A Functional Hierarchy for South Australia's Land Transport Network

Government of South Australia
Department of Planning, Transport and Infrastructure

A Functional Hierarchy for South Australia's Land Transport Network

Department of Planning, Transport and Infrastructure

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Introduction

South Australia's transport corridors are under increasing pressure to cater for growth in travel demand due to an expanding population and economy. *A Functional Hierarchy for South Australia's Land Transport Network* has been developed to describe a functional hierarchy that identifies which corridors are important for different modes of transport. It will guide the use of road and rail space to improve safety and efficiency for users of the transport network.

In October 2011, the South Australian Government released the *Road Safety Action Plan 2011 & 2012*, which provided a suite of actions aimed at achieving the targets identified in *Towards Zero Together - South Australia's Road Safety Strategy 2020*. One of these actions is:

"Develop and publish a road classification and functional hierarchy for South Australian roads that reflects the 30-Year Plan for Greater Adelaide and supports safe management of the network…"

This document goes further and includes South Australia's rail corridors and major off-road cycle paths, in recognition of the importance of rail and cycling safety and the vital roles that different corridors play in South Australia's transport network.

What is 'Road Classification' and 'Functional Hierarchy'?

South Australia's land transport corridors (including road and rail) are a key component of the urban and rural environment and provide for a variety of different transport modes and users (i.e. functions), such as public transport, freight, bicycle, pedestrian, motorcycle and car movements. Some corridors provide for longer distance travel, while others provide for access to local communities.

Roads are not all the same. While many roads look similar, each road needs to provide its own specific function (or combination of functions) depending on its location in the transport network, the type and volume of users and the adjacent land use.

Similarly, rail corridors are not all the same. Some provide for high volume freight trains while others provide for high frequency passenger trains or trams. The land use and urban design along these corridors needs to be consistent with these functions.

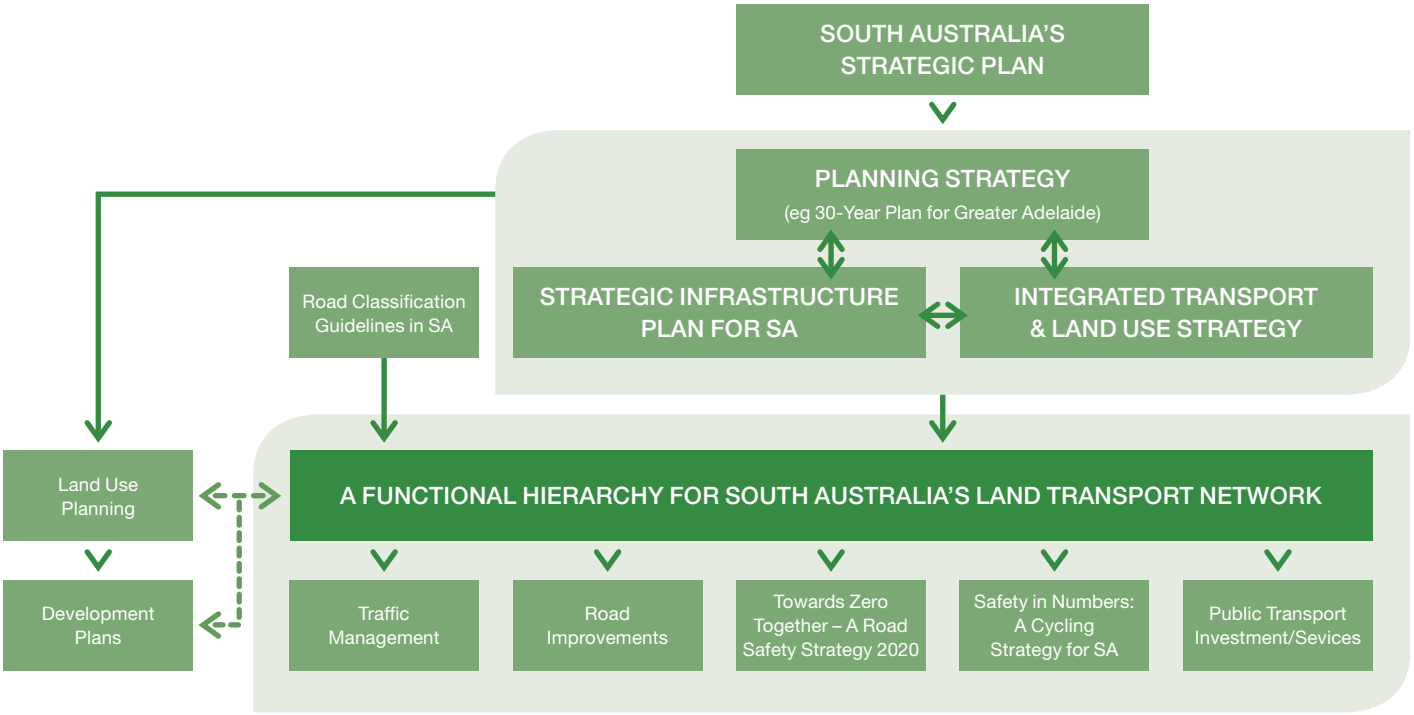
An important first step in distinguishing between different roads is to determine if a road is the responsibility of State or Local Government (i.e. individual Councils). **Road classification** is determined by the *Road Classification Guidelines in South Australia*, released by the South Australian Government in 2008. This document details criteria to be used to determine whether a road should be classified as an arterial road or a local road.

"… the classification of roads will be based purely on whether the road is arterial or local… to determine if a road is the responsibility of State or Local Government."

"Any subsequent hierarchy (such as the functional classes or other classification) would be up to each road authority (e.g. Council) to apply to their roads"

The State Government generally maintains all roads classified as arterial roads. Arterial roads typically cater for large traffic volumes over longer distances compared to local roads. The State Government also maintains all local roads within unincorporated areas (in the north of the State), as well as the passenger rail network within Adelaide. The State Government does not maintain Adelaide's rail freight network or the regional rail network.

A **functional hierarchy** identifies which transport corridors are important for different modes of transport (e.g. public transport, freight etc). For example, a cycling route represents a strategically important transport link for cyclists. That is not to say that cyclists do not use other



roads and paths, but those corridors identified on the functional hierarchy are key links in the transport network for that mode of transport.

Similar corridors and locations can be identified for public transport, freight, pedestrians and commuter traffic. Overlapping functions do not mean that one function is more important than another, but rather that the transport corridor needs to cater for more than one function.

While each function is important and should be treated on merit, there is a hierarchy from the perspective that the functions that have been identified for a transport corridor are of a higher priority.

A functional hierarchy is consistent with the concept of *Link* and *Place*. Under this concept a transport corridor, such as a road, functions as a *Link*, that being its role as a conduit for traffic and part of the wider road network. Roads and railways maintained by the State Government typically need to provide a strong *Link* function. Locations along the road can also be a *Place*, that being a destination in its own right where activities occur adjacent the road. The functional hierarchy recognises the role transport corridors have for both *Link* (e.g. through traffic routes) and *Place* (e.g. pedestrian activity areas, transport interchanges and ports).

What is the purpose of the Functional Hierarchy?

This functional hierarchy describes the functions of each transport corridor for which the State Government is responsible, while also highlighting transport use on some corridors that are owned and maintained by Local Government or private operators. It provides a clearer picture of the roles individual corridors perform in achieving the broader goals and targets identified in the *Strategic Infrastructure Plan for South Australia*, the *Planning Strategy for South Australia* (including the *30-Year Plan for Greater Adelaide*) and *South Australia's Strategic Plan*.

The urban form and nature of activities adjacent transport corridors influence, and are affected by, the functional hierarchy. Allowable land uses adjacent road corridors are guided by Local Government Development Plans. It is recommended that *A Functional Hierarchy for South Australia's Land Transport Network* is read in conjunction with the relevant Development Plan for an area when specific land development proposals are considered.

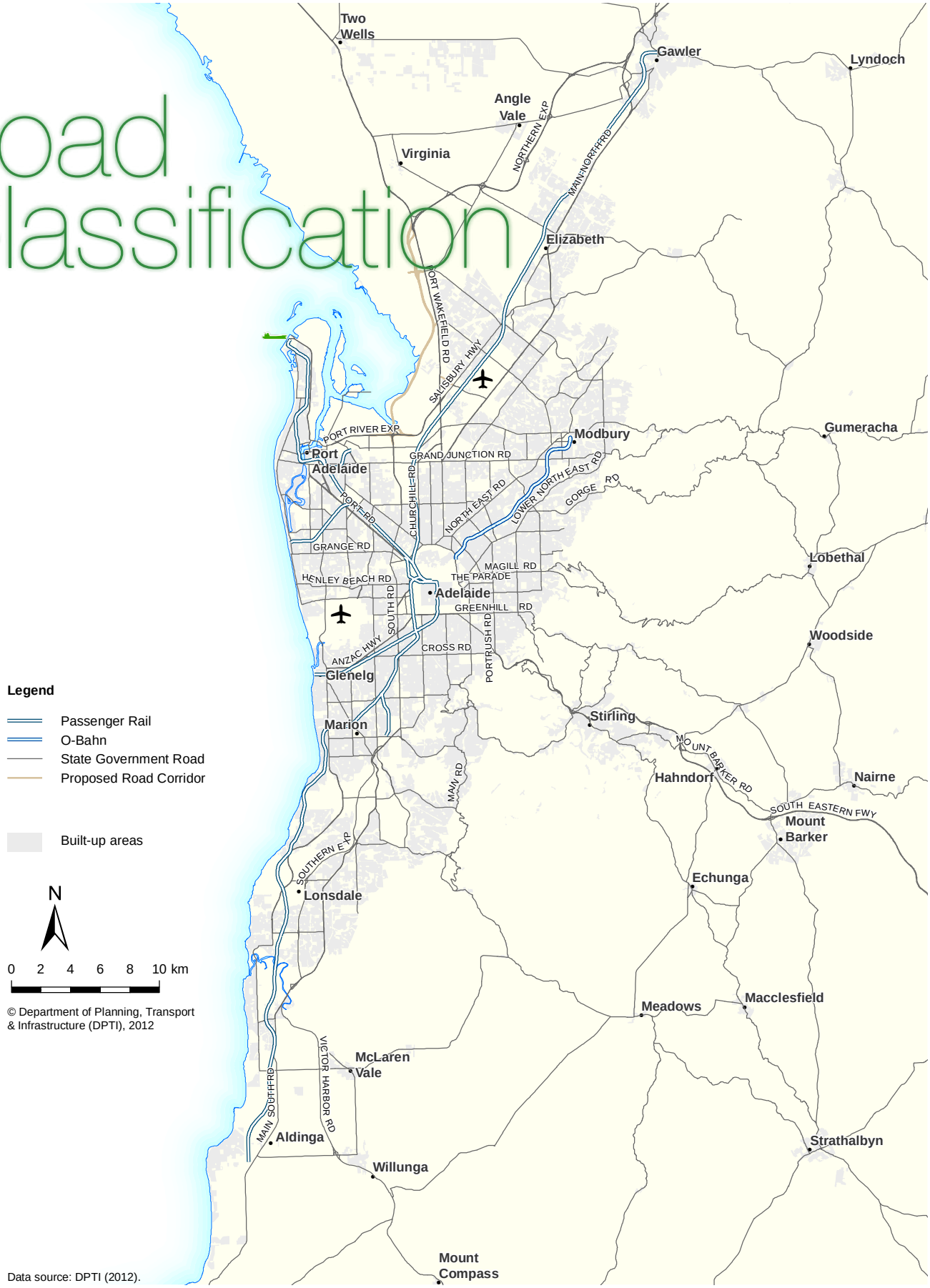
What are the corridor functions?

A Functional Hierarchy for South Australia's Land Transport Network shows the functional hierarchy for both metropolitan and regional transport networks, and covers the following functions:

- Public transport corridors
- Cycling routes
- Pedestrian access areas
- Major traffic routes
- Freight routes
- Peak hour routes
- Tourist routes
- Key outback routes

An example of a 'public transport corridor' is Henley Beach Road. An example of a 'pedestrian access area' is The Parade. South Road is an example of a route that performs the dual function of 'major traffic route' and 'freight route'.

Road Classification



Legend

- Passenger Rail
- O-Bahn
- State Government Road
- Proposed Road Corridor
- Built-up areas

N

0 2 4 6 8 10 km

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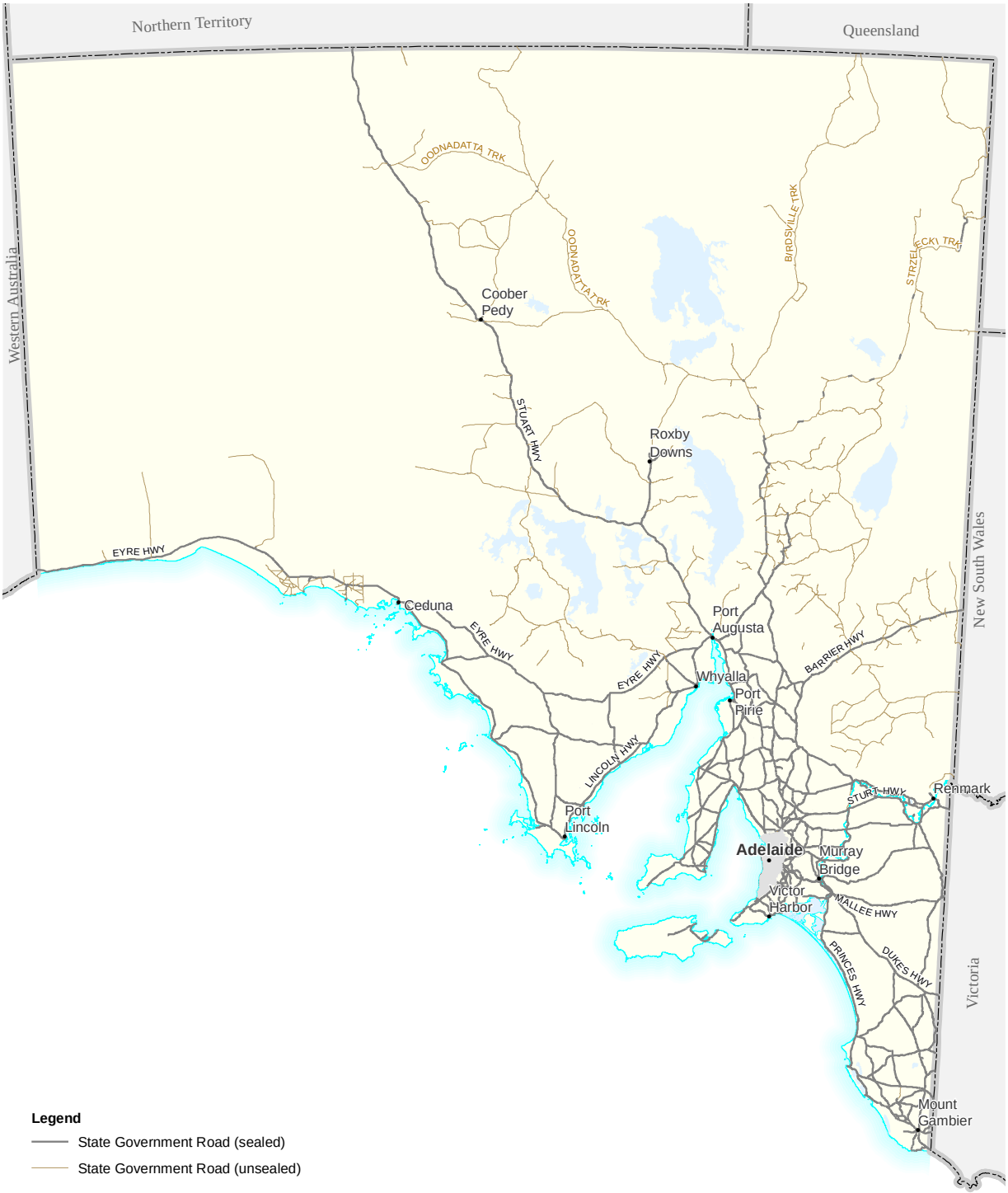

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Functional Hierarchy

PUBLIC TRANSPORT CORRIDORS

Substantial community benefits can be gained by increasing the use of public transport, including reduced traffic congestion, crashes and environmental pollution. The South Australian Government's aim is to increase the use of public transport to 10% of metropolitan weekday passenger vehicle kilometres travelled by 2018 (*South Australia's Strategic Plan* - Target 63).

Greater Adelaide's strategic mass transit network provides access across the metropolitan area, linking major activity, population and employment centres. Infrastructure investment and service improvements are focused on developing a transit system that concentrates passenger flows onto fast, frequent, high capacity corridors supported by cross-suburban and local services feeding into transport interchanges at key locations.

The strategic mass transit network is made up of both existing and potential future infrastructure, categorised as follows:

Dedicated and Priority Corridors

- Priority high speed, high frequency, high capacity corridors providing connections between major centres. These corridors are either:
  - dedicated off-road, right-of-way corridors comprising train lines, off-road tram lines and the O-Bahn; or
  - strategic on-road corridors with greater priority for transit, including potential on-road tram lines and bus lanes.

High Frequency Corridors

- High frequency on-road corridors providing access between major activity centres, employment areas and neighbourhoods, and links to the Priority Corridors.

Standard Frequency Corridors

- Standard frequency on-road corridors providing access to district centres and cross-suburban connections.

Reserve Corridors

- Potential mass transit corridor.

Desired Outcomes

Public transport corridors should:

- Enable the safe and efficient movement of transit vehicles and passengers and optimise transit travel times;
- Be accessible, including the provision of safe pedestrian access at key nodal points across road and rail corridors;
- Have sufficient space for accessible, safe and functional transit stop facilities, such as shelters and signs;
- Incorporate safe and convenient pedestrian links between stations and stops and neighbouring activity centres and residential areas;
- (In the case of road corridors) have the potential to provide priority of movement and dedicated space for buses/trams;
- Provide for park-n-ride and kiss-n-ride facilities at key stations and stops.

The strategic mass transit network also contains transport interchanges designed for safe and convenient transfers, including pedestrian and cycling links and park-n-ride facilities, and is supported by local bus services providing localised access and feeder services to these interchanges.

Any arterial road that provides for public transport should facilitate safe and regularly spaced crossings for pedestrians (see 'Pedestrian Access').

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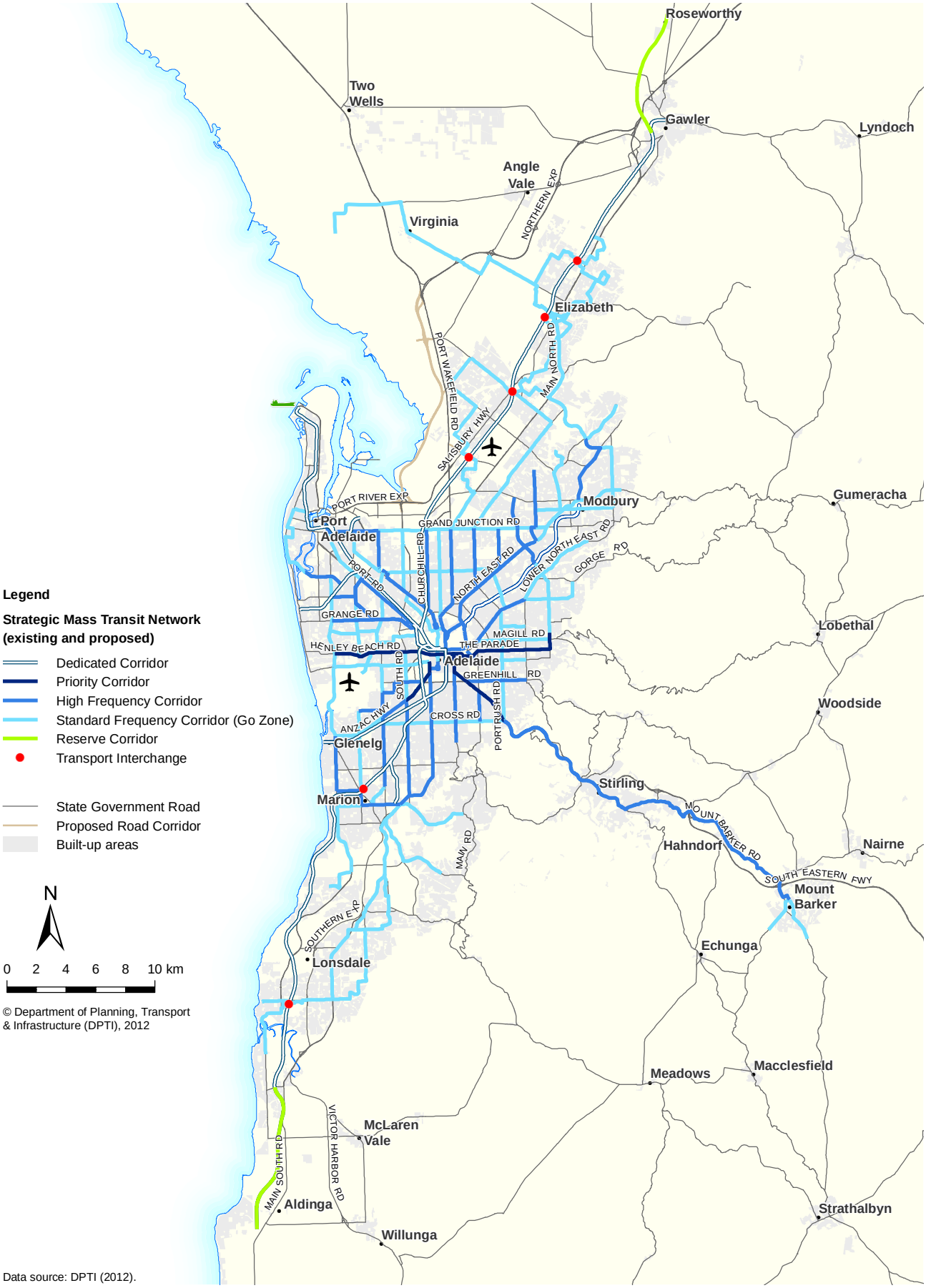

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Functional Hierarchy

CYCLING ROUTES

The cycling network in Greater Adelaide and large regional towns enables direct, efficient and safe travel for cyclists. The cycling network consists of:

Major Cycling Routes

Metropolitan

- Arterial roads where bicycle transportation is emphasised;
- Direct, continuous links to the Adelaide CBD, regional centres, district centres and major employment areas, as well as access to key cycle trip generators (e.g. strip and local shopping, educational institutions and places of cultural and social activity).

Regional

- Arterial roads where:
  - training cyclists can maintain fitness by riding the appropriate distance and gradient at the necessary speed; and
  - touring and recreational cyclists can experience low stress cycling in a safe and attractive environment.

Greenways and Cycling Routes (Local Roads)

- Comfortable, convenient and safe cycling routes on both dedicated off-road paths and local streets with low traffic volumes. Cycling routes on local roads typically follow the metropolitan Bike*direct* network.

Any arterial road not covered in the above categories should still provide dedicated space for cyclists, especially as part of new urban road projects or road upgrades.

Desired Outcomes

Major cycling routes should:

Metropolitan

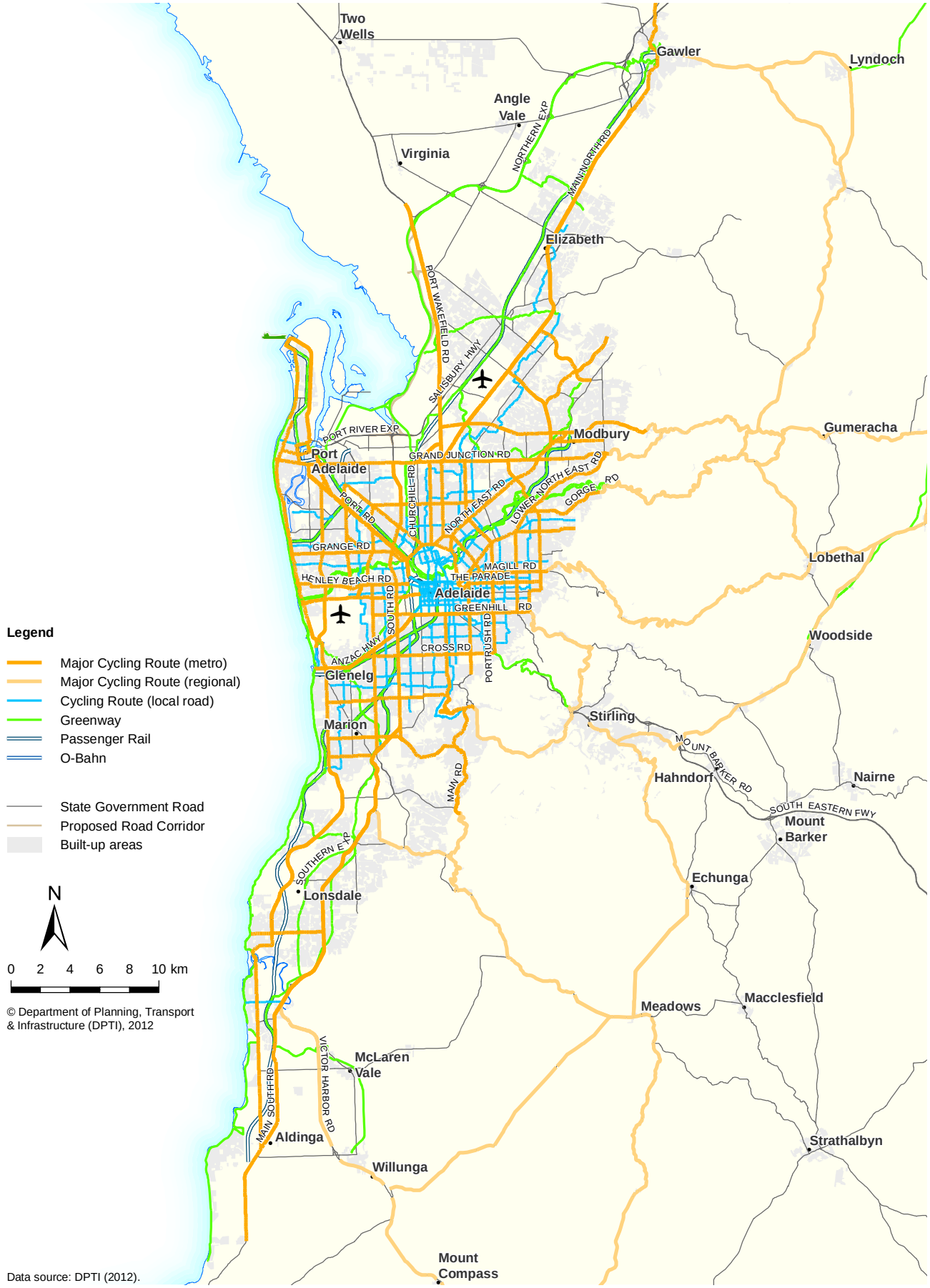
- Optimise cycling travel times;
- Provide space specifically for cyclists, including continuous designated and dedicated road space or paths (i.e. no squeeze points);
- Provide separation between cyclists and moving traffic;
- Provide priority for cyclists.

Regional

- Provide a smooth pavement and sealed shoulders (especially on uphill sections).

Greenways and cycling routes (local roads) should:

- Provide priority for cyclists;
- Provide a low-traffic, low-speed environment for cycling and walking;
- Provide safe and convenient arterial road crossings.



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PEDESTRIAN ACCESS

Pedestrian access identifies locations where significant pedestrian activity exists or is planned. The safety of pedestrians must be an important consideration in the management of the road system. The extent and level of treatment at these locations will vary depending on the surrounding land use and interaction with other transport functions along the corridor. The ultimate aim is to provide for the convenient, safe and efficient movement of pedestrians by implementing traffic management measures and other initiatives.

Priority Pedestrian Area

- Pedestrian access areas located along and across arterial road routes, where pedestrians are given a high priority.

High Activity Pedestrian Area

- Provide safe and convenient connections at key locations along an arterial route for connections and access to destinations of high pedestrian activity.

In addition to the above pedestrian area categories, any arterial roads accessed by public transport should provide for safe and regularly spaced crossings for pedestrians.

Desired Outcomes

Priority pedestrian areas should:

- Provide for safe and efficient movement on a wider footpath area;
- Be well lit and accessible for persons with a disability;
- Facilitate permeability and continuous access for pedestrians across and along the road corridor;
- Promote direct and convenient pedestrian movement by minimising crossing distance and delay at intersections throughout the day;
- Provide a safe walking environment through reduced vehicle speeds and high levels casual surveillance (e.g. from adjacent buildings);
- Provide a comfortable walking environment, including the provision of street trees, street furniture and other amenities;
- Promote a sense of place and encourage public activities.

High activity pedestrian areas should:

- Provide for safe and efficient movement on a wider footpath area;
- Be well lit and accessible for persons with a disability;
- Facilitate access to public transport and major destinations at regular spaces along the arterial road corridor;
- Provide a safe walking environment by promoting safe vehicle speeds;
- At key locations, provide a comfortable walking environment, including the provision of street trees, street furniture and other amenities that promote walking as a travel mode.

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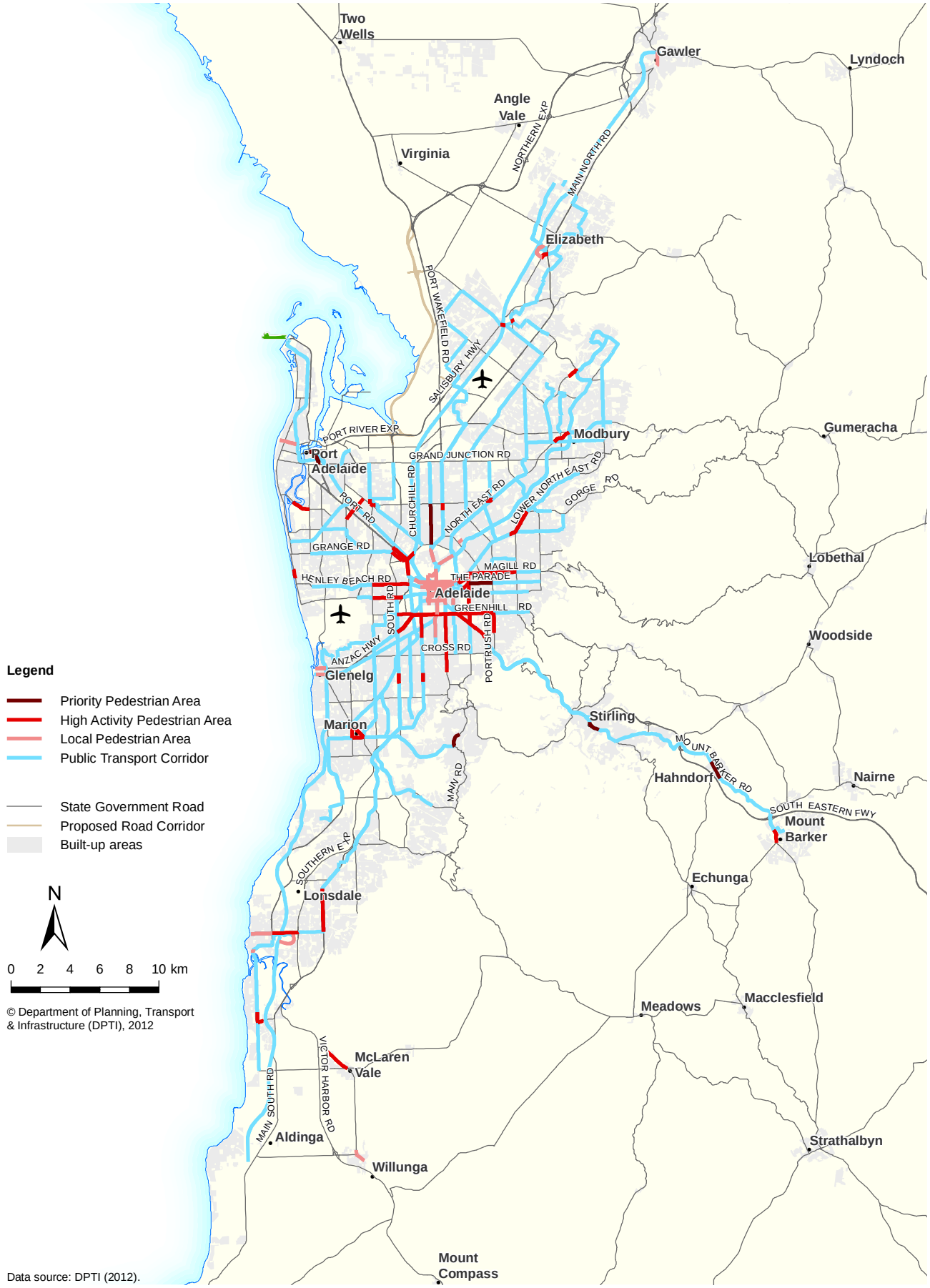
Two Wells
Gawler
Lyndoch
Angle Vale
Virginia
NORTHERN EXP
MAIN NORTH RD
Elizabeth
PORT WAKEFIELD RD
SALISBURY HWY
PORT RIVER EXP
Port Adelaide
Modbury
Gumeracha
GRAND JUNCTION RD
CHURCHILL RD
PORT RD
NORTH EAST RD
LOWER NORTH EAST RD
GORGE RD
GRANGE RD
Lobethal
HENLEY BEACH RD
MAGILL RD
THE PARADE
Adelaide
SOUTH RD
GREENHILL RD
PORTRUSH RD
Woodside
CROSS RD
ANZAC HWY
Glenelg
Stirling
Marion
MOUNT BARKER RD
Hahndorf
Nairne
MAIN RD
SOUTH EASTERN FWY
Mount Barker
SOUTHERN EXP
Echunga
Lonsdale
Meadows
Macclesfield
VICTOR HARBOR RD
McLaren Vale
MAIN SOUTH RD
Aldinga
Strathalbyn
Willunga
Mount Compass
Legend
Priority Pedestrian Area
High Activity Pedestrian Area
Local Pedestrian Area
Public Transport Corridor
State Government Road
Proposed Road Corridor
Built-up areas
N
0 2 4 6 8 10 km
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Functional Hierarchy

MAJOR TRAFFIC ROUTES

The role of major traffic routes is to cater safely and efficiently for all types of road users in vehicles, for up to 24 hours a day, seven days a week.

These routes typically cater for relatively high traffic volumes (in the order of 20,000+ vehicles per day in the metropolitan area and 2000 - 3000+ vehicles per day in regional areas), and all forms of long distance traffic.

Given their importance, major traffic routes would typically be the focus of major investment and highly responsive maintenance. These routes would typically have minimal direct side road or property access (potentially using service roads), and have minimal disruption to traffic flow.

In regional South Australia, the provision of frequent overtaking opportunities is also beneficial as this reduces vehicle conflict, thus improving safety.

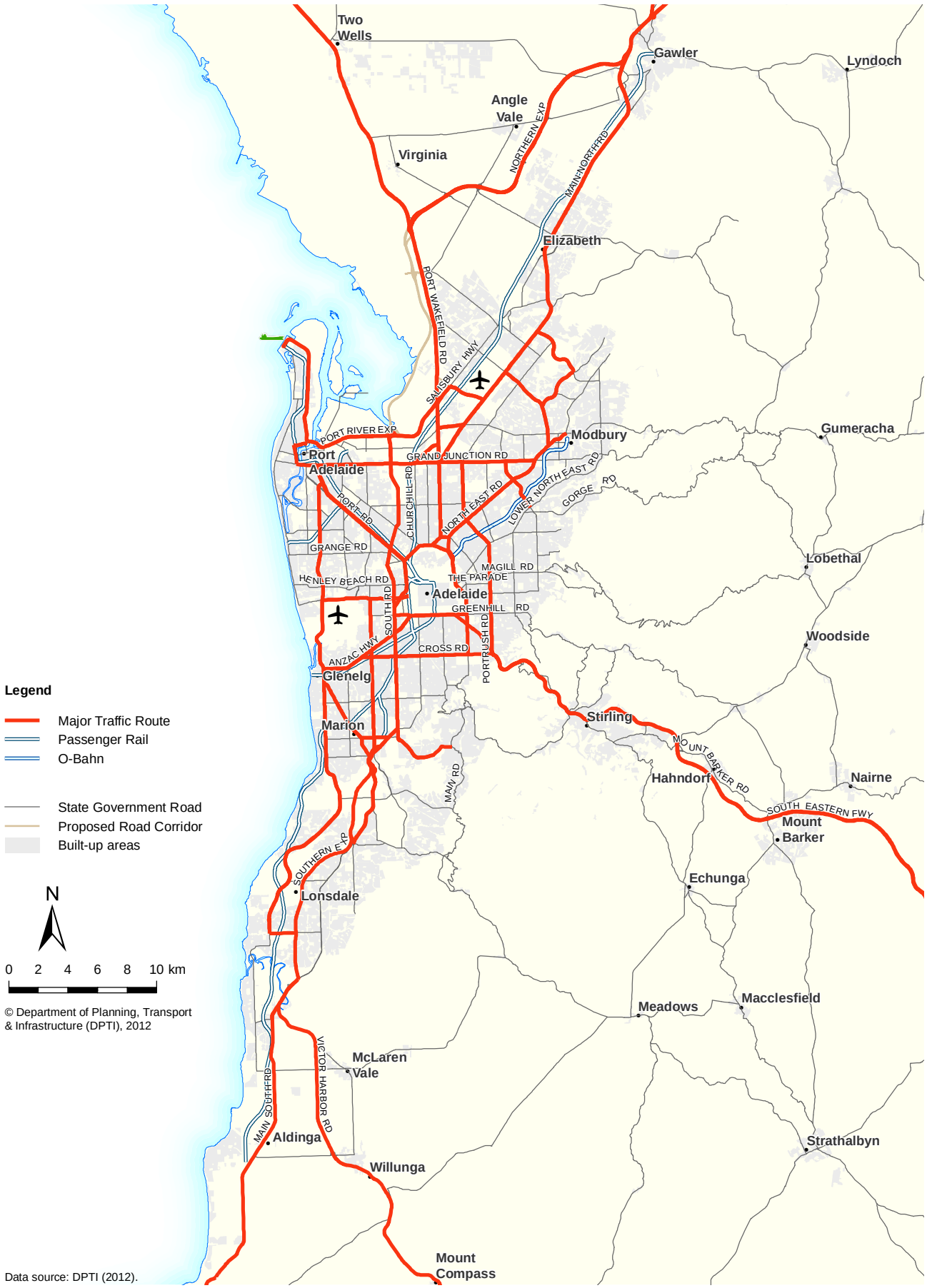
Desired Outcomes

Major traffic routes should have:

- Safe and efficient movement at all times of the day;
- Priority of movement at intersections;
- Minimal impact from stationary buses or turning traffic;
- Reduced or eliminated on-street parking;
- Rationalised property access points and local area access;
- Limited side friction from adjacent land uses;
- Appropriate areas provided for cyclists and pedestrians.

In regional South Australia, major traffic routes should have:

- Wide lanes and sealed shoulders;
- Smooth sealed roads with a high standard of pavement marking;
- Frequent overtaking opportunities and rest areas in rural areas.



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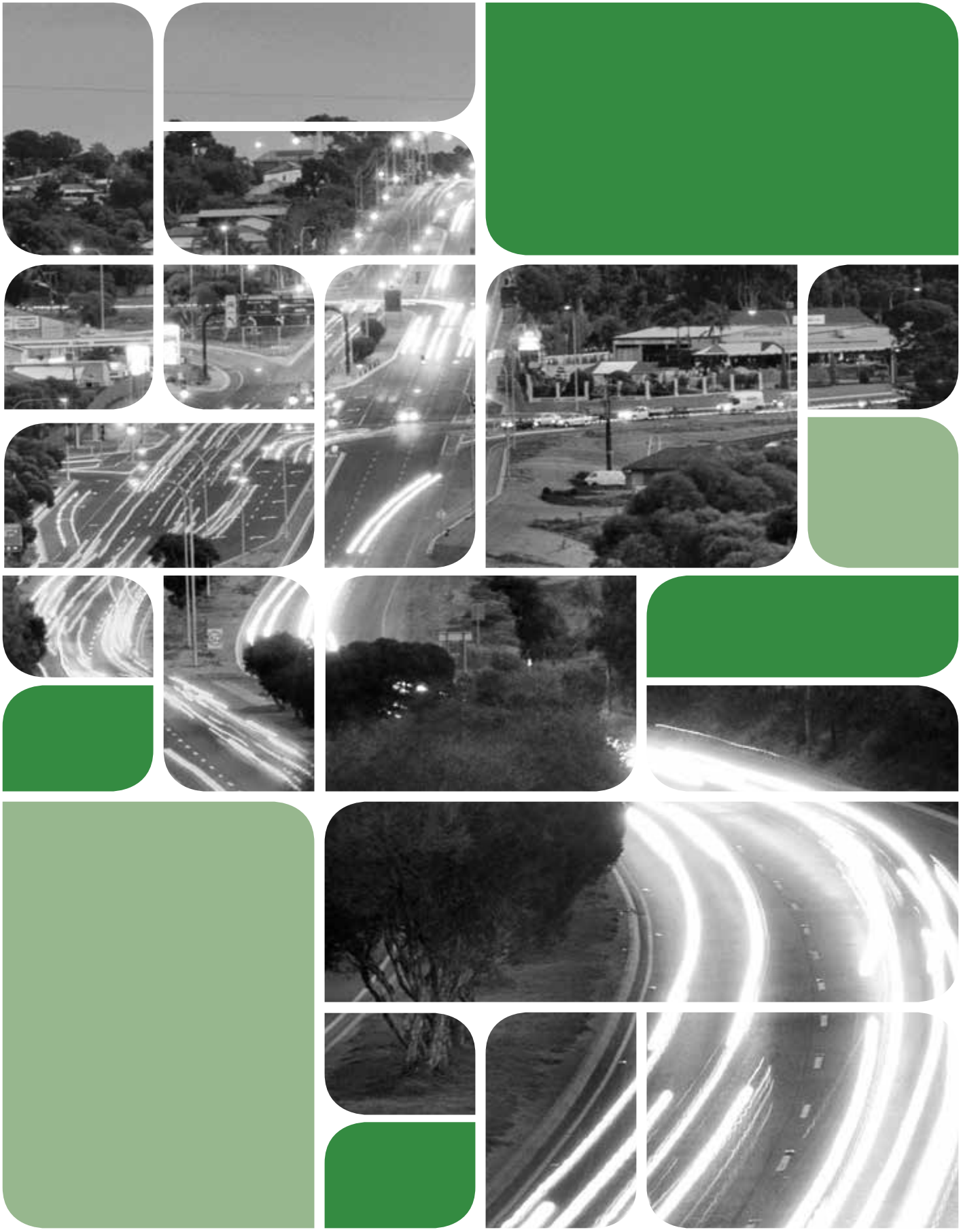

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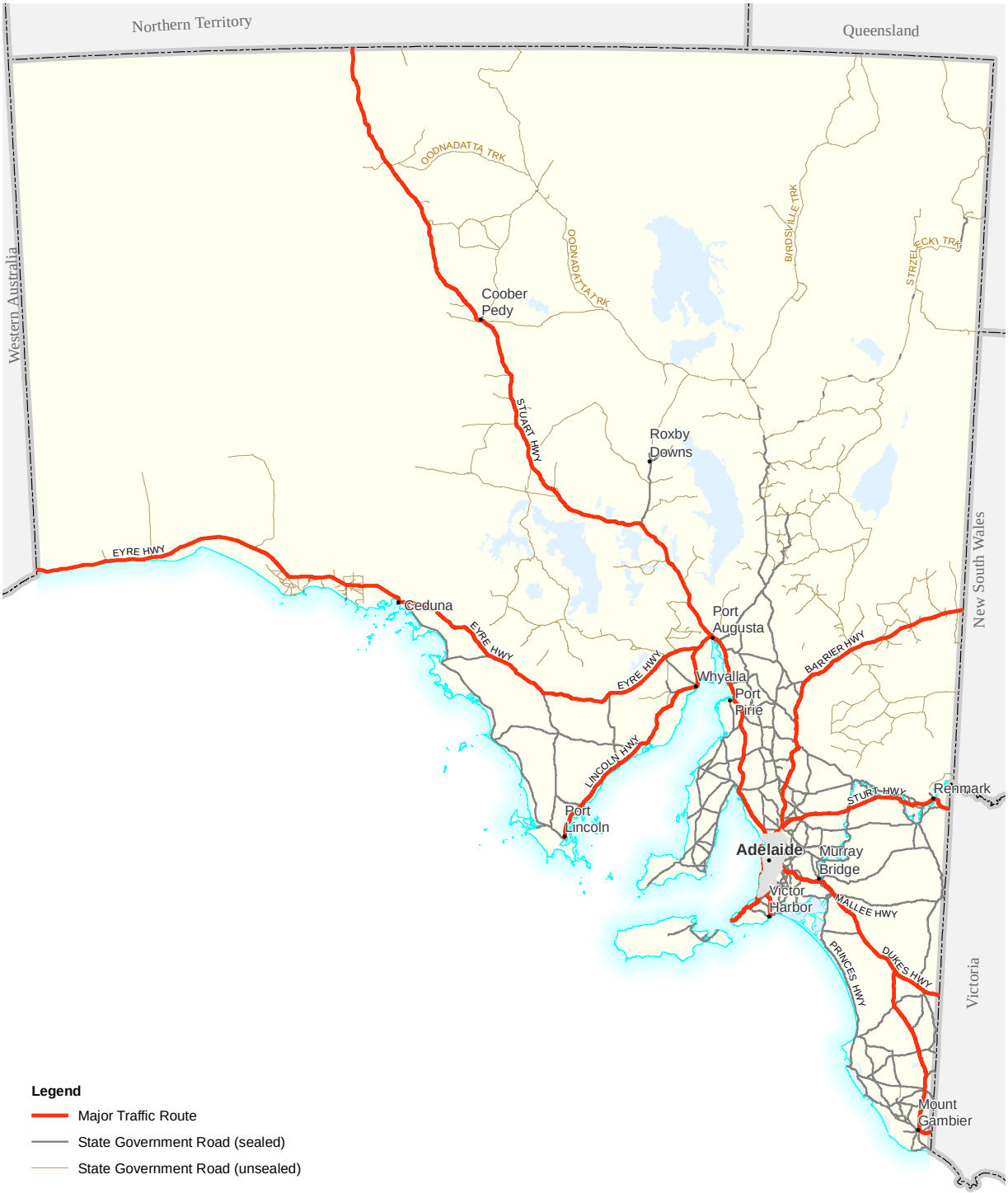

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Functional Hierarchy

FREIGHT ROUTES

The role of freight routes is to cater safely and efficiently for freight vehicles for up to 24 hours a day, seven days a week. These routes need to provide optimal travel efficiency and reliability of travel times throughout the day for heavy vehicles, especially when freight and commuter peak periods coincide.

Rail corridors play an important role in moving freight, particularly long haul, bulk products such as grain and minerals. Private operators maintain and manage the rail network and work with the South Australian Government to improve safety at level crossings. These routes link strategically important economic regions, industrial lands, strategic sea ports and important regional centres within and outside South Australia.

A key safety consideration is the width of lanes adjacent the kerb so that freight vehicles are able to safely pass a parked vehicle (where required), cyclist or stationary bus. Minimising direct access to the route also contributes to efficient and safer traffic movements.

In regional South Australia the provision of frequent overtaking opportunities is also beneficial as this reduces the conflict between freight vehicles and commuter and tourist traffic, thus improving safety.

The freight route network does not include all roads that may be for use by Restricted Access Vehicles (refer to RAVnet at http://dpti.sa.gov.au/ravnet). Freight Routes would nevertheless be the priority for improvements and initiatives to facilitate access by Restricted Access Vehicles.

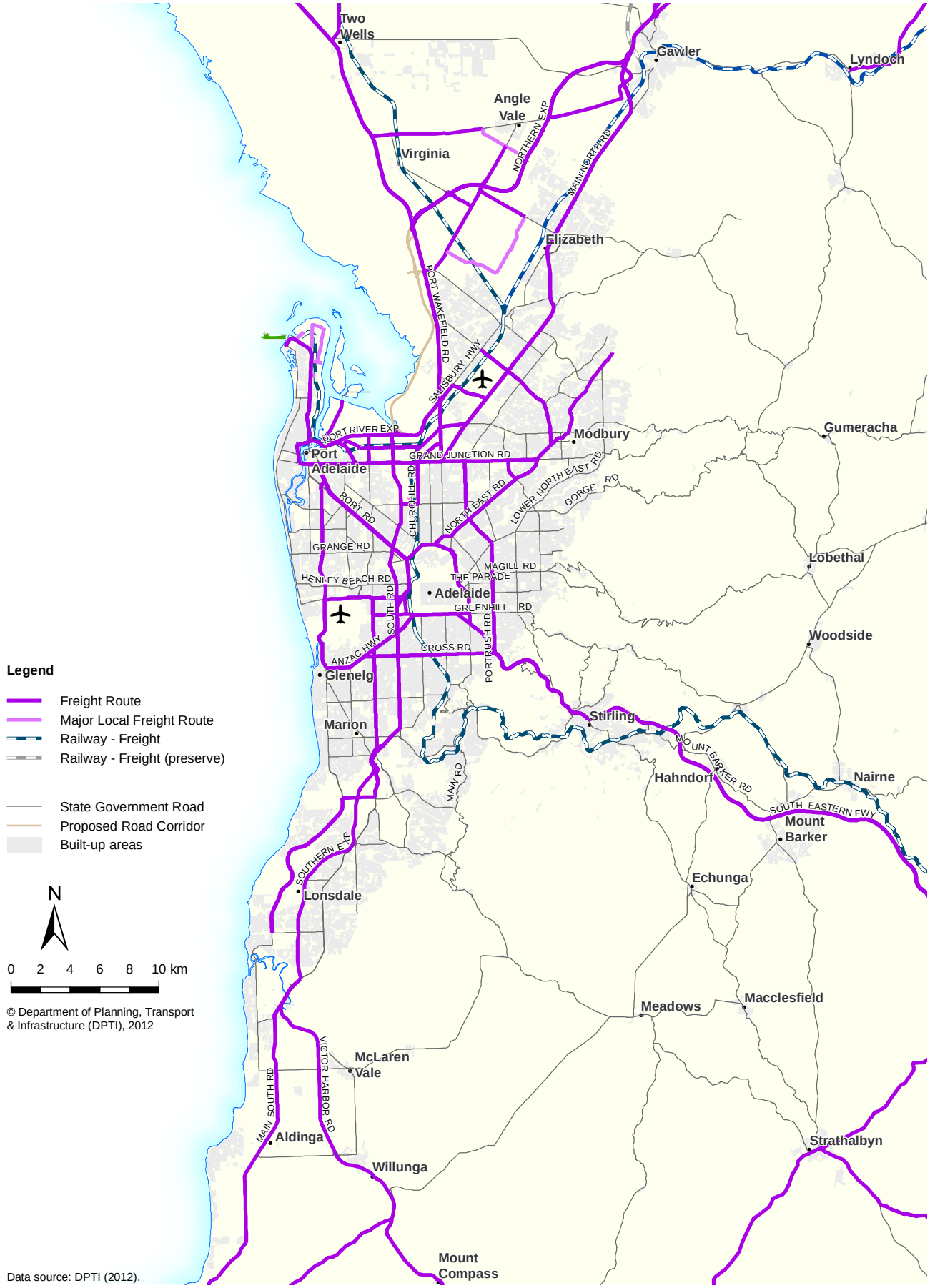
Desired Outcomes

Freight routes should have:

- Safe, efficient and reliable movement at all times of the day;
- Priority of movement at intersections;
- Minimal impact from stationary buses or turning traffic;
- Limited side friction from adjacent land uses;
- Appropriate areas provided for cyclists and pedestrians;
- The ability to cater for Restricted Access Vehicles.

In regional South Australia, sealed freight routes should have:

- Wide lanes and sealed shoulders;
- Smooth sealed roads with a high standard of pavement marking;
- Frequent overtaking opportunities (including climbing lanes) and rest areas in rural areas.



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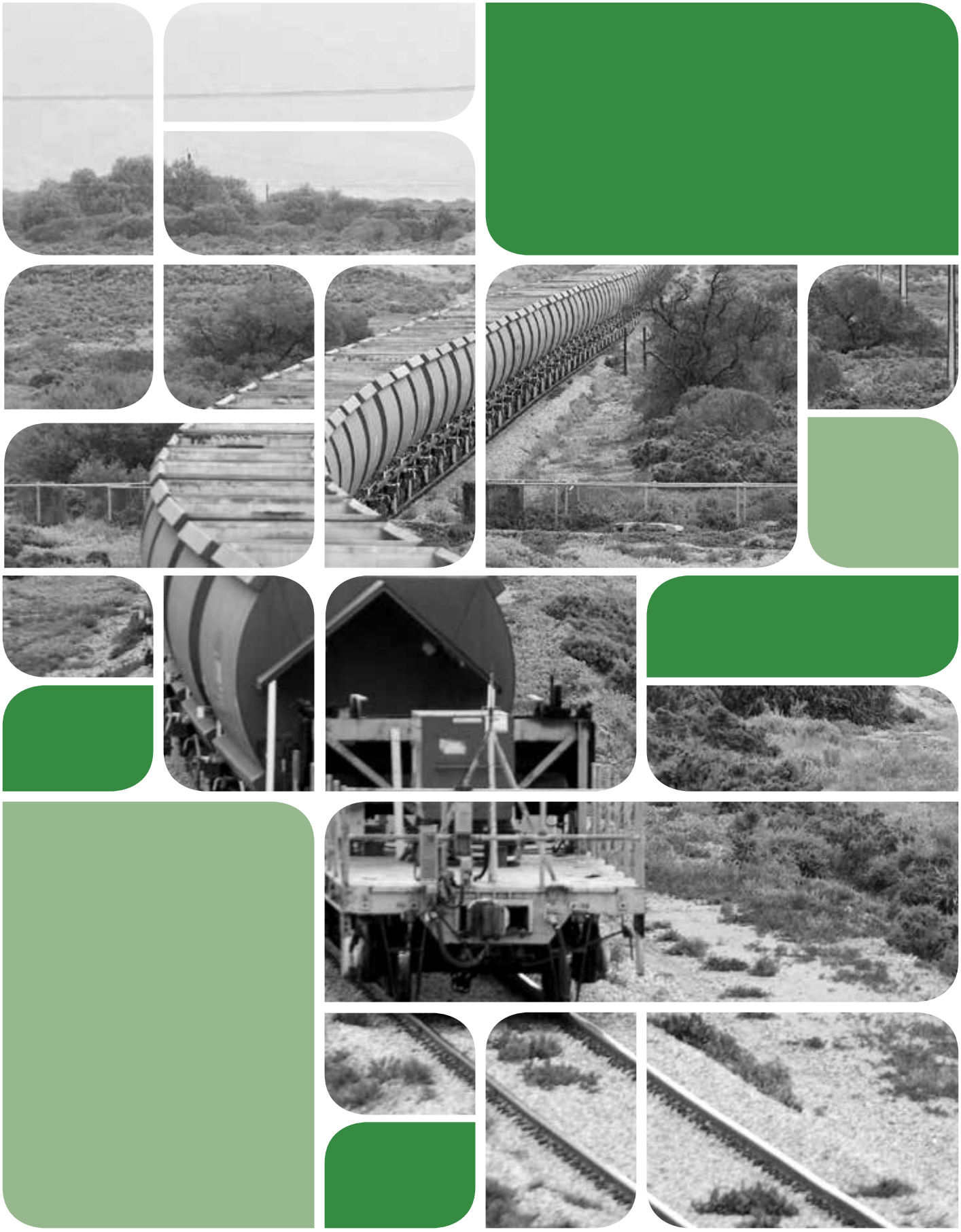

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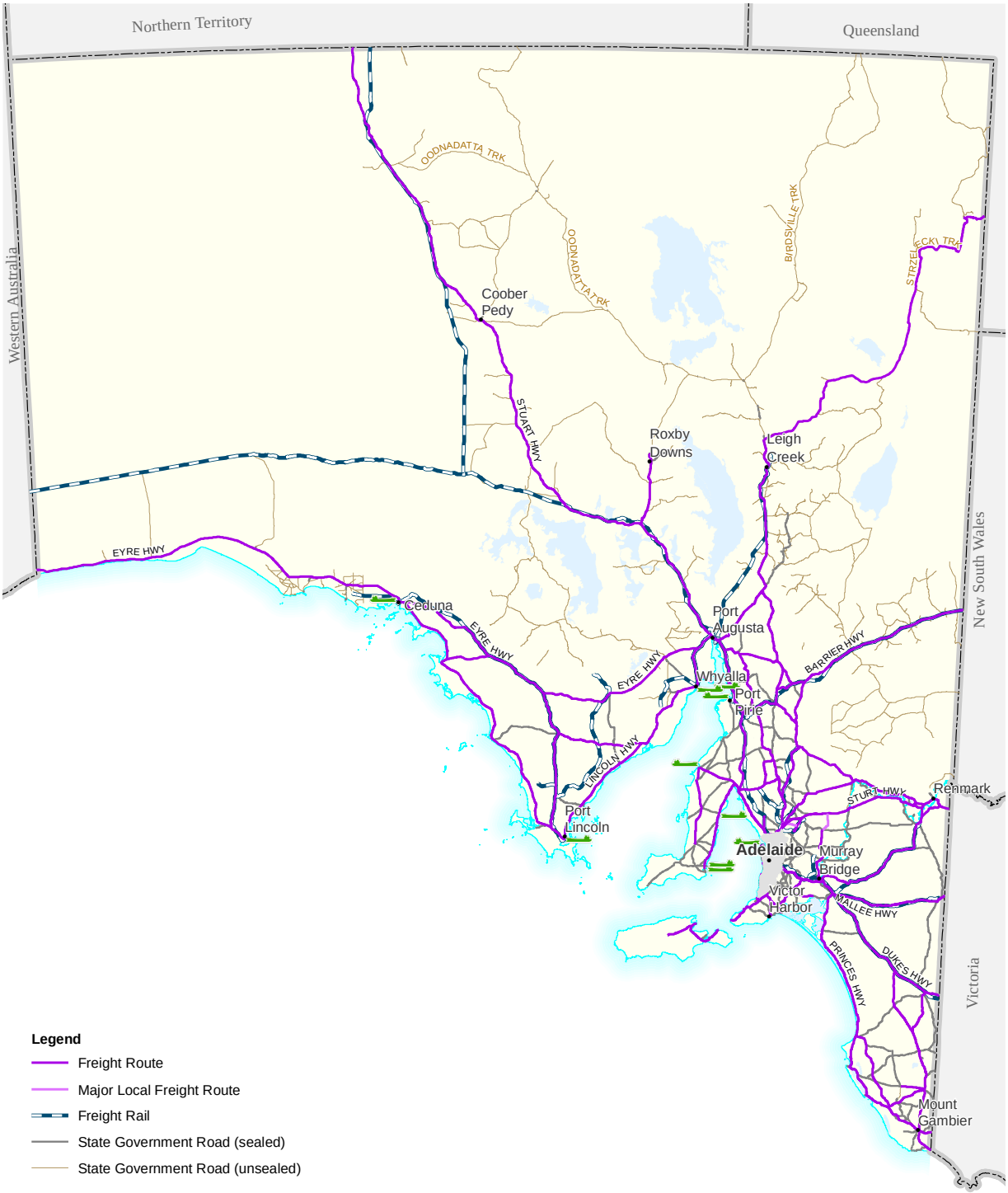

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PEAK HOUR ROUTES

Peak hour routes link residential and employment areas in Adelaide and cater particularly for private vehicle travel during peak periods. This includes routes in the outer metropolitan area where significant volumes of vehicles commute daily to Adelaide.

Traffic management on these routes can vary across different time periods throughout the day, thereby providing the opportunity to cater for peak hour traffic while supporting adjacent land use activity during the off-peak periods.

Peak hour routes do not overlap with freight routes or major traffic routes.

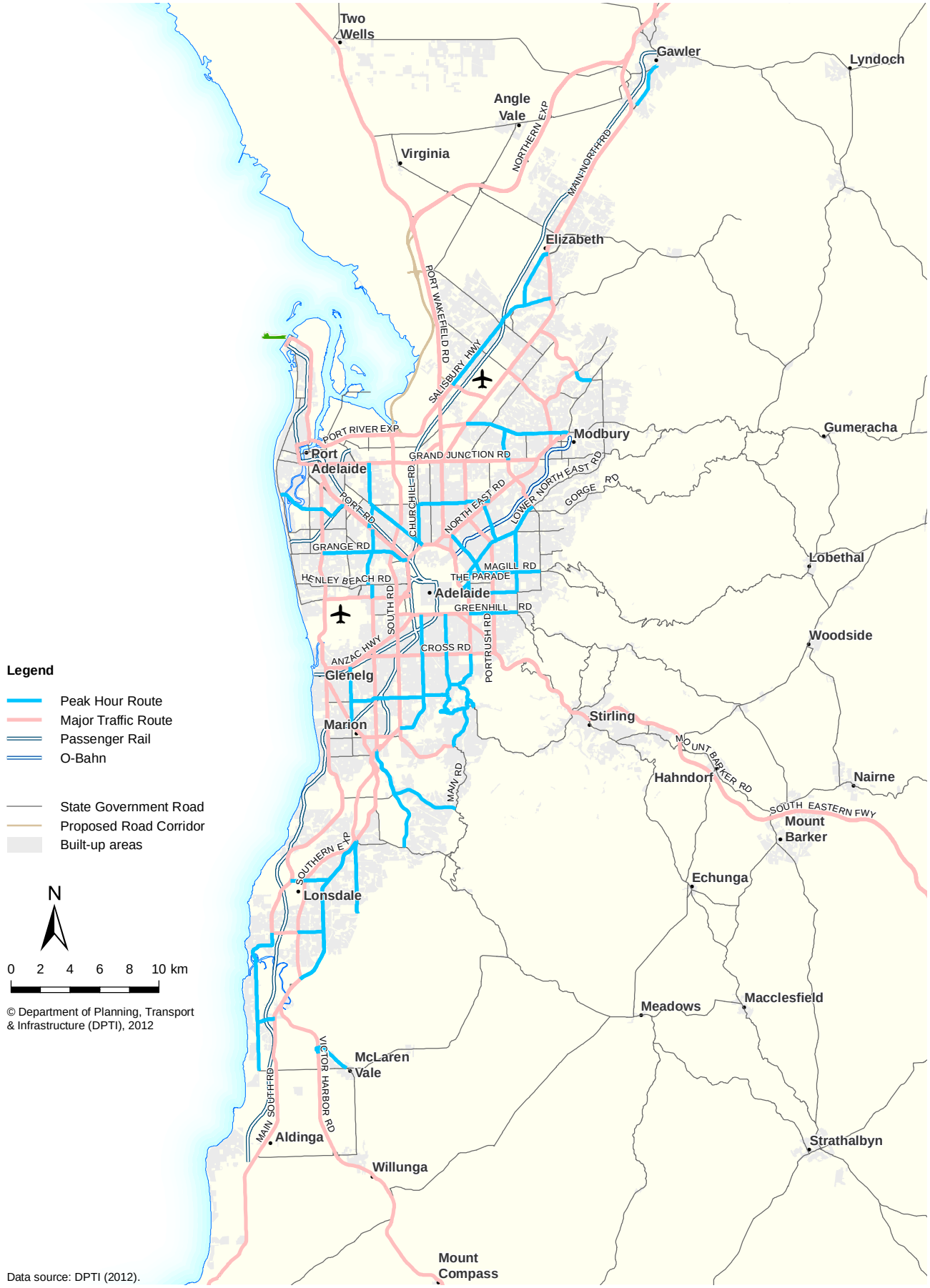
Peak hour road routes:

- Provide for longer distance trips and minimise delays during commuter peak periods;
- Cater for large traffic volumes during commuter peak periods;
- Can change their characteristics throughout the day and night, providing increased support for adjacent land uses (e.g. by allowing for parking, vehicle access and pedestrian movements) during commuter off-peak periods.

Desired Outcomes

Peak hour routes should:

- Optimise signal coordination for the high volume travel direction during commuter peak periods;
- Effectively cater for vehicle movements and reduce side friction (e.g. due to parking or vehicles entering or exiting the traffic flow) during commuter peak periods;
- Have flexible traffic management arrangements which change priority of use during commuter off-peak periods.



Data source: DPTI (2012).

Functional Hierarchy

TOURIST ROUTES

The tourism network for regional South Australia is one that provides safe and reliable routes for road users that are typically unfamiliar with the area. The tourism network consists of:

Direct/Scenic Tourist Routes

- Provide a direct link to/from key regional activity centres or key tourist destinations, and through major tourist regions.

Outback/Adventure Tourist Routes

- Scenic routes on unsealed roads through major tourist regions in unincorporated areas.

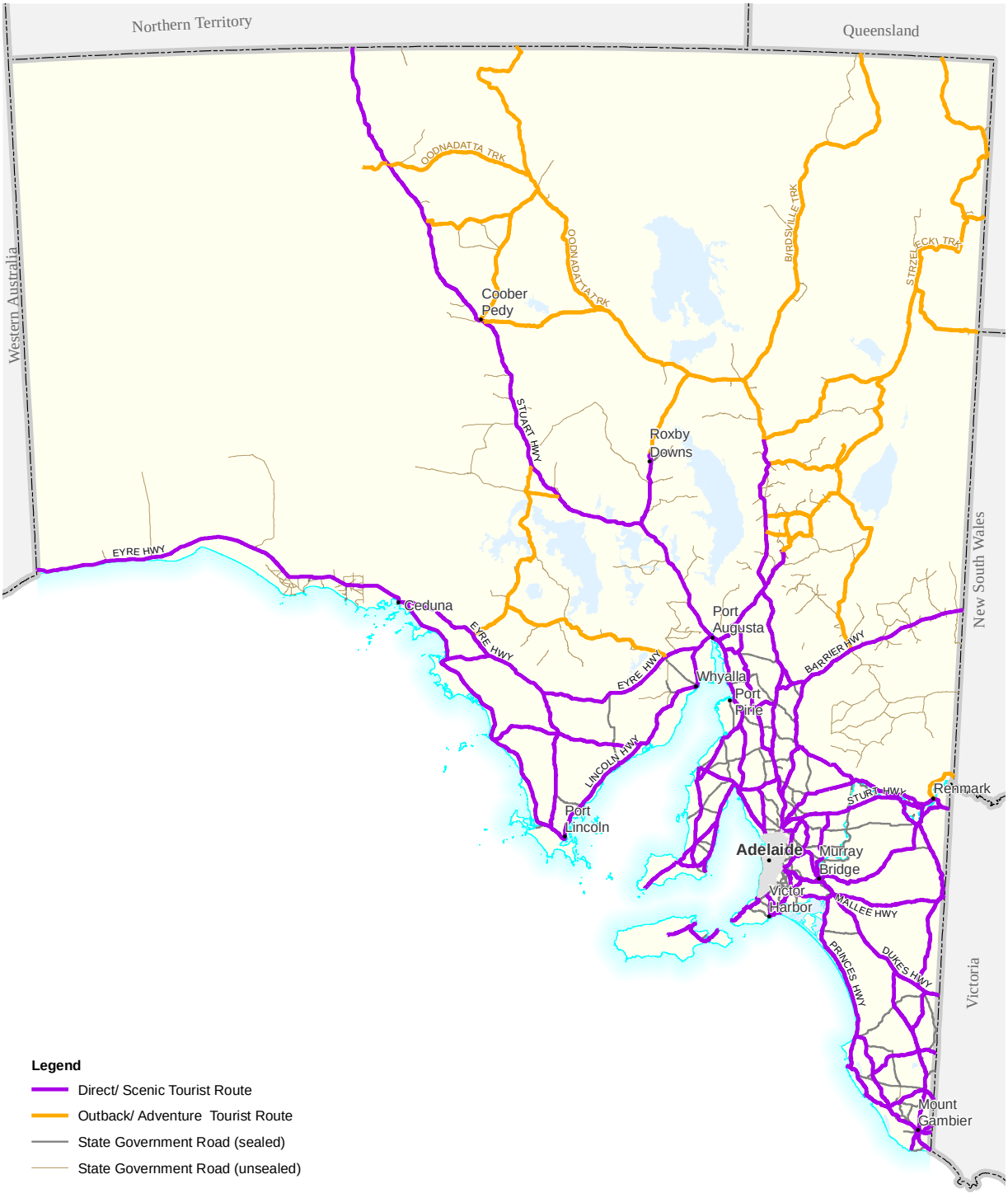
Desired Outcomes

Direct/scenic tourist routes should:

- Provide a high level of easily understood information for drivers (e.g. signs);
- Provide rest areas where appropriate.

Outback/adventure tourist routes should:

- Provide a link through major tourist regions in unincorporated areas.



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Functional Hierarchy

KEY OUTBACK ROUTES

The South Australian Government is responsible for the care, control and management of approximately 10,000km of roads in the unincorporated area of the state. The majority of these roads are unsealed and include key outback routes.

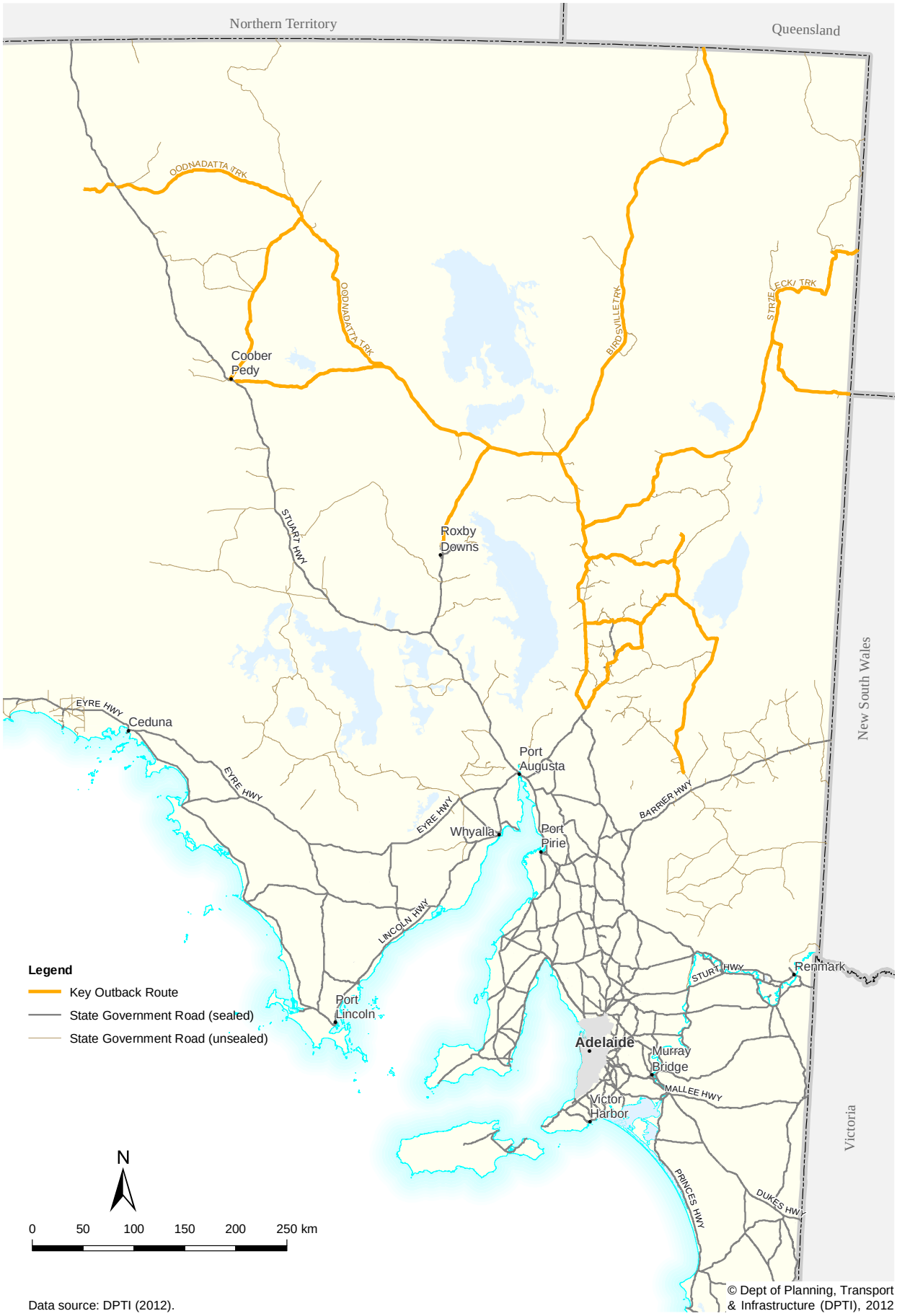
Key outback routes are those which link key centres in outback South Australia. They provide access to communities and usually provide a multi-purpose function. These routes are of relatively high standard, providing safe and reliable access for road users unfamiliar with the area and accommodate heavy vehicle traffic.

Examples of key outback routes are the Birdsville Track, the Strzelecki Track and the Oodnadatta Track.

Desired Outcomes

Key outback routes should:

- Provide safe and reliable access;
- Minimise times where the road is closed due to weather events (e.g. flooding);
- Be adequately maintained to ensure accessibility for the community, tourism, mining and pastoral activities;
- Provide a high level of easily understood information drivers (e.g. signs).


Northern Territory
Queensland
New South Wales
Victoria
OODNADATTA TRK
OODNADATTA TRK
BIRDSVILLE TRK
STRZELECKI TRK
Coober Pedy
Roxby Downs
STUART HWY
EYRE HWY
Ceduna
EYRE HWY
EYRE HWY
Port Augusta
Whyalla
Port Pirie
BARRIER HWY
LINCOLN HWY
Port Lincoln
STURT HWY
Renmark
Adelaide
Murray Bridge
MALLEE HWY
Victor Harbor
PRINCES HWY
DUKES HWY
Legend
Key Outback Route
State Government Road (sealed)
State Government Road (unsealed)
N
0 50 100 150 200 250 km
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For further information visit
www.sa.gov.au/transport/corridors

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