GOVERNMENT OF WESTERN AUSTRALIA

Department of **Transport**
Main Roads Western Australia
Public Transport Authority

Western Australian Planning Commission

Perth and Peel@3.5million
The Transport Network

March 2018

CONTENTS

1 INTRODUCTION

Today, the Perth and Peel regions stretch more than 150 kilometres from Two Rocks in the north to Bouvard in the south and are home to more than two million people. It is estimated that if current trends sustain, that more than 3.5 million people will live in Perth and Peel by 2050.

In March 2018, the State Government released *Perth and Peel@3.5million*, a strategic suite of documents which present a long-term growth strategy for land use and infrastructure provision for the Perth and Peel regions.

The suite includes four detailed sub-regional land use planning and infrastructure frameworks:

1. Central sub-region
2. North-West sub-region
3. North-East sub-region
4. South Metropolitan Peel sub-region

These frameworks show what our city could look like in the future, how we can maintain our valued lifestyle and how we can realistically accommodate a substantially increased population.

While population growth brings enormous opportunities, it also increases demand on the State's resources, social and physical infrastructure, services and natural environment. Strong economic and rapid population growth in the early part of this century has shown how important Perth's transport system is.

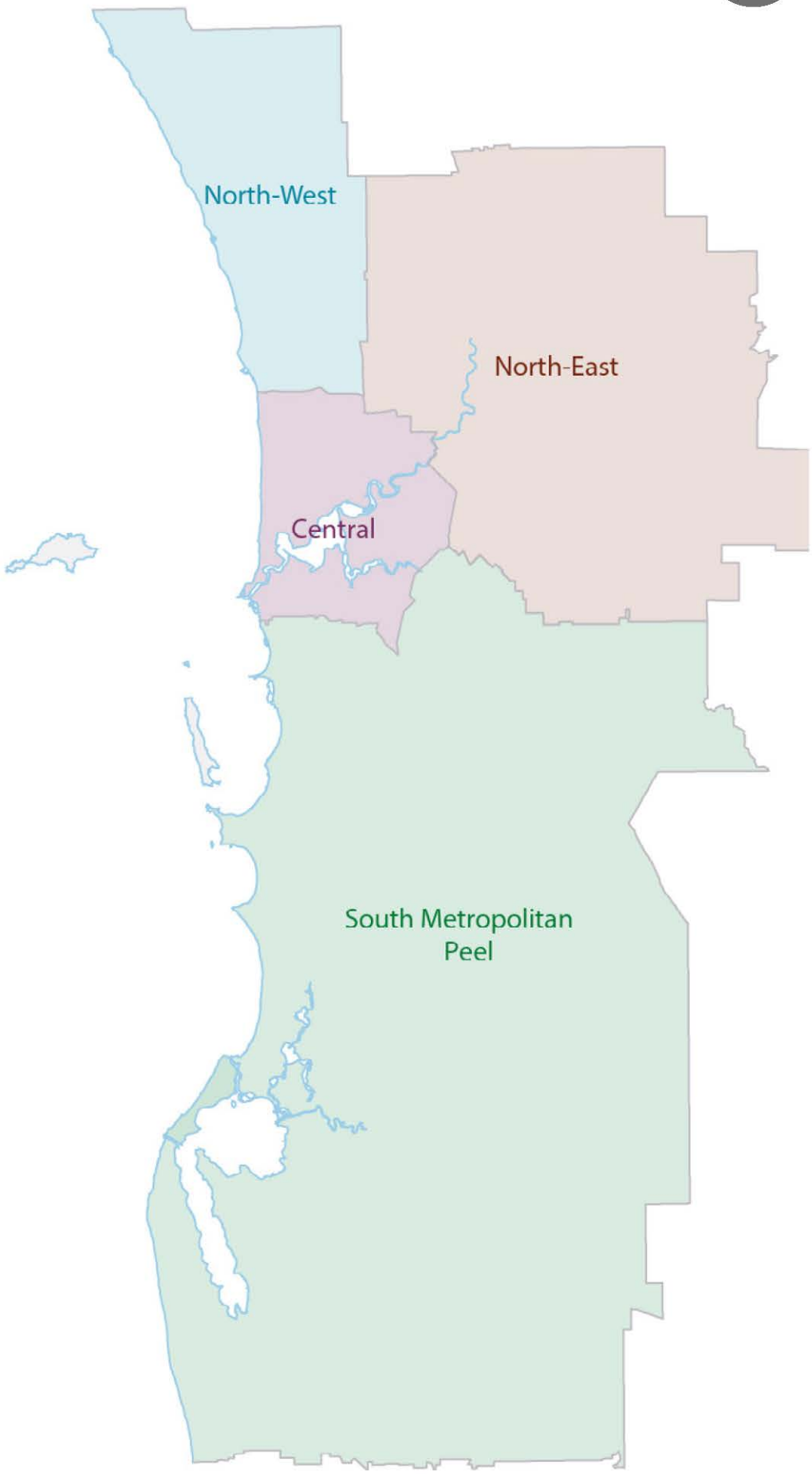
As we move towards a population of 3.5 million, we will require fundamental changes to the city's transport network to service growth areas and keep Perth moving.

It is clear that we need to plan for a transport network that will drive urbanisation around infrastructure and enable high levels of accessibility for work, education and other activities. A number of projects across the Transport Portfolio will support efficient and effective movement of people and freight that is integrated with land uses and links key economic and employment opportunities.

One of the Government's key priorities to achieve moving people efficiently, while integrating with land use opportunities, is METRONET. METRONET will ensure land use and transport outcomes are at the forefront of the design of new infrastructure and will lay the groundwork for vibrant new communities. It 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.

Figure 1

Perth and Peel - the four sub-regions



2 THE TRANSPORT NETWORK

The Perth and Peel sub-regional land use planning and infrastructure frameworks were developed by the Western Australian Planning Commissions (WAPC), through the Department of Planning, Lands and Heritage in collaboration with other State Government agencies.

The frameworks take into account, 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;
- the *Future Perth Airports Technical Study* which investigates potential sites for additional aviation facilities to serve the Perth and Peel regions;
- a review of State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning;
- planning for the development and growth of both the Inner Harbour at Fremantle and the future Outer Harbour at Kwinana by the Westport Taskforce; and
- the Future State Administered Roads Project (Mains Roads Western Australia), which reviews future State road classifications.

The integration of key centres with high quality public transport networks is a fundamental principle of the frameworks. Public transport infrastructure has been prioritised through METRONET to support the vision to deliver sensitive, sustainable and vibrant communities. This strategic infrastructure investment will provide an opportunity for the optimisation of improved infill opportunities.

Easy movement of people and freight across the sub-regions and beyond is a key to economic development and regional liveability so it is critical to integrate urban and employment centres with efficient transport infrastructure and services. However, a significant population increase will inevitably place additional pressure of all levels of existing road and rail networks across Perth and Peel. Achieving the most efficient use of current and proposed transport networks, services and social infrastructure is a critical element of planning for this future population growth within a consolidated urban form.

To accommodate future population growth and ensure efficiency of the transport system is not compromised, the sub-regional frameworks recognise the need to integrate urban and employment nodes with transport infrastructure and services, including upgrading and adding new transport infrastructure to the network.

The Transport Portfolio has worked extensively with the Western Australian Planning Commission (WAPC), through the Department of Planning, Lands and Heritage towards an integrated approach of land use planning and infrastructure provision. Previous detailed planning has established Perth and Peel's extensive transport network with key elements including:

- an extensive regional road network including primary distributors, such as the Mitchell and Kwinana Freeways, and national highways;
- the passenger railway network;
- the freight network with a range of transport assets including the Port of Fremantle; and
- the intermodal terminal at Kewdale.

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 public transport network for the Perth and Peel regions includes an integrated network of passenger rail lines and transit corridors. Passenger rail infrastructure proposals under METRONET Stage One will have a significant positive impact across sub-regional communities.

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

Provision of a network of paths for cyclists and pedestrians offers commuters an alternative to private car trips, as well as providing recreation opportunities and associated health benefits. At a regional level, shared paths are provided along major transportation routes including railway lines and freeways. A comprehensive pedestrian and cycling network is provided at a local level through district and local structure plans.

The freight network is important to the Western Australian economy. Where practicable, these transport corridors will be protected from the encroachment of sensitive and incompatible land uses, an important consideration when identifying locations for infill housing development. Similarly, the design, construction and operation of this infrastructure within these corridors will seek to minimise impacts on surrounding land uses. Planning for the development of additional container port facilities to service future needs of a growing population is the primary focus of the Westport Taskforce.

Existing general and civil aviation facilities may not be adequate to meet the needs of a population of 3.5 million people. Studies to identify suitable locations for future airports are ongoing.

With anticipated population and job growth within the Perth and Peel regions, additional pressure will be placed on the transport network. A range of strategies is required to alleviate road congestion such as the appropriate management, upgrading and offering of feasible public transport options which can:

- encourage people to work near where they live;
- promote and encourage employment opportunities which meet the skill base of the local commuting population;
- improve integration of transport within activity centres;
- investigate transport options, including new routes and technology;
- provide movement network improvements including upgrades and extensions of road, rail and transit priority routes; and
- identify new regional road networks in new urban and industrial development areas and connections to existing and proposed freight infrastructure.

Each strategy is reliant on a collaborative approach across government to identify preferred locations across Perth and Peel for new infrastructure, which is anticipated to include a new airport and a trading port.

The following pages summarise the transport components of the Perth and Peel sub-regional land use planning and infrastructure frameworks.

2.1 Central sub-region

Public transport:

METRONET will define the future of the public transport network in the Central sub-region. Key transport corridors will be required to transition into multi-functional corridors to achieve a more compact and diverse urban form.

Areas around train stations and other major public transport infrastructure have been identified as having the potential to accommodate increased development. A balanced transport and land use approach will be required to accommodate all transport modes, parking and utilities as well as a people-friendly urban environment.

The future provision of transport and other service infrastructure across Perth and Peel has, where possible, been planned within shared corridors, contributing to the efficient use of land. These shared corridors have sought to avoid and minimise the impact on environmental assets, landscapes and conflicting land uses.

Four key passenger rail proposals are included in METRONET Stage One and will form part of a potential Circle Line in the Central sub-region. They include:

1. Completing the Forrestfield-Airport Link – an 8.5 km railway spur from Forrestfield to the Perth CBD with three new stations: Redcliffe, Airport Central and Forrestfield.
2. The 14.5 km extension of the Thornlie Line to Cockburn Central with two new stations proposed at Nicholson Road and Ranford Road.
3. A new rail line from the existing Midland Line to the Ellenbrook town centre with additional stations at Morley, Malaga and Ellenbrook.
4. Extending the Midland Line to a new station at Bellevue and relocating the existing Midland Station (rail and bus).

The proposed public transport network for 2050 is shown in Figure 2.

Roads:

Three primary distributor reservations are proposed in the Central sub-region as shown in Figure 3 and include Orrong Road, Charles Street and Ellen Stirling Boulevard. In addition, the Jandakot Airport Eastern Link Road, between Ranford Road and Jandakot Airport, is proposed to create a new road reservation in Canning Vale in response to the endorsed Jandakot Airport Master Plan (2014). It will provide improved access to the Jandakot Airport, service the proposed Canning Vale Sports Precinct, the future bus station/ park and ride facility, Canning Vale Waste Disposal Facility site, and provide a link to the residential development to the south.

Freight and aviation:

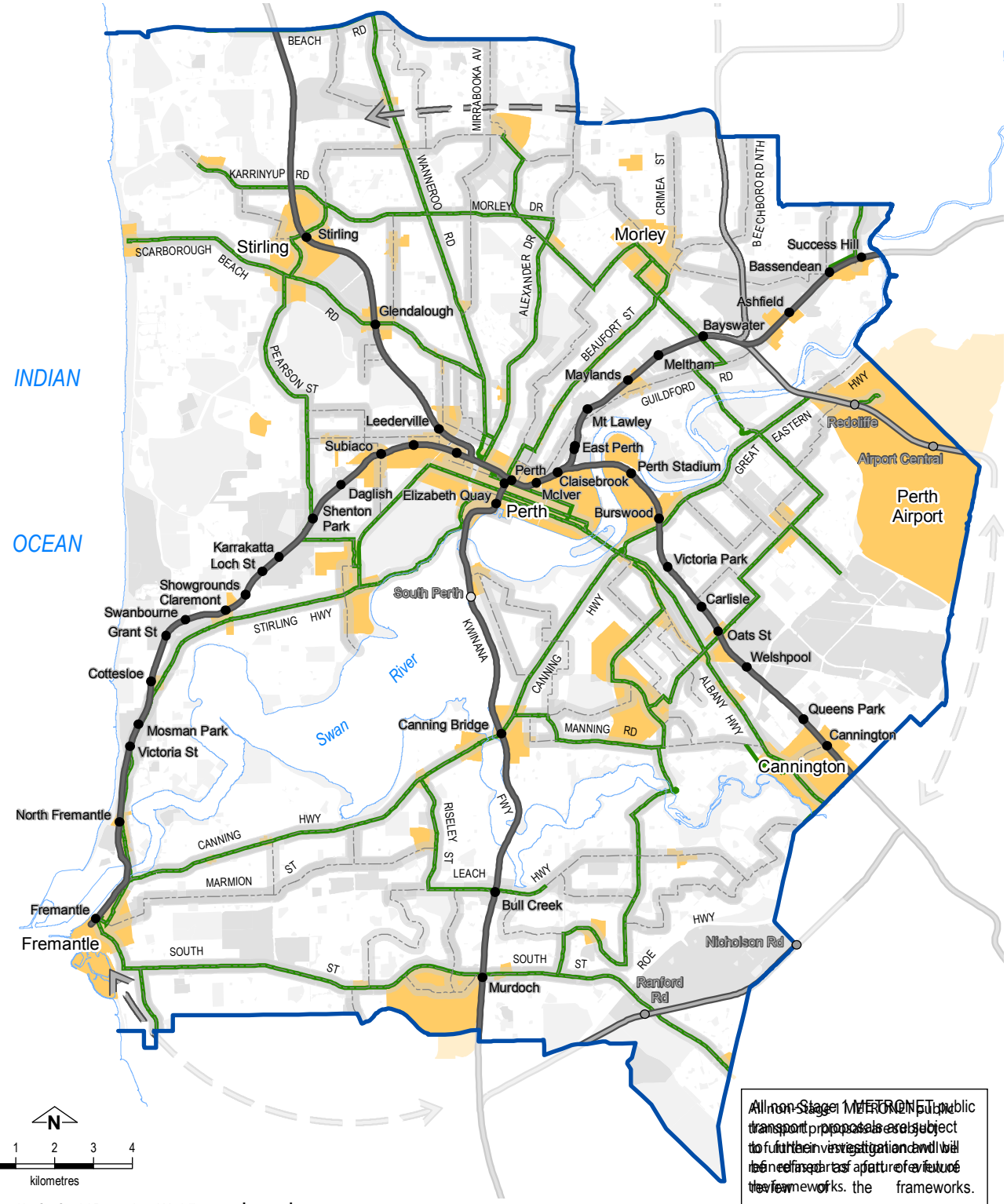
The 2050 network of key freight and aviation infrastructure for the Central sub-region is shown in Figure 4. A number of enhancements will be made to the metropolitan freight rail network to accommodate the more than fourfold increase in international containers expected by mid-century. In the Central sub-region, this includes duplicating the single-track sections at the Forrestfield and Kewdale intermodal precincts and removing a level crossing at Nicholson Road in Canning Vale.

The classification of networks in the area marked as ‘Subject to Westport freight investigations’ in Figure 3 is currently subject to review as part of the development of the Westport: Port and Environs Strategy.

In the event that 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.

Figure 2

Central sub-region
2050 Public Transport Network



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

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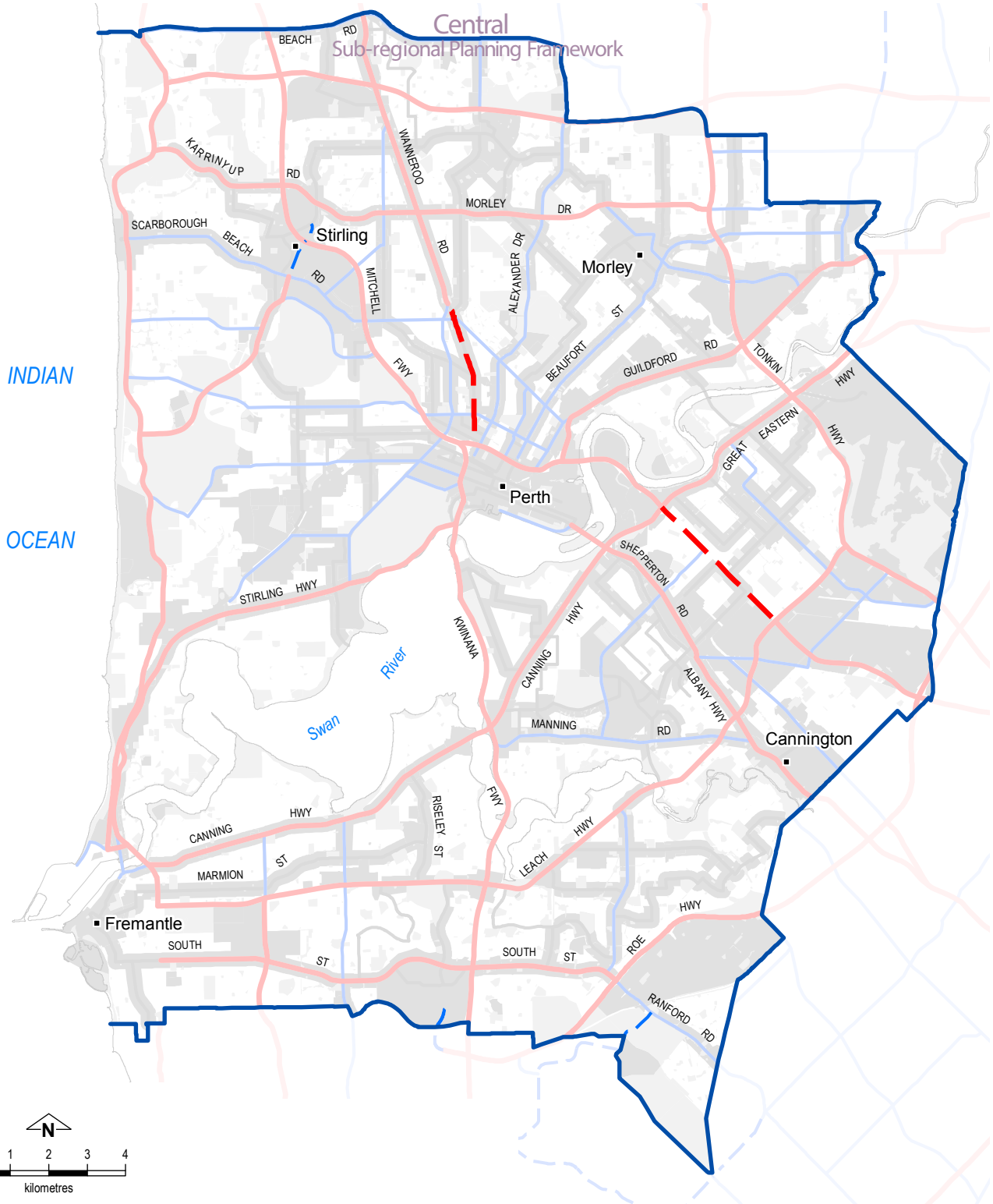
- Passenger rail/station - existing
- Passenger rail/station - proposed Stage 1 METRONET
- Passenger rail - further investigation
- Passenger station - further investigation
- High-frequency public transit
- Proposed high-priority transit route
- Activity centre

Railway alignment subject to further planning - refer to text in Part 5.3 of the Framework.

Figure 3

Central sub-region 2050 Road Network



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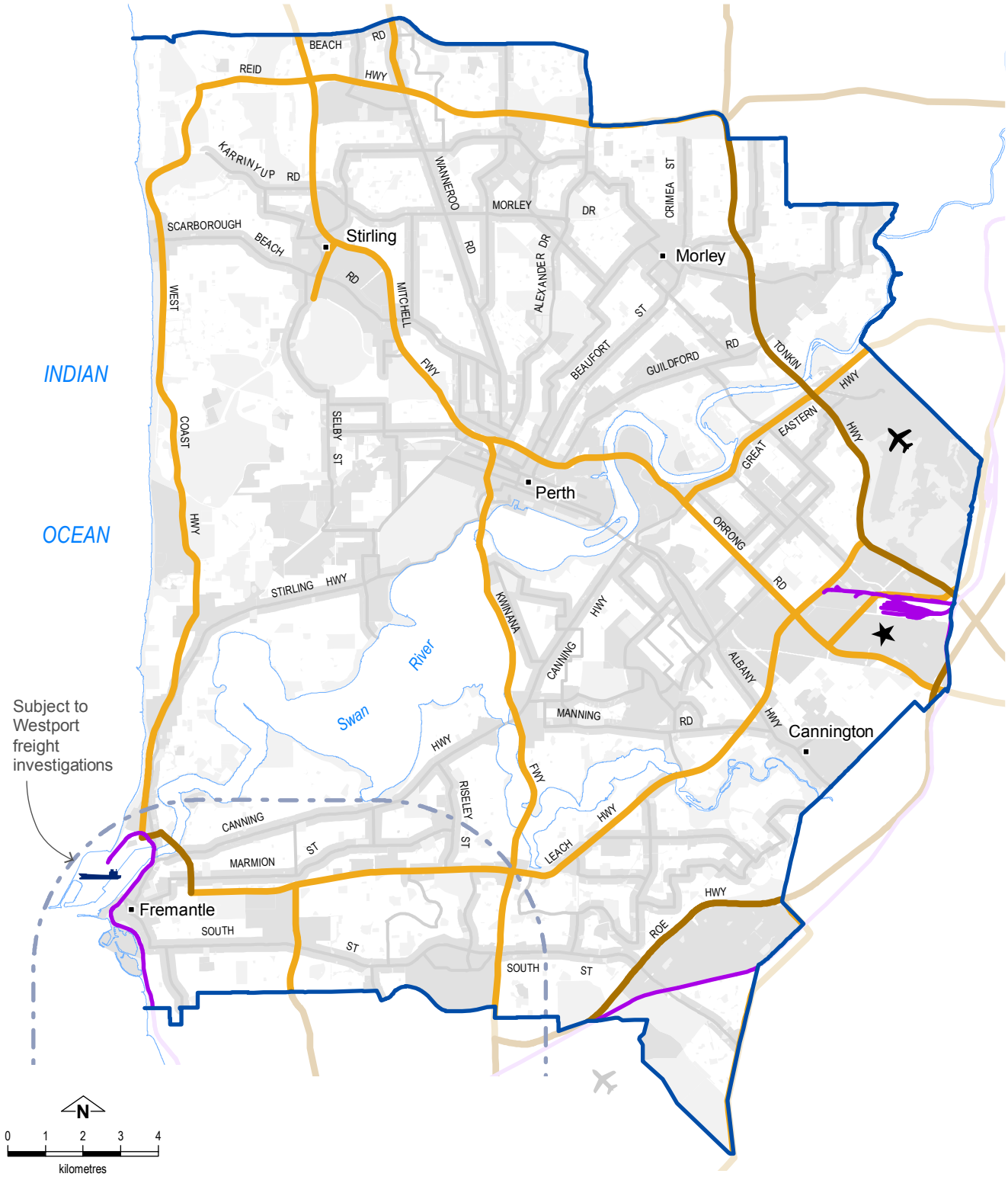
Legend

Primary distributor
- Existing (MRS/PRS reservation)
- Proposed

Integrator arterial
- Existing (MRS reservation)
- Proposed

Figure 4

Central sub-region 2050 Freight Network



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Legend

- Airport
- Port
- Intermodal freight terminal
- Freight rail

Freight roads

- Primary
- Secondary

2.2 North-West sub-region

Public transport:

A significant challenge for the North-West sub-region is to change the population's travel patterns, which will require a focus on improvements to regional roads, public transport, active transport routes and increased employment self-sufficiency. The region will need to focus on promoting strategic employment opportunities to encourage people to work where they live.

Key transport network improvements will need to focus on:

- → upgrading the existing road network, particularly the Mitchell Freeway, Marmion Avenue and Wanneroo Road;
- → strengthening east-west connections to the North East sub-region;
- → investigating new integrator arterial roads to support development in East Wanneroo; and
- → investigating linkages between the cities of Joondalup and Wanneroo.

Planned passenger rail infrastructure for the sub-region includes the Yanchep Rail Extension as part of METRONET Stage One. The Yanchep Rail Extension will extend the existing Joondalup Line 13.8 km to provide stations at Yanchep, Alkimos and Eglinton.

Further investigation is required for the potential East Wanneroo Rail Link (or East-West Rail Link), to connect the Joondalup and Ellenbrook Lines in the long-term. A final alignment for this rail line will be determined following further assessment of alignment options. In the medium term, improvements to on-road public transport will also be undertaken with the construction of high frequency transit corridors connecting Joondalup to Whitfords and Alkimos to Eglinton. These key public transport initiatives are shown in Figure 5.

Roads:

The future regional road network for the North-West sub-region is centred on the extension, construction and upgrading of the existing network, particularly the Mitchell Freeway, Marmion Avenue and Wanneroo Road.

Regional road proposals are detailed in Figure 6 and outlined below. The road classifications are currently under review by Main Roads Western Australia, which may result in future changes.

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–Flynn Drive

This road will form part of the freight network and be upgraded to a primary distributor in order to improve its capacity and efficiency for freight and general traffic. It will provide an important east–west link to the North-East sub-region, particularly the potential Bullsbrook intermodal terminal.

Gnangara Road–Ocean Reef Road

It is proposed that this road be upgraded to a primary distributor in order to provide an important east–west link for general and freight traffic movements between the North-West and North-East sub-regions.

East Wanneroo regional road network

As part of the identification of East Wanneroo as an urban expansion area, a regional road network analysis was undertaken by the Department of Planning, Lands and Heritage that identified the need for new integrator arterial roads to support development. The network is based on the East Wanneroo Structure Plan, which has been augmented with minor extensions to better serve the industrial and urban land uses proposed in South Pinjar. New regional roads include Lenore Road, Badgerup Road, Sydney Road, Elliot Road and Ranch Road.

Yanchep–Two Rocks regional road network

A number of new and realigned regional roads are proposed to provide access to the Yanchep strategic metropolitan centre and Mitchell Freeway, based on district and local structure planning that has been undertaken in the area. New regional roads include Breakwater Drive, Two Rocks Road and Shearwater Avenue.

Neerabup regional road network Wattle Avenue and a new North-South road are proposed to serve as integrator arterial roads that will connect the Neerabup and Nowergup industrial areas to the broader regional and freight road network.

Freight:

The North-West sub-region's economy is directly influenced by the efficiency of freight movements. The sub-region's freight network is reliant on the regional road network to connect activity and industrial centres within and outside of the sub-region. These roads include the Mitchell Freeway, Neaves Road–Flynn Drive, Gnangara Road– Ocean Reef Road and a portion of the proposed Whiteman-Yanchep Highway, as shown in Figure 7.

Figure 5

North-West sub-region
2050 Public Transport Network

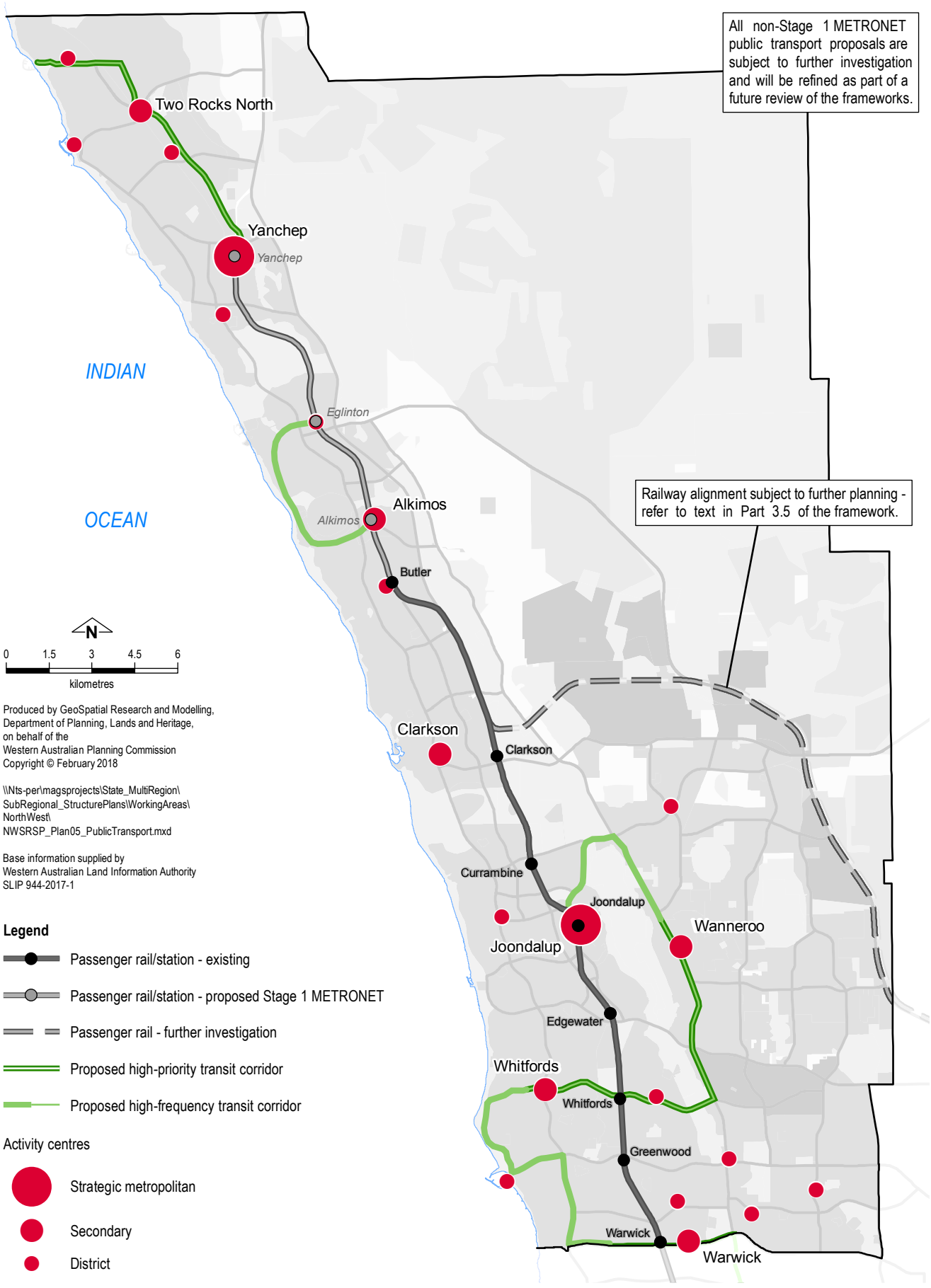
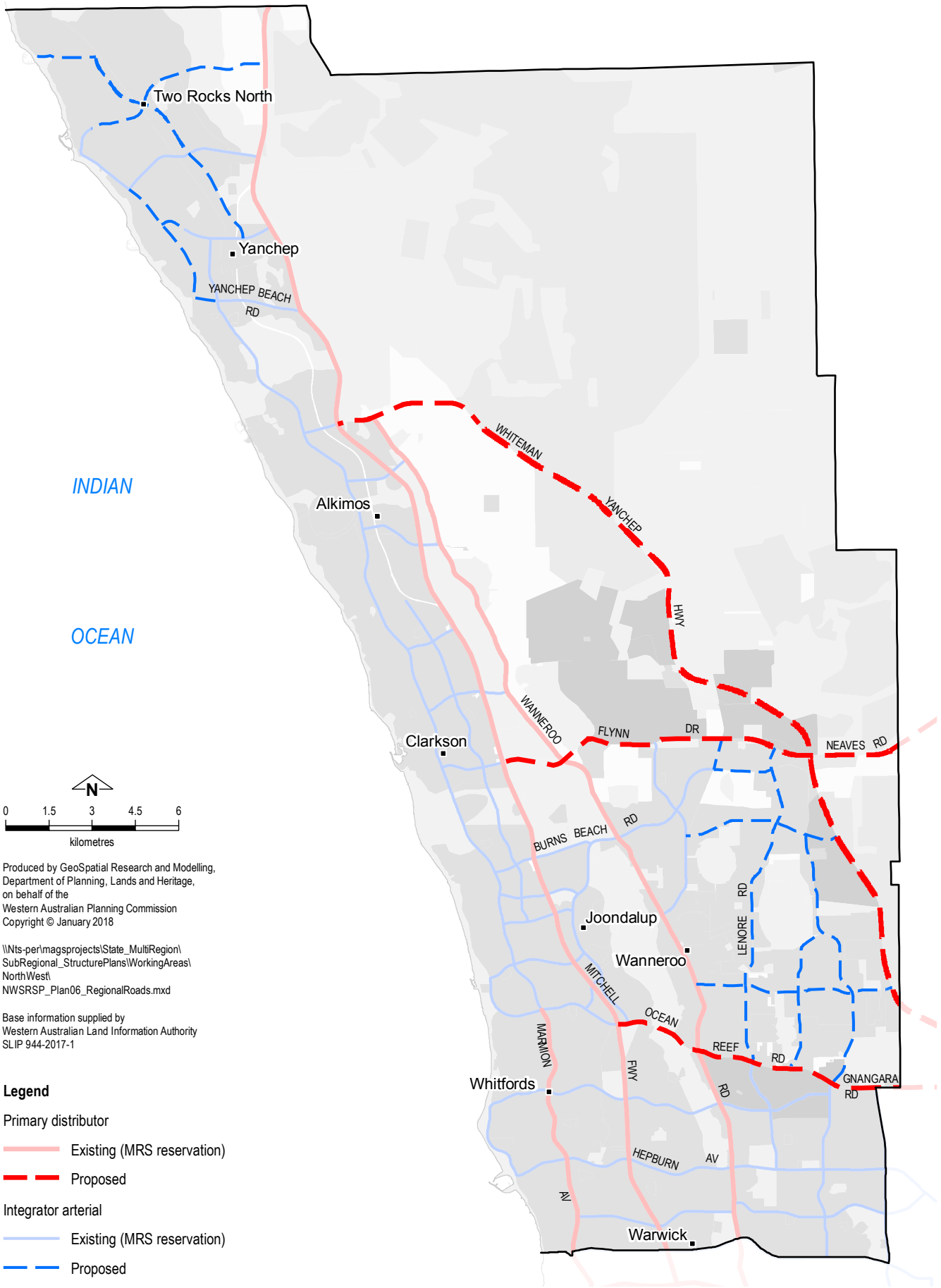


Figure 6

North-West sub-region 2050 Road Network



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Legend

Primary distributor

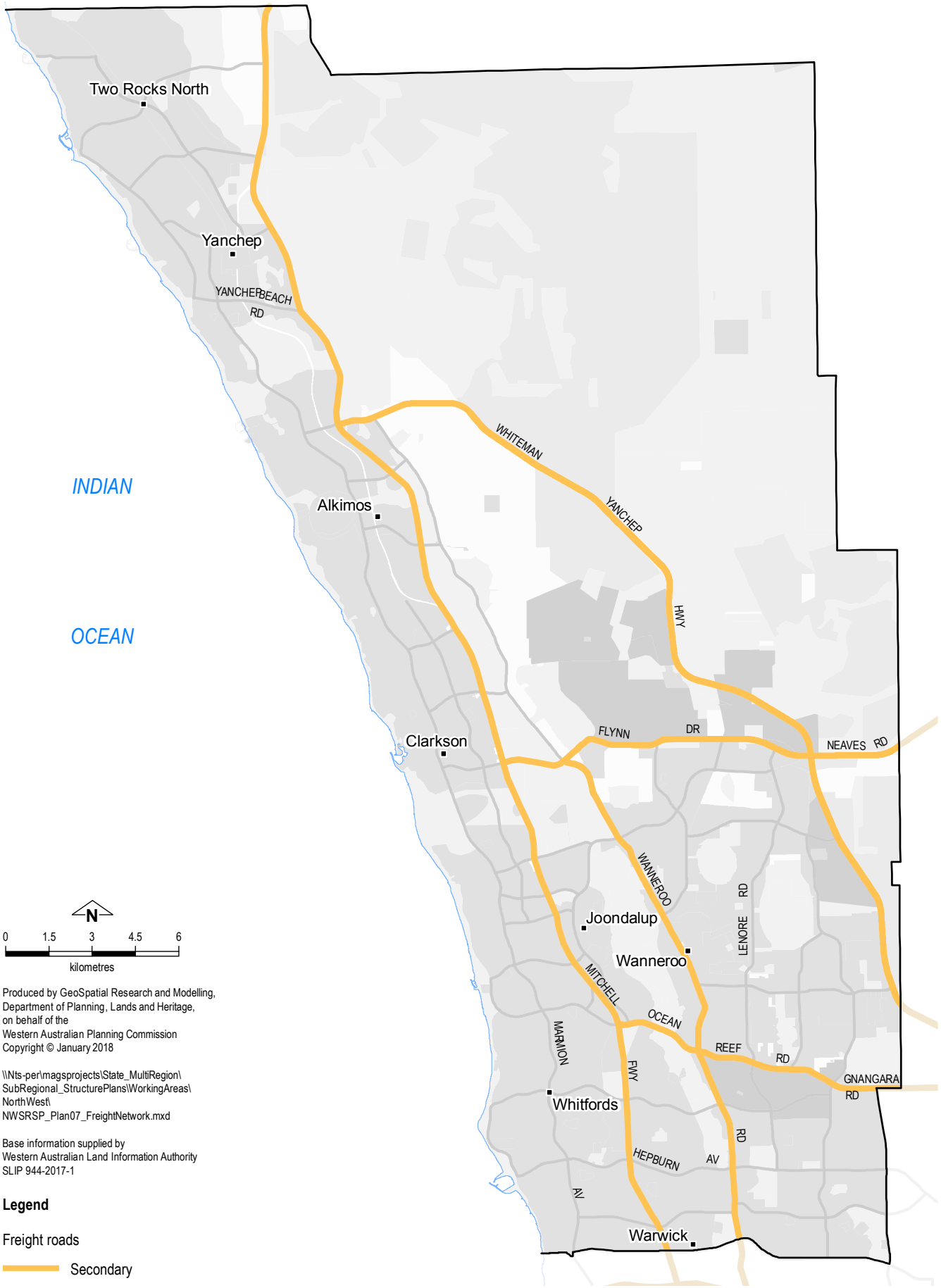
- Existing (MRS reservation)
- Proposed

Integrator arterial

- Existing (MRS reservation)
- Proposed

Figure 7

North-West sub-region 2050 Freight Network



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Legend

Freight roads

Secondary

2.3 North-East sub-region

Public transport:

The North-East transport network provides not only a valuable link to the greater Perth and Peel regions but nationally too. It needs to build on this advantage as a gateway to national markets by upgrading the existing road network, through the proposed Perth-Darwin National Highway and the Perth-Adelaide National Highway, with a potential intermodal terminal at Bullsbrook.

Passenger rail infrastructure proposed for the sub-region includes the following proposals as part of METRONET Stage One:

- Completing the Forrestfield-Airport Link – an 8.5 km railway spur from Forrestfield to the Perth CBD with three new stations: Redcliffe, Airport Central and Forrestfield.
- The 14.5 km extension of the Thornlie Line to Cockburn Central with two new stations proposed at Nicholson Road and Ranford Road.
- A new rail line from the existing Midland Line to the Ellenbrook town centre with additional stations at Morley, Malaga and Ellenbrook.
- Extending the Midland Line to a new station at Bellevue and relocating the existing Midland Station (rail and bus).

Further investigation is required for the proposed East Wanneroo Rail Link and the Circle Line that connects the Joondalup, East Wanneroo (potential), Ellenbrook, Midland, Armadale, Mandurah and Fremantle Lines.

The sub-region's passenger rail network will be supported by a network of High Priority Transit Corridors and High Frequency Transit Corridors that will provide public transport connections between activity centres, population catchments, rail stations and local bus services.

The key public transport initiatives are shown in Figure 8.

Roads:

The planned regional road network for the North-East sub-region includes new and upgraded primary distributor and integrator arterial roads as shown in Figure 9 and detailed below. The road classifications are currently under review by Main Roads 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 Subregion 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 Highway, potentially form part of the future freight network and enhance access to the planned Bullsbrook intermodal terminal and Bullsbrook/North Ellenbrookand 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.

Freight and aviation:

The proposed 2050 freight and aviation network for the North-East sub-region is shown in Figure 10. 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.

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.

Figure 8

North-East sub-region
2050 Public Transport Network

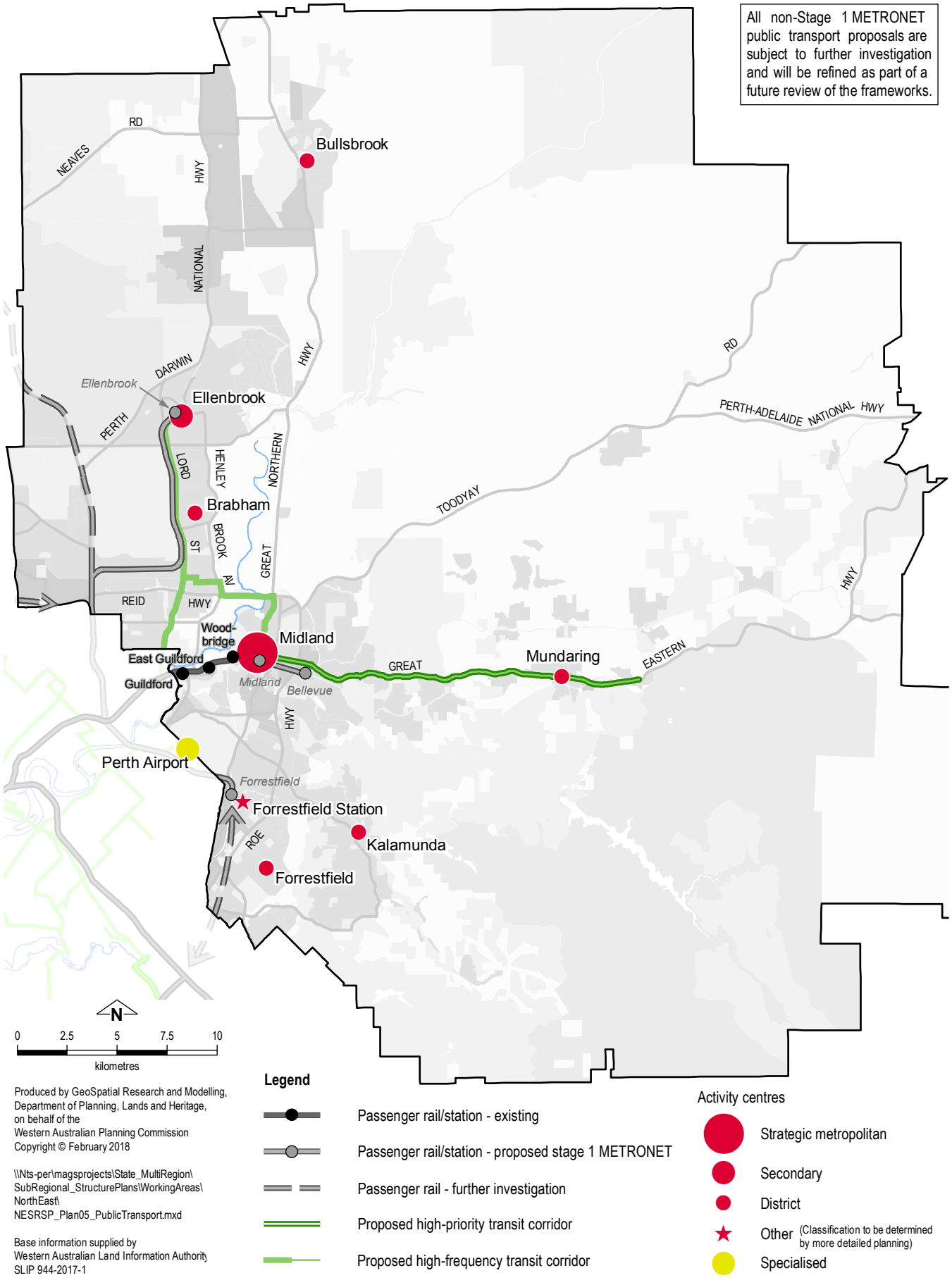

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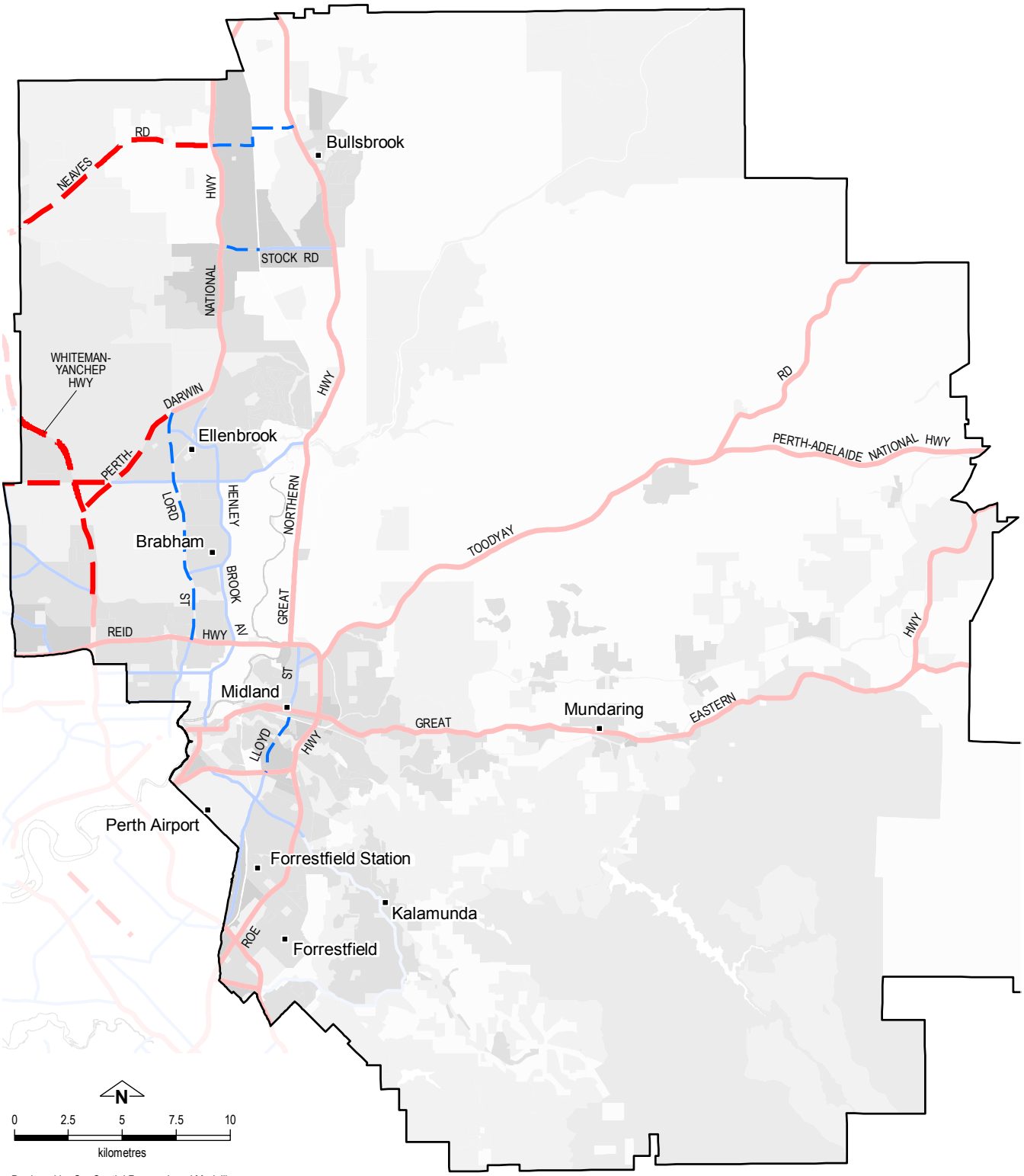
Figure 9

North-East sub-region 2050 Road Network



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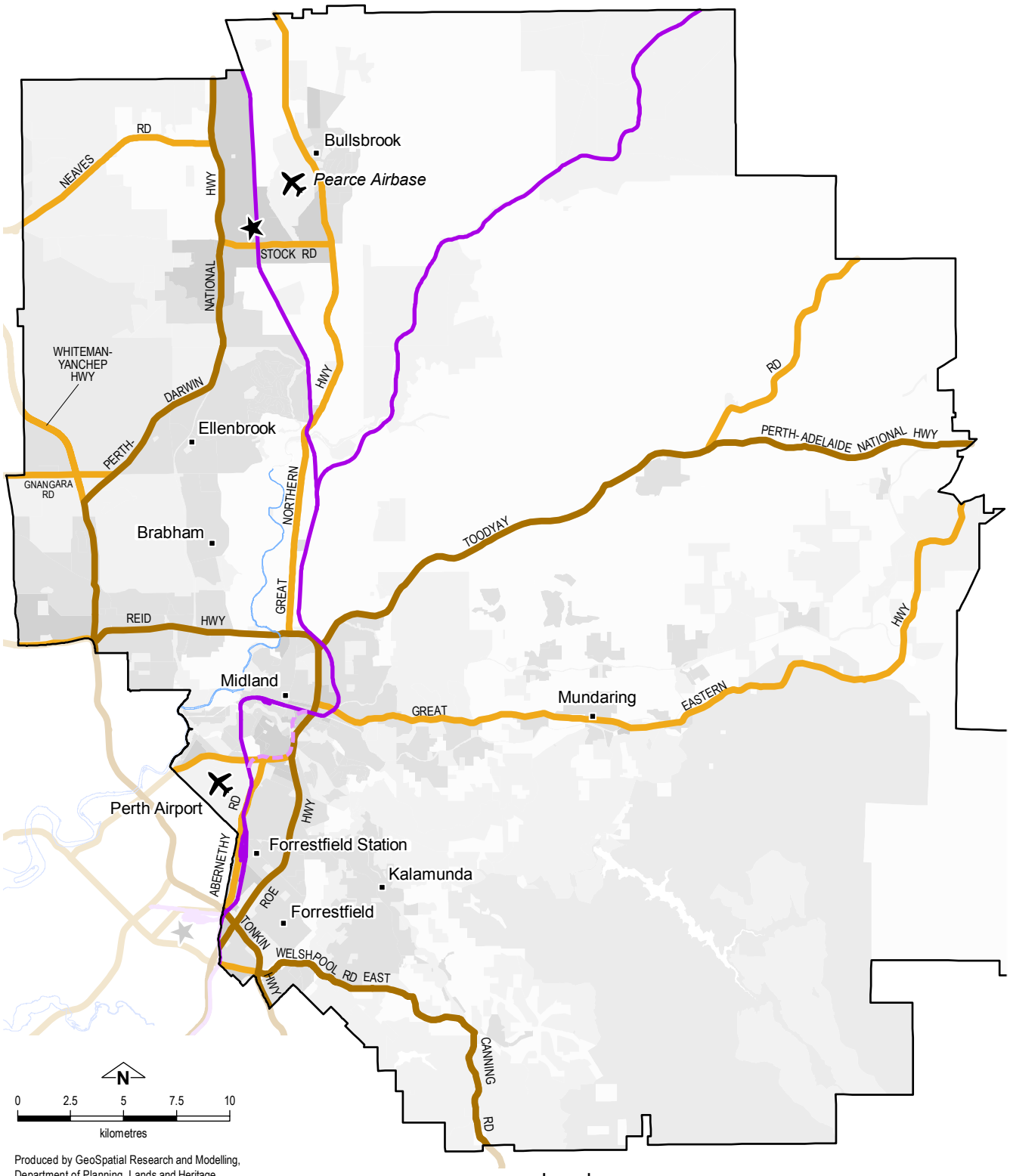
Legend

Primary distributor
- Existing (MRS reservation)
- Proposed

Integrator arterial
- Existing (MRS reservation)
- Proposed

Figure 10

North-East sub-region 2050 Freight Network



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Legend

- Airport
- Intermodal freight terminal
- Freight rail - existing
- Freight rail - proposed

Freight roads

- Primary
- Secondary

2.4 South Metropolitan Peel sub-region

Public transport:

The proposed public transport network for the South Metropolitan Peel sub-region includes an integrated network of passenger rail lines and transit corridors. Passenger rail infrastructure will meet the need for higher-speed longer-distance travel to the Perth CBD and inner areas and to support strategic centres in the outer sub-regions.

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

- → the 14.5 km extension of the Thornlie Line to Cockburn Central with two new stations proposed at Nicholson Road and Ranford Road.
- → extending the Armadale rail line to Byford – with the station being located to integrate with Byford and surrounding localities
- → an additional station on the Mandurah rail line at Karnup.

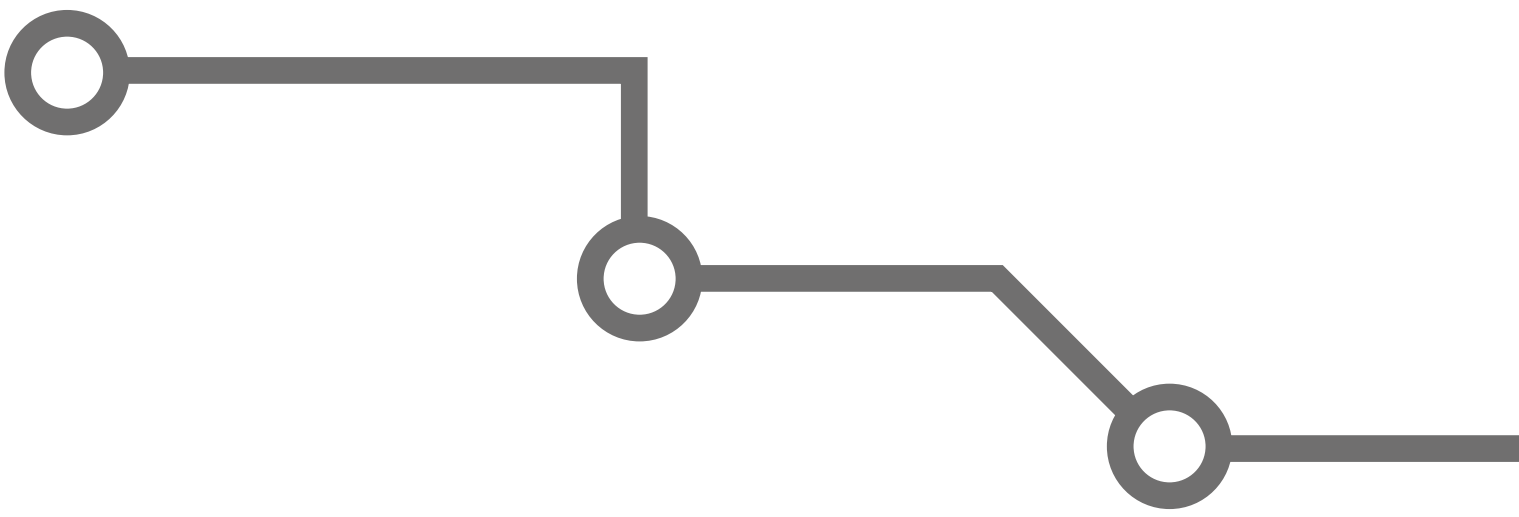
Further investigation is required for the following longer term passenger rail infrastructure options such as:

- → investigating a proposed future Circle Line that connects the Joondalup, East Wanneroo/ Ellenbrook, Midland, Armadale, Mandurah and Fremantle Lines including extending the Forrestfield-Airport rail line to connect to Thornlie rail line and connecting the Thornlie rail line to Fremantle
- → better integration of the Australind service with the metropolitan passenger rail service between Perth and Mundijong to improve operational efficiency
- → potential strategic additional southern metropolitan rail line as well as possible further high speed extension to Bunbury in the long-term
- → a long-term contingency station on the Mandurah rail line at Gordon Road.

Investigations are ongoing in relation to the identification of a site for a stabling facility to support the provision of additional passenger services on the Mandurah Line. This site must be located south of, but near to the, Rockingham Station and have direct connection to the Mandurah Line. A site north of Safety Bay Road is preferred. However, further detailed investigations are required to confirm the location of this facility.

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

The key public transport initiatives are shown in Figure 11.



Roads:

By 2050, the Kwinana Freeway and Tonkin Highway will provide the main network for north–south road movement within the framework area. Also, the sections of Roe Highway (east of the Kwinana Freeway) within the framework area will form part of the network for the broader Perth and Peel regions, including minor westward extension from the Kwinana Freeway to connect to the Murdoch activity centre.

The sub-region's future regional road network includes a number of new and upgraded primary distributor and integrator arterial roads, as shown on Figure 12 and detailed below.

Armadale–Wungong

Easterly extension of Rowley Road to connect with Wungong Road, extension and upgrading of Wungong South Road and extension of Eleventh and Twelfth Roads are proposed. Possible southward relocation of the intersection of Forrest Road with Tonkin Highway (for future connection with Oxley Road) could be explored.

Byford–Cardup–Mundijong network

Additional linkages will be provided between road networks proposed in the existing Byford and Mundijong district structure plans and will include extension of Doley Road and realignment of the southern portion of Malarkey Road.

Some refinement of east-west connections may be appropriate, including westward extension of Norman Road to connect to Bishop Road.

Cockburn–Jandakot

Berrigan Drive will be extended (east of its junction with Jandakot Road) through the western and northern sectors of the airport to connect with Ranford Road. Jandakot and Warton Roads will become integrator arterial roads. Armadale Road is to be realigned to connect to North Lake Road via the new Armadale Road bridge

Spearwood–Wattleup–Postans

A new north–south route connecting Spearwood and Gilmore Avenues with opportunities for a lateral connection to the potential north–south route is proposed. These will service and connect people to the Latitude 32 industrial area.

Kwinana–Rockingham–Karnup

The following new connections will complete the existing network in this sector:

- → Nairn Drive will connect to Wellard Road — via Kerosene Lane and Baldivis Road with a direct grade-separated crossing over the railway;
- → Stakehill Road will be extended west to Warnbro Sound Avenue and upgraded east of Nairn Drive;
- → Dampier Drive will be extended east of Ennis Avenue to Nairn Drive; and
- → Baldivis Road will be extended south to join Anstey Road.

Pinjarra–Ravenswood and Nambeelup

Three inter-connected integrator arterial road networks will serve industrial development at Nambeelup as well as any future development at Ravenswood and West Pinjarra/South Yunderup, focusing on key centres at Pinjarra and Ravenswood. Pinjarra Road may require upgrade with additional lanes, in parts, between Mandurah and South Yunderup Road.

Future development options in Ravenswood and West Pinjarra/ South Yunderup would also require corresponding connections to the Kwinana Freeway/ Forrest Highway at Rogers Road and Beacham Road (north-facing ramps) to support development and ensure balanced transport outcomes.

Freight and aviation:

The proposed 2050 freight and aviation network for the South Metropolitan Peel sub-region is shown on Figure 13.

Future road corridors that will be investigated for possible inclusion in the freight network include the Southern Link Road, Mandjoogoordap Drive (between Kwinana Freeway and Tonkin Highway) and the proposed South Western Highway Deviation.

Other proposals include realignment of the freight railway that currently passes through Mundijong, to the western side of the future urban area, to improve the amenity of Mundijong and ameliorate severance effects. Minor realignment of the freight rail in Waroona is also required as part of the longer term realignment of South Western Highway in Waroona.

An assessment of options is also underway to identify additional freight rail infrastructure connecting to the Kwinana Industrial Area to deal with capacity limitations at the 'Kwinana Triangle'. The classification of networks in the area marked as 'Subject to Westport freight investigations' in Figure 12 is currently subject to review as part of the development of the Westport: Port and Environs Strategy

In the event that 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.

Figure 11

South Metropolitan Peel sub-region 2050 Public Transport Network

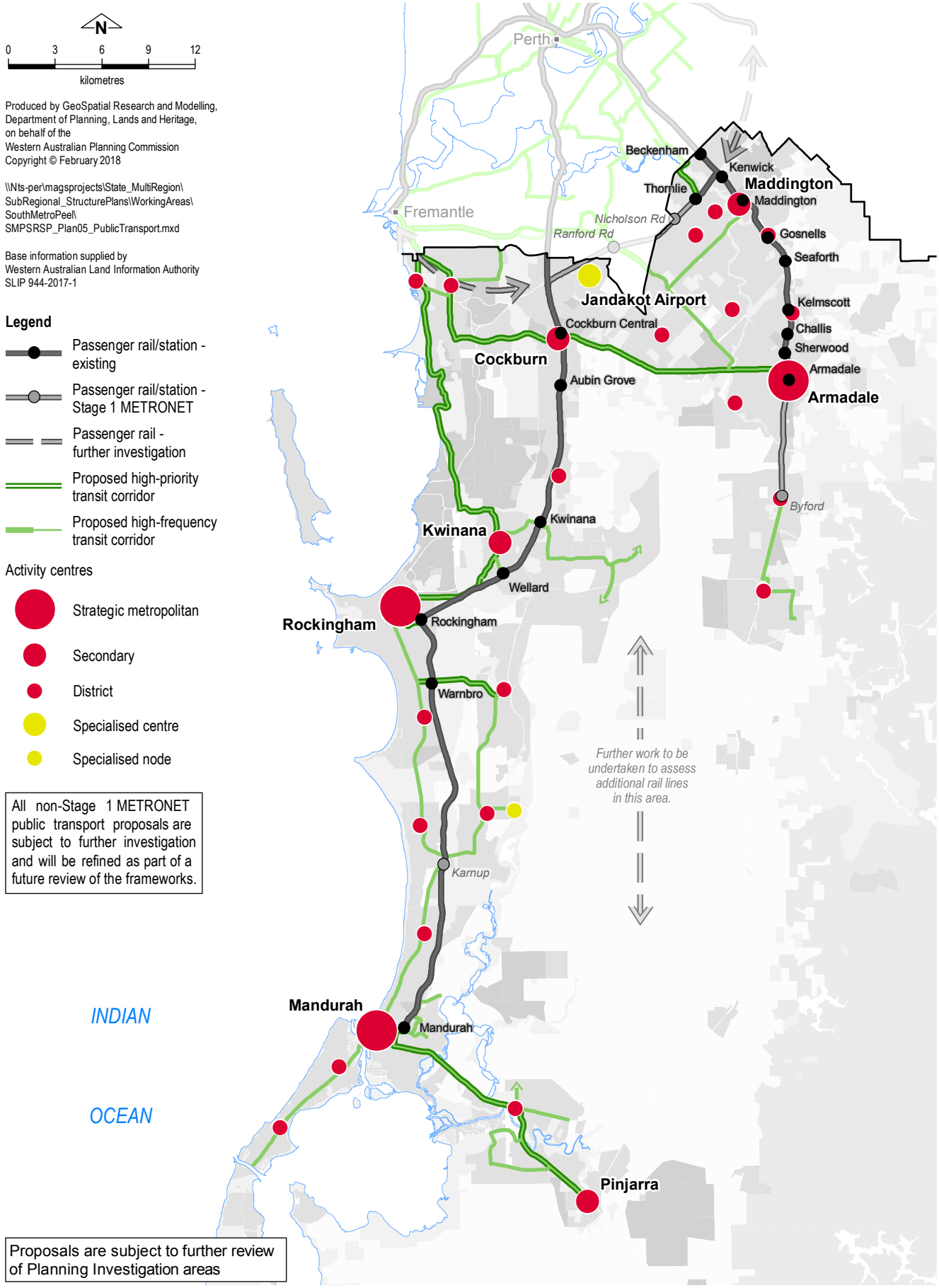
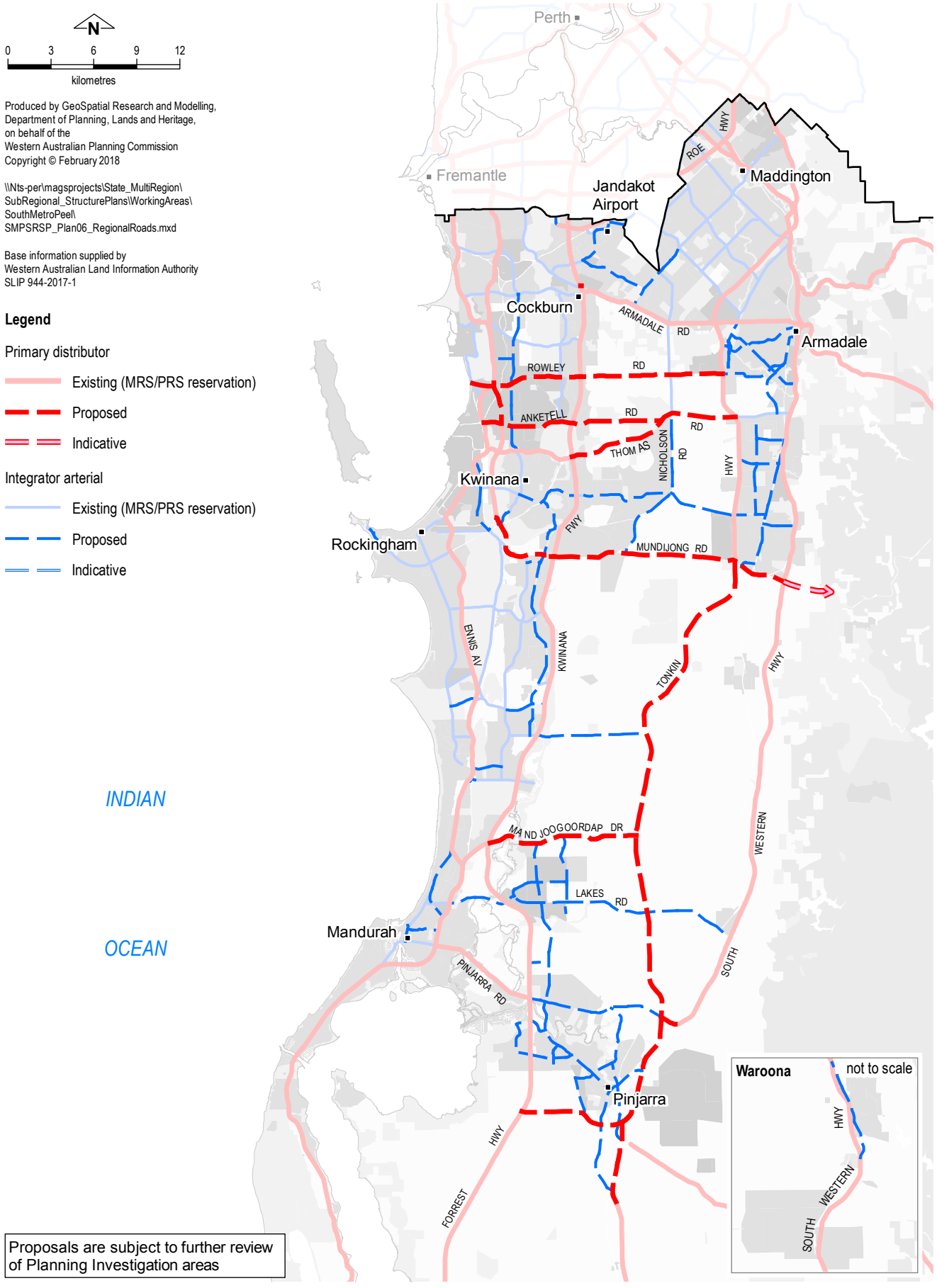


Figure 12

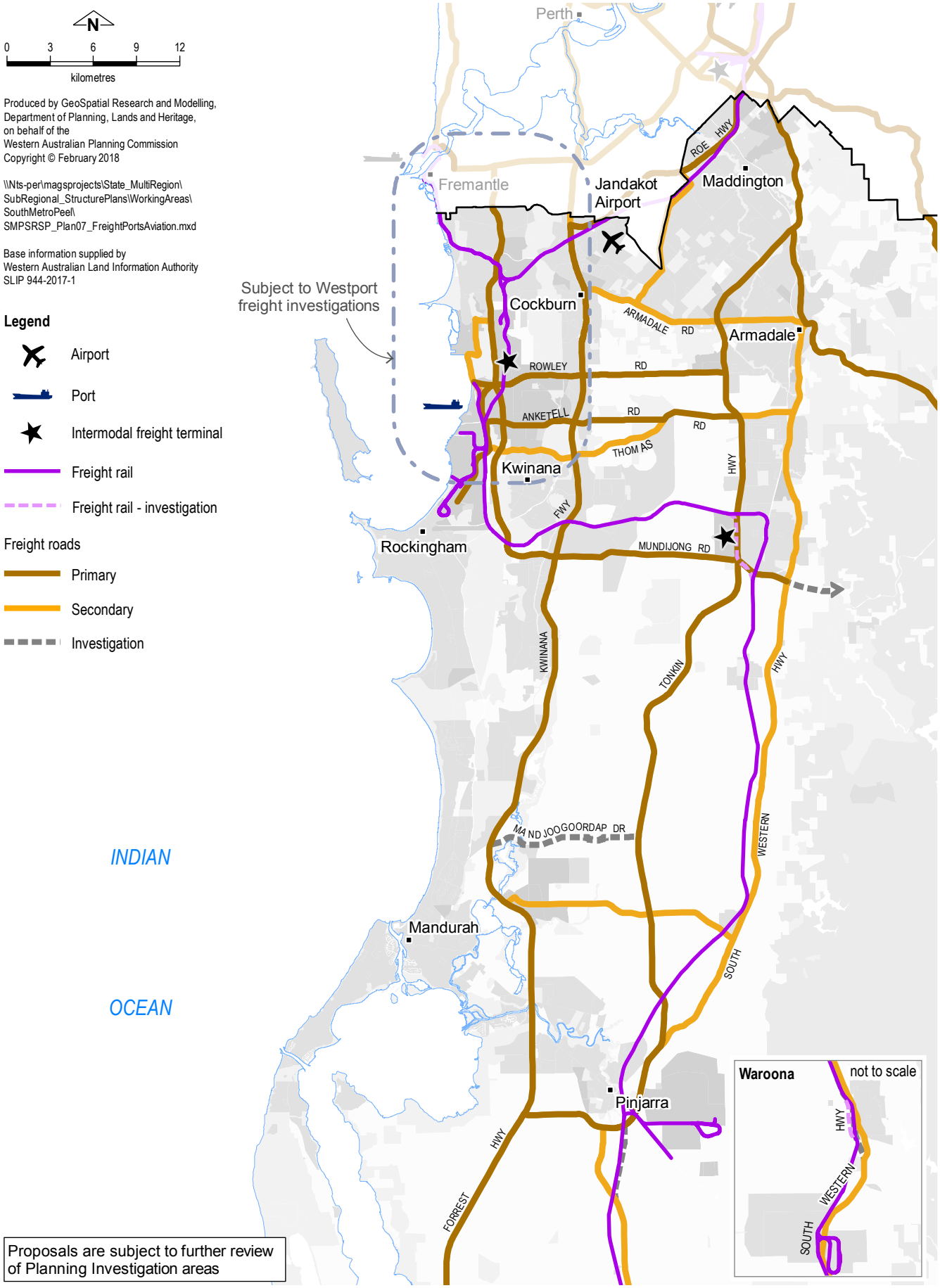
South Metropolitan Peel sub-region 2050 Road Network



Proposals are subject to further review of Planning Investigation areas

Figure 13

South Metropolitan Peel sub-region 2050 Freight Network



2.5 Perth and Peel 2050 Cycling and Walking Network

As the city grows, there will be more emphasis on providing high-quality, safe and comfortable pedestrian and cycling infrastructure, especially around activity centres. In addition, there will be more travel choices available to encourage increased use of public transport, walking and cycling. Many new off-road shared paths have been planned as part of the bicycle network and safe active streets will provide a safer way for cyclists to travel on the roads through some of Perth's older suburbs.

There will be additional river crossings and end-of-trip facilities for major activity centres. The proposed network aims to connect more cyclists to activity centres and train stations and to increase recreational cycling. The increasing use of electric bikes will take more cyclists longer distances, faster, for less effort.

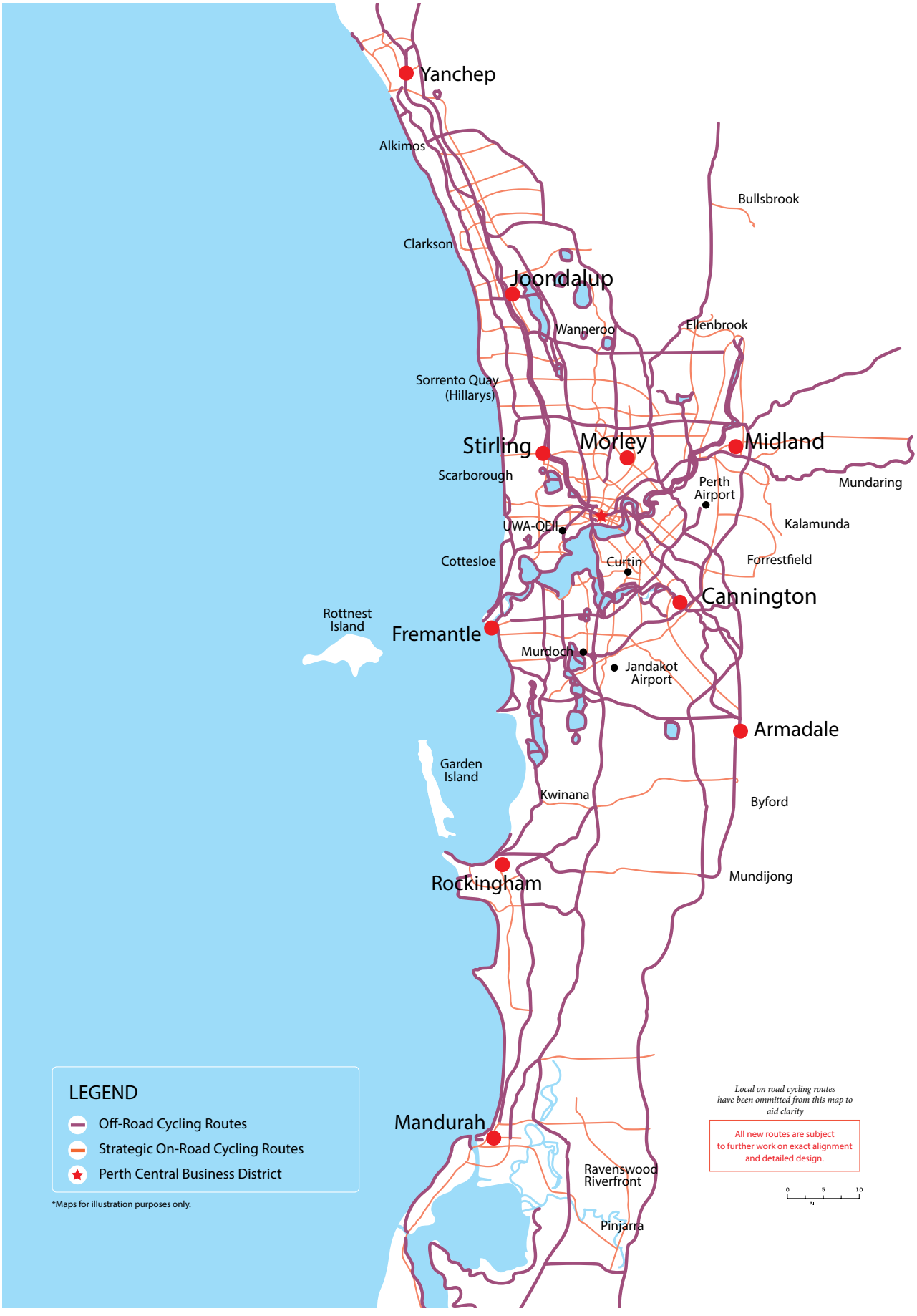
More detailed arrangements for integrating a comprehensive pedestrian and cycling network throughout urban areas, including connections to rail stations, will be determined through district and local structure plans and in consultation with local government.

The cycling network for a city of 3.5 million, shown in Figure 14, proposes the following enhancements to increase the use of active transport:

- An extension to the current 172 km of metropolitan off-road commuter cycle paths to over 850 km, to cater for approximately half a million bicycle trips each day.
- Active transport bridges: new active transport (cycling and pedestrian) and green (active and public transport) bridges to improve connectivity across rivers and lakes, reducing walking and cycling times. These include the: Three Points Bridge, connecting Chidley Point, Point Walter and Point Resolution; three bridges crossing the Swan River between Heirisson Island and Maylands; and three bridges over the Canning River between Salter Point and Waterford.

Figure 14

Perth and Peel
2050 Cycling and Walking Network

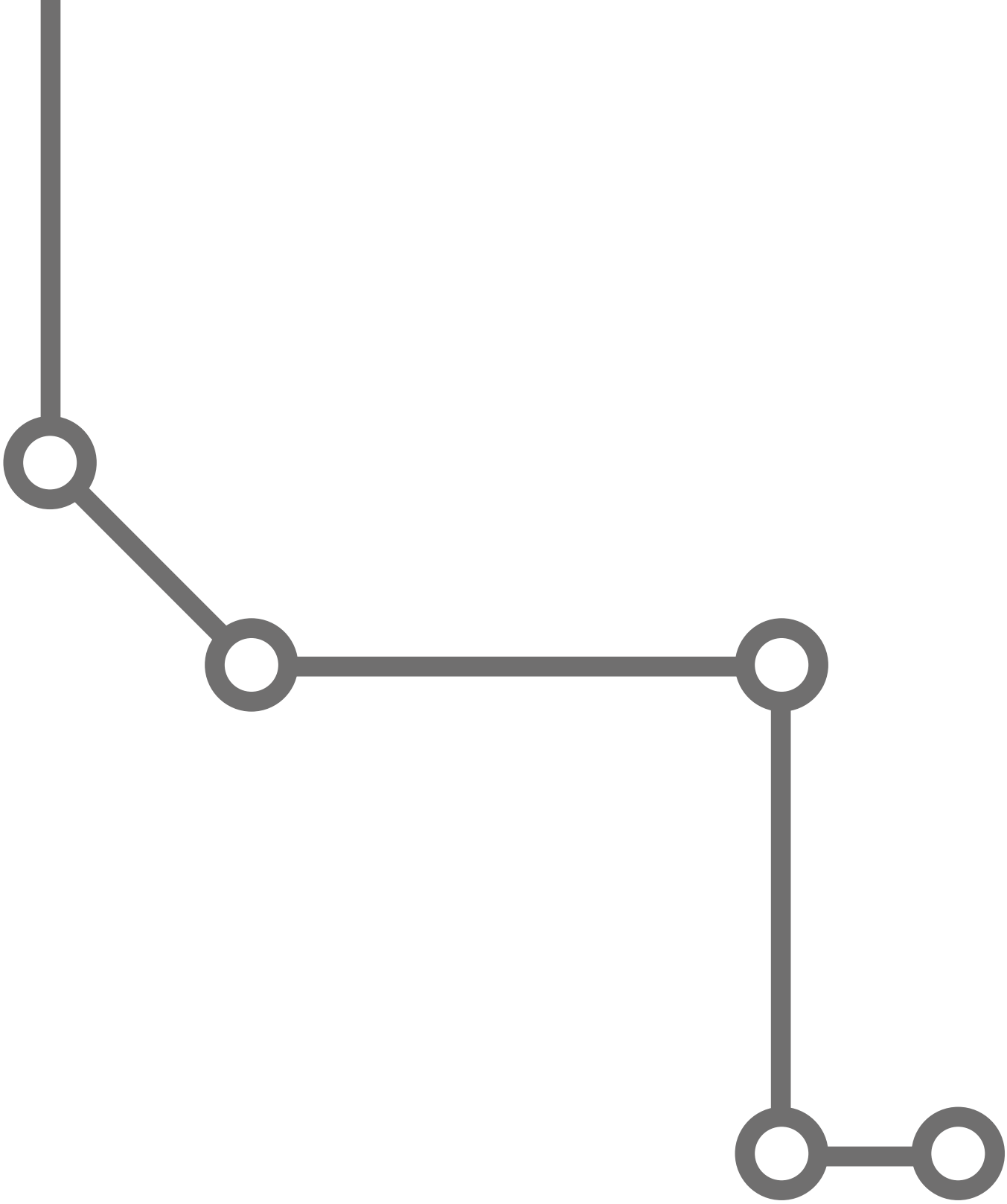


3 IMPLEMENTATION AND MONITORING

The complete sub-regional planning and infrastructure frameworks released as part of the Perth and Peel@3.5million suite are available on the Department of Planning; Lands and Heritage website.

The frameworks set out a long-term strategic guide for the development of Perth and Peel to accommodate a population of 3.5 million. They are long-term plans, incorporating land use and infrastructure proposals plus an urban and employment footprint to 2050.

They will be continually monitored with an initial review to be undertaken after three years, with a large focus on refining the transport network through the Westport and METRONET Taskforces.



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