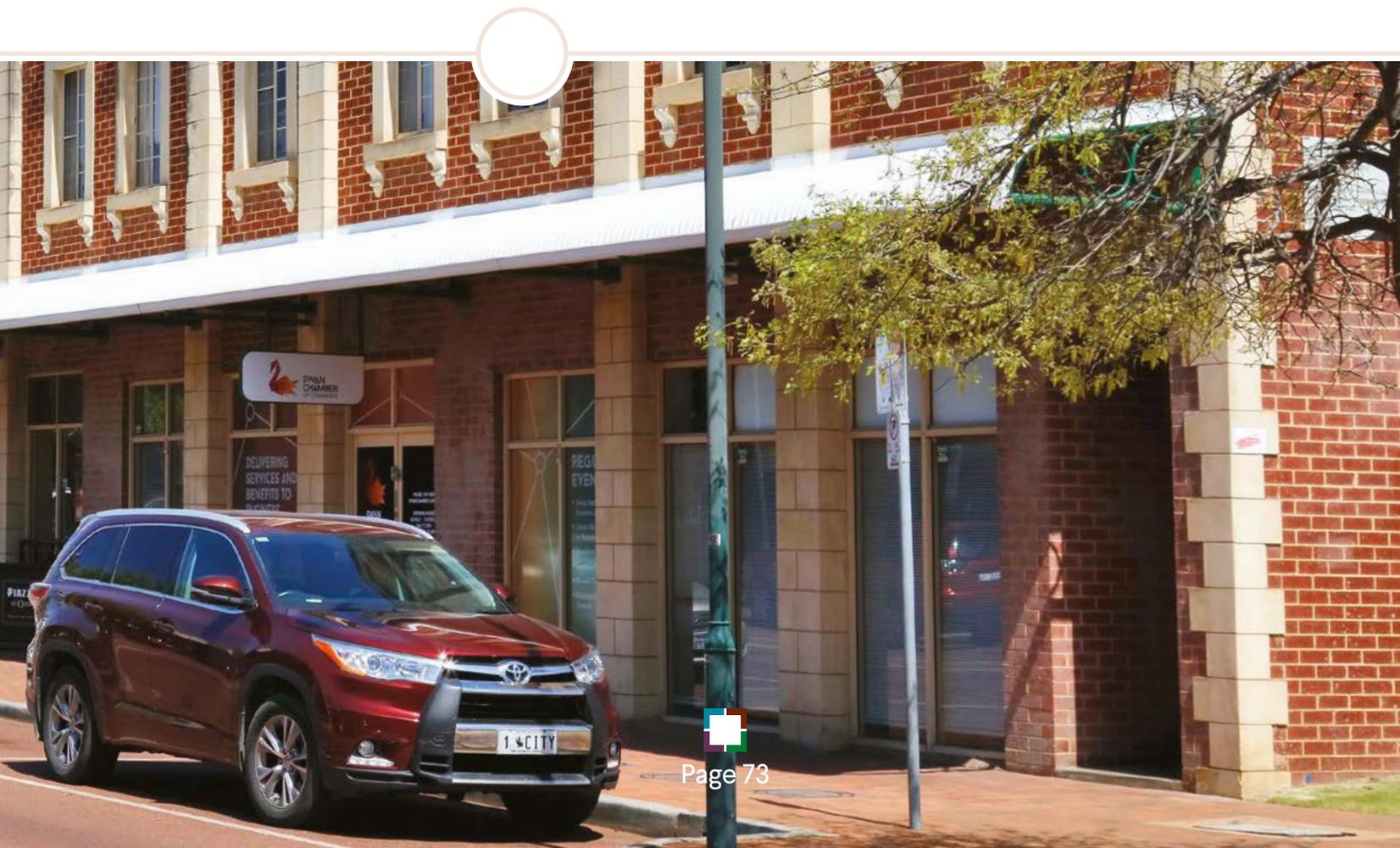
Activity centres: are community focal hubs. They comprise uses such as commercial, retail, higher-density housing, entertainment, tourism, civic/community, higher education and medical services. Activity centres vary in size and diversity and are designed to be well-served by public transport.

Affordable housing: refers to dwellings that households on low-to-moderate incomes can afford, while meeting other essential living costs. Affordable housing includes public housing, not-for-profit housing and other subsidised

housing under the National Rental Affordability Scheme, together with private rental and home ownership options for those immediately outside the subsidised social housing system.

Affordable living: recognises that direct rental or mortgage payments are not the only costs that households incur. Other expenses include the consumption of water, gas and electricity, property fees and taxes, the cost of transport (to work, education and shopping) and the price of food.

Agglomeration: is the phenomenon whereby businesses become more productive through proximity to other businesses. This occurs in a number of ways, for example when a small number of shops or restaurants cluster in a neighbourhood, or when businesses in similar industries cluster together such as with the information technology industry in Silicon Valley. Agglomeration economies come from the local density and diversity of businesses, workers and residents and exist whenever people become more productive through proximity to others.



Basic raw materials: are material that consists of sand (including silica sand), clay, hard rock limestone (including metallurgical limestone), gravel and other construction and road-building materials.

Bush Forever: is the State Government's strategic plan to protect sites of regionally-significant bushland within the Swan Coastal Plain portion of the Perth metropolitan region.

Dwelling: is a self-contained suite of rooms, including cooking and bathing facilities, intended for long-term residential use. Units (whether self-contained or not) within buildings offering institutional care (such as hospitals) or temporary accommodation (such as motels, hostels and holiday apartments) are not defined as dwellings.

Emerging activity centres: are centres as identified within *State Planning Policy 4.2 Activity Centres for Perth and Peel*, which includes centres which have been identified and/or approved, but have not yet become established.

Employment density: is the total employment of a selected geography divided by the total size of the selected geography (gross land area in hectares).

Employment self-sufficiency: is the ratio (expressed as a percentage) of the total labour force (local residents who are employed or seeking employment) of a defined area relative to the total number of jobs available in that area. A percentage above 100 indicates a region has more jobs locally than resident workers.

Green network: consists of public and private open spaces. The green network includes Bush Forever sites, national and regional parks, district and local parks, sports fields, school grounds, community facilities, golf courses, foreshores and beachfront areas connected by streetscapes, trails, cycle paths and pedestrian footpaths.

High Frequency Transit Corridor: where public transport services are available at a frequency of five minutes in peak times and 15 minutes out of peak times.

High Priority Transit Corridor: where high frequency public transport is facilitated through the use of traffic signalling priority, queue jumps at traffic lights or dedicated lanes.

Industrial: is land identified for industrial use, to provide for manufacturing industry, the storage and distribution of goods and associated uses.

Industrial Expansion: is land identified for future industrial development.

Industrial Investigation: is land that may be suitable for industrial development, but requires further investigation to determine its suitability and/or refinement of the area available for industrial use.

Infill or urban infill: is the redevelopment of existing urban areas at a higher density than currently exists.

Infrastructure Coordination Framework: a dynamic spatial and reporting tool assisting the WAPC Infrastructure Coordinating Committee to facilitate greater alignment of strategic land use and infrastructure plans through a revised Infrastructure Planning Cycle for Government.

Knowledge-based economy: is any economy based on creating, evaluating and trading knowledge. It describes a trend in advanced economies towards a greater dependence on knowledge, information and high skill levels.

Knowledge-based industries: are those industries that are in the business of the production, distribution and use of knowledge and information.

Labour force: is the total number of local residents who are participating in the labour force (i.e. those employed plus those seeking work).



Liveability: encompasses the many characteristics that make a place desirable for people to live.

Liveable Neighbourhoods: is a Western Australian Planning Commission operational policy that guides the structure planning and subdivision for new urban areas (greenfield) and urban infill sites.

Local planning strategy: is a local-level planning framework that provides strategic direction for land use and development in a local government area and is used to guide or inform the content of statutory local planning schemes.

Local planning schemes: are statutory planning schemes developed by local governments to regulate land use planning at a local scale. Land uses within a local planning scheme are required to be consistent with broad land uses assigned under the relevant region scheme.

Natural resources: are naturally-occurring elements such as water, solar, wind and wave energy, wood, coal and other minerals and fertile land.

New activity centres: are proposed centres, not identified within *State Planning Policy 4.2 Activity Centres for Perth and Peel*, necessary to ensure that new urban areas have access to services in close proximity to where people live.

New urban areas (greenfield areas): undeveloped land that has been identified for future urban use as an Urban Expansion or Urban Investigation area.

Open Space Investigation: is land that may be suitable for open space (nature/passive recreation) purposes but requires further investigation to determine its suitability and/or refine its area.

Population-driven employment: is employment associated with a growing residential population.

Planning Investigation: is land that will be subject to further planning investigation/s to consider its suitability, and the area of land to be identified, for a possible change of use.

Priority agricultural land: land of state, regional or local significance for food production purposes, due to its collaborative advantage in terms of soils, climate, water (rain or irrigation) and access to services.

Private self-supply (water): water use for private non-potable purposes such as public open space, industry and agriculture. Historically sourced from groundwater.

Public drinking water source area: the area from which water is captured to supply drinking water. It includes all underground water pollution control areas, catchment areas and water reserves constituted under the *Metropolitan Water Supply Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947*.

Quality of life: is used to describe the general wellbeing of individuals and societies.

Region Planning Schemes: are the statutory regional planning schemes for the Perth and Peel regions (*Metropolitan Region Scheme and Peel Region Scheme*) and are the principal statutory mechanisms for the implementation of strategic land use and infrastructure proposals. These schemes provide for the acquisition of land (and waterways) where reserved for public purposes including regional open space, public uses and infrastructure.

Residential density targets: were established in *Directions 2031 and Beyond* and require new areas and structure plans under review to adhere to a target of 15 dwelling units per gross hectare of Urban zoned land, therefore excluding land comprised within all other zones and reserves under the applicable region scheme. Also refer to residential site density.



Residential site density: a residential density target needs to be translated into residential site density of 26 dwellings per residential site hectare. This is defined as the number of dwellings on land that is zoned residential under local planning schemes or structure plans, and excludes all non-urban regional reservations in the region schemes and non-residential zones in local planning schemes such as local road reserves, local reserves for sport and recreation, primary schools, commercial/ activity centres and offices. Also refer to residential density targets.

Rural living: an umbrella term used to describe a range of zones that provide for low density residential uses in an estate or precinct, generally characterised by a grouping of lots in the order of one to 40 hectares. Rural living zones include those named rural living, rural retreat, rural residential, special rural, rural smallholdings, rural conservation and landscape protection. Although primary production land uses may occur within some rural living zones, they must be incidental to and compatible with the primary rural living intent and purpose of the zone.

Rural Residential: a sub-set of rural living and a land use zone with land parcels from one to four hectares in size.

Sense of place: is a component of 'cultural identity'; sense of place is a personal response to environmental, social and economic surroundings that an individual experiences in daily life. It can be the individual's or communities' perception and feeling of belonging for a home, local area, region, state or country.

Spatial plan: land use and infrastructure plan for Perth and Peel (Figure 4).

Sports sites: provide a setting for formal structured sporting activities.

State forest: is a predominantly woodland area located on Crown land that may provide for conservation, recreation, water protection, timber production or extraction of basic raw materials.

Strategic economy and employment: is associated with the production and transfer of goods, services and knowledge predominantly to serve markets beyond the immediate location or catchment. Also known as 'traded clusters', as distinct from 'local clusters', which comprise industries that serve local population and business driven demand.

Structure plan: a plan for the coordination of future subdivision and zoning of an area of land.

Sustainability: is meeting the needs of current and future generations through the integration of environmental protection, social advancement and economic prosperity.

Total dwellings: occupied and unoccupied dwellings.

Transit-oriented development: is an urban development around public transport stations that increases use of public transport. The aim is to locate moderate-to-high intensity commercial, mixed-use, community and residential development close to train stations and/or transit corridors to encourage public transport use over private vehicles.

Urban: land identified for urban use (Urban or Urban Deferred zoned land in the *Metropolitan Region Scheme*), such as residential and associated activity and bulky goods/light industry employment centres, recreation and open space.

Urban consolidation: includes infill and greenfield development through increased densities and/or the logical extension or 'rounding off' of existing urban and industrial areas to more-effectively utilise existing social, service and transport infrastructure.



Urban Expansion: is land that has been identified for future urban development.

Urban Investigation: is land that may be suitable for urban development, but requires further investigation to determine its suitability and/or refine the area available for urban use.

Water resource precinct: is an infrastructure site identified by the Water Corporation for the provision of water and wastewater-related services.



References

City of Swan 2008, *Bullsbrook Townsite and Rural Strategy* (draft), City of Swan, Midland.

City of Swan 2008, *Local Planning Scheme No. 17*, City of Swan, Midland.

City of Swan 2012, *Urban Housing Strategy* (draft), City of Swan, Midland.

City of Swan 2013, *Local Planning Strategy* (draft), City of Swan, Midland.

Department of Environmental Protection 2000, *Bush Forever: Keeping the Bush in the City, Volume 2: Directory of Bush Forever Sites*, Department of Environmental Protection, Perth.

Department of Planning 2013, *Planning Provisions for Affordable Housing: Discussion Paper*, Department of Planning, Perth.

Department of Planning and Infrastructure 2002, *North Eastern Hills Settlement Pattern Plan*, Western Australian Planning Commission, Perth.

Department of Planning and Urban Development 1992, *Foothills Structure Plan*, Department of Planning and Urban Development, Perth.

Department of Planning and Urban Development 1994, *North-East Corridor Structure Plan*, Department of Planning and Urban Development, Perth.

Department of Planning and City of Swan 2011, *Hazelmere Enterprise Area Structure Plan*, City of Swan, Midland.

Department of Sport and Recreation 2012, *Classification Framework for Public Open Space*, Department of Sport and Recreation, Leederville.

Department of Transport, Public Transport Authority and Main Roads Western Australia 2016, *Transport @ 3.5 Million – Perth and Peel Transport Plan for 3.5 million people and beyond*, Department of Transport, Perth.

Department of Transport and Public Transport Authority 2016, *Cycling Network Plan* (draft), Department of Transport, Perth.

Department of Transport and Main Roads Western Australia 2016, *Perth Freight Transport Network Plan* (draft), Department of Transport, Perth.

Department of Transport and Public Transport Authority 2016, *Perth Public Transport Plan* (draft), Department of Transport, Perth.

Department of Transport and Main Roads Western Australia 2016, *Road Network Plan* (draft), Department of Transport, Perth.

Department of Transport and Public Transport Authority 2016, *Travel Demand Management Plan* (draft), Department of Transport, Perth.

Essential Environmental 2014, *North-East Metropolitan Sub-regional Structure Plan – Regional Water Management Strategy* (unpublished), Department of Planning, Perth

Shire of Kalamunda 2007, *Local Planning Scheme No. 3*, Shire of Kalamunda, Kalamunda.

Shire of Kalamunda 2010, *Local Planning Strategy*, Shire of Kalamunda, Kalamunda.

Shire of Kalamunda 2014, *Local Housing Strategy*, Shire of Kalamunda, Kalamunda.

Shire of Kalamunda 2013, *Hills Rural Study* (draft), Shire of Kalamunda, Kalamunda.

Shire of Mundaring 2014, *Local Planning Strategy: Strategies Document*, Shire of Mundaring, Mundaring.

Shire of Mundaring 2014, *Local Planning Scheme No. 4*, Shire of Mundaring, Mundaring.

Shire of Mundaring 2016, *Helena Valley Urban Expansion Strategy* (draft), Shire of Mundaring, Mundaring.

Western Australian Planning Commission 2000, *Bush Forever: Keeping the Bush in the City, Volume 1: Policies, Principles and Processes*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2003, *North-East Corridor Extension Strategy*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2006, *Kewdale–Hazelmere Integrated Masterplan*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2007, *Guidelines for the Lifting of Urban Deferment*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2009, *Swan Urban Growth Corridor: Sub-Regional Structure Plan*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2010, *Outer Metropolitan Perth and Peel Sub-regional Strategy* (draft), Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2010, *Directions 2031 and Beyond: Metropolitan Planning Beyond the Horizon*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2011, *Muchea Employment Node: Structure Plan*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2012, *Economic and Employment Lands Strategy: Non-heavy Industrial: Perth Metropolitan and Peel Regions*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2012, *Delivering Directions 2031: Annual Report Card 2012*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2013, *Delivering Directions 2031: Report Card 2013*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2014, *State Planning Strategy 2050: Planning for Sustained Growth and Prosperity*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission November 2016, *Urban Growth Monitor: Perth Metropolitan, Peel and Greater Bunbury Regions*, Western Australian Planning Commission, Perth.

Western Australian Planning Commission 2014, *Urban Land Development Outlook – Perth Metropolitan Region and Peel Sub-region 2013/14*, Western Australian Planning Commission, Perth.

Western Australian Waste Authority 2012, *Western Australian Waste Strategy: “Creating the Right Environment”*, Office of the Waste Authority, Perth.

Legislation

Environmental Protection Act 1986 (WA)

Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth)

Metropolitan Region Scheme, and associated amendments.

Metropolitan Redevelopment Authority Act 2011 (WA)

Planning and Development Act 2005 (WA)

Swan Valley Planning Act 1995 (WA)



State planning policies

State Planning Policy 1 State Planning Framework (Variation No 2) (February 2006)

State Planning Policy 2.2 Gnangara Groundwater Protection (August 2005)

State Planning Policy 2.4 Basic Raw Materials (July 2000)

State Planning Policy 2.5 Rural Planning (December 2016)

State Planning Policy 2.7 Public Drinking Water Source Policy (June 2003)

State Planning Policy 2.10 Swan-Canning River System (December 2006)

State Planning Policy 3.7 Planning in Bushfire Prone Areas (December 2015)

State Planning Policy 4.2 Activity Centres for Perth and Peel (August 2010)

State Planning Policy 5.1 Land Use Planning in the Vicinity of Perth Airport (July 2015)

State Planning Policy 5.2 Telecommunications Infrastructure (September 2015)

State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning (September 2009)

Master plans

City of Swan

Bullsbrook Townsite Land Use Master Plan (draft 2014)

Midland Activity Centre Master Plan (2013)

Metropolitan Redevelopment Authority

Midland Master Plan (2015)



Appendix 1 – Consolidated urban form

TABLE 1.1: Existing and projected dwellings and population 2011–50

Local government	Existing dwellings (2011)	Existing population (2011)	Additional dwellings (2050)	Additional population (2050)	Total dwellings (2050)	Total population (2050)
Swan	41,520	114,300	73,450	176,100	114,970	290,400
Mundaring	13,850	38,360	8,070	18,560	21,920	56,920
Kalamunda	21,180	56,490	21,040	46,770	42,220	103,260
Total	76,550	209,150	102,560	241,430	179,110	450,580

The information in Table 1.1 identifies the existing and projected number of dwellings and population for the sub-region in 2011 and 2050, based on the draft framework scenario.

TABLE 1.2: Additional dwelling and population capacity

Category	Gross site area (ha)	Additional dwellings	Additional population
Infill	-	39,900	87,790
Undeveloped Urban and Urban Deferred	4,500	57,440	169,460
Urban Expansion/ Investigation	3,070	35,330	104,240
Total	7,570	132,670	361,490

Table 1.2 identifies the estimated additional number of dwellings and population capacity for the proposed consolidated urban form, including infill, undeveloped Urban and Urban Deferred zones (MRS), Urban Expansion and Urban Investigation areas. The consolidated urban form has:

- capacity for approximately 30 per cent of the additional dwellings in the sub-region to be provided in established urban areas as infill development based on an occupancy rate of 2.2 people per dwelling;
- an urban land supply of 54 years based on an average consumption of 140 hectares per annum, excluding infill development;
- new urban areas generally based on achieving the minimum average density targets of 15 dwelling units per gross hectare of Urban zoned land, where appropriate, and an occupancy rate of 2.95 people per dwelling;
- made allowance for land required for future region scheme reservations, major drainage requirements and retention of environmental attributes; and
- excluded land classified Planning Investigation.



TABLE 1.3: Urban deferred land – key issues

Site	Issue(s) requiring resolution
Parkerville settlement	Provision of service infrastructure
Hazelmere (east of Roe Hwy)	Poultry farm/rendering plant buffers
Bullsbrook (north)	Provision of service infrastructure
Bullsbrook (south)	Landfill facility buffer
Bennett Springs	Poultry farm buffer Passenger railway line/station land requirements (METRONET)
Caversham	Poultry farm buffer
East Ballajura	Regional road and passenger railway line/station land requirements (METRONET)

Table 1.3 identifies sites that, given their land use or surrounding land uses, are unlikely to become available for urban development in the short-term. These sites will be subject to a request for lifting of urban deferment under the MRS and further detailed planning. Other sites currently zoned Urban Deferred that are likely to be suitable for urban development in the short-term are classified Urban on Plan 1 – The planning framework.

TABLE 1.4: Urban infill dwelling targets by local government

Local government	2011–16	2016–21	2021–26	2026–31	Total 2031	Post-2031	Total infill (2050)
Swan	4,000	5,640	3,090	2,320	15,050	10,640	25,690
Kalamunda	2,410	1,700	1,480	1,120	6,710	4,740	11,450
Mundaring	570	380	390	280	1,620	1,140	2,760
Total	6,980	7,720	4,960	3,720	23,380	16,520	39,900

The proposed consolidated urban form places a greater emphasis on infill dwellings with the introduction of minimum infill dwelling targets. To assist in the preparation of local planning strategies, Table 1.4 provides a timing projection for the minimum infill dwelling targets for each respective local government in five-year intervals.

Appendix 2 – Economy and employment

TABLE 2.1: Employment self-sufficiency 2011–50

Indicator	2011	2050	Total change	Total % change
Population	209,150	450,580	241,430	115%
Labour force	102,610	224,860	122,250	119%
Jobs	82,380	192,950	110,570	134%
Employment self-sufficiency	80.3%	85.8%	5.5%	-

Adjustments were made to employment self-sufficiency estimates in the 2001, 2006 and 2011 Census data, published in *Delivering Directions Annual Report Card 2013*, to account for and redistribute census respondents not indicating where in Western Australia their job is located. This provides a higher estimate of employment and subsequently higher employment self-sufficiency.

The projections in Table 2.1 are based on the draft framework scenario and exclude consideration of Planning Investigation areas.

TABLE 2.2: Activity centre hierarchy

Hierarchy classification	Activity centre
Strategic metropolitan centre	Midland
Secondary centre	Ellenbrook
District centre	Forrestfield Kalamunda Mundaring Brabham* Bullsbrook*
Other (hierarchy to be determined by more detailed planning)	Forrestfield Station**
Specialised centre	Perth Airport***

- * Denotes emerging centre
- ** Denotes new centre
- *** Perth Airport is partly located within the Central and North-East sub-regions.

Table 2.2 sets out the key activity centres for the sub-region, including existing, emerging and new centres.



TABLE 2.3: Anticipated job numbers for activity centres

Activity centre	2011	2050	Total additional (2011–50)
Midland	6,670	17,170	10,500
Ellenbrook	1,450	5,390	3,940

Table 2.3 reflects the anticipated job numbers for strategic metropolitan and secondary centres within the sub-region from 2011 to 2050. For job numbers relating to Perth Airport refer to the Central Sub-regional Planning Framework. The job numbers are a projection only based on the draft framework scenario and subsequent refinements following public consultation. These numbers may vary due to various factors including, but not limited to, the economy and infrastructure provision.

TABLE 2.4: Industrial land demand

Timeframe	Gross demand (ha)
To 2021	545
2022 to 2031	780
Post 2031	1,485
Total	2,810

The projected demand for industrial land is based on the draft framework scenario average demand of 78.2 hectares (gross) per annum. The total number of years addressed within the demand is 36 (2015 to 2050 inclusive).



TABLE 2.5: Industrial centres – proposed land supply

Site	Gross Area (ha)*	Sub-Regional Planning Framework
Metropolitan Region Scheme undeveloped industrial**	760	Industrial
North Ellenbrook	900	Industrial Expansion
North Ellenbrook Extension	1,350	Industrial Investigation
Bullsbrook Town-Site Precinct North	110	Industrial Expansion
Bullsbrook South Extension A	300	Industrial Expansion
Bullsbrook South Extension B	100	Industrial Investigation
Hazelmere South	50	Industrial Expansion
Wattle Grove	10	Industrial Expansion
Total	3,580	

* Gross area is site area prior to deductions for environmental and other features such as roads and buffers (as at 2014).

** Excludes future service industrial/bulky goods land uses within Urban areas.

To 2050, it is anticipated that job numbers within the industrial centres will predominantly be concentrated in Bullsbrook/ North Ellenbrook, with a total of approximately 31,800 additional jobs being provided. Malaga is also predicted to contribute approximately 4,300 jobs during this timeframe. The job numbers are a projection only, based on the draft framework scenario, and may vary due to a number of factors including, but not limited to, economic drivers, staging and sequencing of land uses and infrastructure provision.



APPENDIX 3 – Environment and landscape

TABLE 3.1: Land reserved for parks and recreation/regional open space and State forest - region schemes

Region/sub-region	Parks and Recreation/ Regional Open Space (Ha)	State forests (Ha)	Total reserved (Ha)
Central	5,460	-	5,460
North-West	26,710	16,280	42,990
North-East	47,440	32,530	79,970
South-East	21,580	65,000	86,580
South-West	10,980	-	10,980
Peel	33,320	98,880	132,200
Total Perth and Peel	145,490	212,690	358,180

Does not include new areas identified in the framework.

Table 3.1 identifies the amount of land reserved in the Perth Metropolitan and Peel Region Schemes for parks and recreation and State forests in 2016.

