Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 127

Program: N/A
Division/Agency: Policy and Research
Topic: Port projections
Proof Hansard Page: 63 (19 October 2015)

Senator Bullock, Joe asked:

Mr Mrdak: Yes. Mr Pittar mentioned the fact that our Bureau of Infrastructure, Transport and Regional Economics also does forecasts of freight flows at ports, so we do have that information.
Senator BULLOCK: Have they done some projections?
Mr Mrdak: Yes.
Senator BULLOCK: Can we have those?
Mr Mrdak: Yes. We will provide that to you on notice.

Answer:

Bureau of Infrastructure, Transport and Regional Economics (BITRE) has been publishing long-term forecasts of exports and imports of containerised and non-containerised freight and sea passengers movements through Australia's five largest capital city ports and, in aggregation, all 'Other Ports' (outside of the five main capital city ports) since 2006. The latest port forecasts were published in BITRE Research Report 138 in December 2014. The report is available in the BITRE website <*www.bitre.gov.au*>

PDF of Research Report 138 can be found at Attachment A.

Australian Government
Department of Infrastructure and Regional Development
Bureau of Infrastructure, Transport and Regional Economics

Attachment A

RESEARCH REPORT 138

bitre

Maritime

Containerised and non-containerised trade through Australian ports to 2032–33

Bureau of Infrastructure, Transport and Regional Economics

Containerised and non-containerised trade through Australian ports to 2032–33

Report 138

Department of Infrastructure and Regional Development
Canberra, Australia

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Foreword

This report presents national- and port-level forecasts of exports and imports of containerised and non-containerised freight and sea passengers movements through Australia's five largest capital city ports and, in aggregation, all 'Other Ports' (outside of the five main capital city ports) over the next 20 years. They have been developed on the basis of the estimated econometric models of export and import demand and the most recent economic outlook and population growth forecasts for Australia and its major trading partners. The forecasts update BITRE's previous 2006 and 2010 forecasts.

The study was undertaken by Dr Krishna Hamal (Team Leader) and Ilia Chibaev with data support from Mano Manoranjan and Adam Malarz. David Mitchell and Dr Gary Dolman provided comments on the draft report.

BITRE acknowledges the cooperation provided by the relevant port authorities and Ports Australia in developing the sea freight movement forecasts presented in this study.

Gary Dolman
Head of Bureau
Bureau of Infrastructure, Transport and Regional Economics
December 2014

At a glance

This report presents forecasts of exports and imports of containerised and non-containerised freight and sea passengers movements through Australia's five largest capital city ports and, in aggregation, all 'Other Ports' (outside of the five main capital city ports) over the next 20 years. The forecasts are based on econometric models of containerised and non-containerised export and import demand, combined with the most recent economic outlook and population growth forecasts for Australia and its major trading partners. The forecasts presented in this report update those previously published by the Bureau of Infrastructure, Transport and Regional Economics in BITRE (2006 and 2010).

The forecasts imply that Australia's sea trade will double over the next 20 years, largely due to the continuing positive economic outlook for Australia and its major trading partners. Total containerised trade through Australian ports, which is evenly distributed between exports (49.5 per cent by mass) and imports (50.5 per cent), is projected to increase by 5.1 per cent a year over the next 20 years, from 7.2 million twenty-foot equivalent units (TEUs) in 2012–13 to 19.4 million TEUs in 2032–33. It is forecast to increase annually by 6.2 per cent per year in Brisbane, 4.5 per cent in Sydney, 4.8 per cent in Melbourne, 5.4 per cent in Adelaide, 5.8 per cent in Fremantle and 5.1 per cent across all Other Ports. By 2032–33, the total volume of containerised trade is projected to reach to 3.6 million TEUs in Brisbane, 5.2 million TEUs in Sydney, 6.4 million TEUs in Melbourne, around 1.0 million TEUs in Adelaide, 2.1 million TEUs in Fremantle and 1.2 million TEUs across all Other Ports.

Australia's non-containerised trade is dominated by exports, which accounted for 89.6 per cent of total non-containerised trade volumes in 2012–13. Imports accounted for only 10.4 per cent of total non-containerised trade. Total non-containerised trade through Australian ports is projected to increase by 3.9 per cent a year over the next 20 years, from 1.1 billion tonnes in 2012–13 to 2.3 billion tonnes in 2032–33. It is forecast to increase annually by 2.8 per cent in Brisbane, 0.7 per cent in Sydney, 0.6 per cent in Melbourne, 4.6 per cent in Adelaide, 1.1 per cent in Fremantle and 4.0 per cent across all Other Ports. The total volume of non-containerised trade is forecast to increase to 48.9 million tonnes in Brisbane, 15.7 million tonnes in Sydney, 13.2 million tonnes in Melbourne, around 27.3 million tonnes in Adelaide, 31.9 million tonnes in Fremantle and 2,136.7 million (or 2.1 billion) tonnes across all Other Ports, by 2032–33.

The long-term outlook for the cruise shipping industry is also positive, largely due to the projected economic growth in source countries of cruise passengers, particularly the USA. The total (inbound plus outbound) number of cruise ship passengers through Australian ports is projected to increase by 1.8 per cent a year over the next 20 years, from 41 000 in 2012–13 to 59 100 in 2032–33.

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Executive summary

Background

Shipping is the main mode of transport for Australia's exports and imports. In 2012–13, total trade in commodities through Australian ports was 1.1 billion tonnes, comprising 992.7 million tonnes of exports and 140.2 million tonnes of imports. Sea freight accounted for 99.7 and 98.4 per cent of Australia's total merchandise exports and imports, by mass, respectively, in 2012–13, with the remainder by air. Over the past decade trade volumes through Australian ports have grown by 83.8 per cent (equivalent to average annual growth of 6.3 per cent per annum). Over the same period container movements through Australian ports have grown by 64.9 per cent (equivalent to average annual growth of 5.1 per cent per annum).

Forecasts of likely future containerised and non-containerised trade through ports are essential to informed planning and management of Australian port infrastructure and associated public policy. This study presents the updated forecasts of containerised and non-containerised through Australian ports over the next 20 years.

The forecasts presented in this report update previous forecasts published by the Bureau of Infrastructure, Transport and Regional Economics in BITRE (2002, 2006 and 2010). The updated forecasts are based on re-estimated econometric models of containerised and non-containerised export and import demand, incorporating the latest available port trade data, and the most recent economic outlook and population growth for Australia and its major trading partners.

Freight forecasting models

Econometric models of containerised export and import demand have been used to forecast the volume of containerised and non-containerised exports and imports at the port level. The models, which are specified in terms of real income, population and exchange rates, are estimated using annual historical data. Port-level forecasts are presented for Australia's five main capital city ports—Brisbane, Sydney, Melbourne, Adelaide and Fremantle—and, in aggregation, all other ports, hereafter referred to as 'Other Ports' (that is, all Australian ports excluding these five main capital city ports). In 2012–13, the five main capital city ports accounted for about 93.8 per cent of Australia's total containerised trade, whereas Other Ports accounted 91.7 per cent of Australia's total non-containerised trade.

Similarly, forecasts of non-containerised export and import volumes are derived at the national and port level on the basis of econometric models which are specified in terms of real gross domestic product (GDP), population, export prices, import prices and exchange rates.

These estimates are also broadly consistent with BITRE's commodity-specific based export and import forecasts reported separately in BITRE (forthcoming).

Data sources

In this study, historical data were used to estimate the econometric models of containerised and non-containerised export and import demand. Historical data on exports and imports of full and empty containers were obtained from Ports Australia (2014), Port of Brisbane (2013a & 2013b), Sydney Ports (2013), Port of Melbourne (2013 & 2014), Flinders Ports (2014) and Fremantle Ports (2013). Sea passenger movement data was sourced from ABS (2013b). Historical GDP growth, exchange rates, export prices and import prices were sourced from Deloitte Access Economics (2014). Australian population estimates were sourced from ABS (2014), while overseas population estimates for the United States of America (USA), Japan and the broader OECD have been sourced from OECD (2014a & 2014b) and IMF (2014).

Port exports and imports

Importantly, the port export and import estimates presented in this report are based on Ports Australia's definition, which records all outgoing cargoes as 'exports' and all incoming cargoes as 'imports'. This definition includes outgoing and incoming domestic cargoes, shipped by coastal shipping services between Australian ports, and hence differs from the usual national accounting convention that restricts exports and imports purely to overseas trade-related movements. Coastal shipping volumes comprise around 9 per cent of total port cargo volumes, across all Australian ports, and between 16 and 25 per cent of major capital city port volumes, and so the main drivers of total cargo volumes through these ports are predominantly international trade related. Nonetheless, the 'export' and 'import' trade volumes reported here will differ slightly from official trade statistics.

Forecast Assumptions

Long-run assumptions about future population growth, economic growth, exchange rates, export prices and import prices are used to develop the long-run forecasts of containerised and non-containerised trade and sea passenger numbers through Australian ports. Assumptions about future Australian population and real GDP growth were sourced from ABS (2013a) and the Treasury (2010 and 2014), respectively, assumptions about likely future population and real GDP growth for the USA, Japan and the broader OECD were sourced from OECD (2014b) and IMF (2014). All other macroeconomic assumptions were sourced from Deloitte Access Economics (2014).

Over the next twenty years, real GDP is forecast to increase by an annual average of 2.7 per cent a year for Australia, 2.5 per cent a year across the OECD, 1.3 per cent a year in Japan, 2.3 per cent a year for the USA and 6.7 per cent a year for China. This is below average trend growth experienced in Australia, USA and China and slightly above average trend growth experienced across all OECD countries and Japan over the past two decades. Consequently, these assumptions will broadly act to lower containerised and non-containerised import volume growth through Australian ports compared to the historical trend.

With regard to exchange rates, the value of the Australian dollar is assumed to decrease against the US dollar over the forecast period, from around US$1.04 per Australian dollar in 2012–13 back to a value closer to the long-term average of US$0.75 per Australian dollar in 2029–30 and onwards. A lower Australian dollar, against the US dollar, dampens Australia's import demand and improves the competitiveness of Australia's exports.

The population of Australia, USA and all OECD countries are projected to increase by an average of 1.5, 0.8 and 0.5 per cent a year, respectively, over the next 20 years. The population of Japan is forecast to decline by 0.4 per cent a year over the forecast period.

Freight shipping forecasts

Importantly, the forecasts of containerised and non-containerised exports and imports presented in this report are 'unconstrained', in that they are based solely on demand-side parameters and do not factor in supply-side factors, which could constrain demand. Supply-side factors are not included because of the lack of long time-series data on variables influencing supply of port activities. Port-level trade forecasts are summarised in Tables ES.1 and ES.2.

The forecasts inherently assume that the historical relationship between port activity and GDP and other economic factors will hold into the future. If this is not the case, the forecasts presented in this report may over- or under-state future growth.

Port of Brisbane

The Port of Brisbane is the third largest container port in Australia, by volume (after Melbourne and Sydney), accounting for 14.9 per cent of Australia's total containerised trade, measured in TEUs. Total containerised trade through the Port of Brisbane increased by 8.1 per cent a year over the last 14 years to 1.1 million TEUs in 2012–13. It is projected to increase by 6.2 per cent a year over the next 20 years to 3.6 million TEUs in 2032–33, including annual growth of 5.0 per cent in full container exports and 6.6 per cent in full container imports over the forecast period. Asia is projected to remain Brisbane's main regional export market in terms of tonnage.

Table ES.1 Containerised trade by port

Port	Annual average growth rate		Trade volume	
	Actual 1998–99 to 2012–13	Forecast 2012–13 to 2032–33	Actual 2012–13	Forecast 2032–33
	per cent per annum		000 TEUs	
Brisbane	8.1	6.2	1 070	3 563
Sydney	6.5	4.5	2 126	5 155
Melbourne	5.9	4.8	2 512	6 415
Adelaide	7.7	5.4	339	972
Fremantle	6.6	5.8	670	2 055
Other Ports	5.7	5.1	447	1 218
All Ports	6.5	5.1	7 165	19 377

Source: BITRE estimates.

Total non-containerised trade through the Port of Brisbane increased by 3.7 per cent a year over the last 14 years, to 28.4 million tonnes in 2012–13, comprising 14.5 million tonnes of exports and 13.9 million tonnes of imports. It is projected to increase by 2.8 per cent a year over the next twenty years to 48.9 million tonnes in 2032–33. Non-containerised exports and imports are forecast to increase by 3.8 and 1.4 per cent a year, respectively, over the forecast period.

Table ES.2 Non-containerised trade by port

Port	Annual average growth rate		Trade volume	
	Actual 1998–99 to 2012–13	Forecast 2012–13 to 2032–33	Actual 2012–13	Forecast 2032–33
	per cent per annum		million tonnes	
Brisbane	3.7	2.8	28.4	48.9
Sydney	-0.2	0.7	13.7	15.7
Melbourne	1.5	0.6	11.8	13.2
Adelaide	6.6	4.6	11.2	27.3
Fremantle	1.7	1.1	25.7	31.9
Other Ports	5.9	4.0	978.7	2 136.7
All Ports	5.5	3.9	1 069.4	2 277.5

Source: BITRE estimates.

Sydney region ports

Sydney region ports are here defined to include Port Botany and the bulk and general cargo and cruise facilities within Sydney Harbour, which include Glebe Island and White Bay. Port Botany is Australia's second largest container port, accounting for 29.7 per cent of Australia's total containerised trade measured in TEUs. Total containerised trade through Sydney region ports increased by 6.5 per cent per year over the last 14 years to 2.1 million TEUs in 2012–13, and it is projected to increase by 4.5 per cent a year over the next 20 years to 5.2 million TEUs in 2032–33. Full container exports and imports through Sydney region ports are forecast to increase by 3.4 and 4.6 per cent a year, respectively, over the forecast period.

The significantly slower projected growth in total containerised trade through Sydney region ports (4.5 per cent per annum), in comparison with recent historical trends (6.5 per cent per annum), is driven primarily by projected slower domestic GDP growth and the assumed fall in the exchange rate, in combination with the relatively high estimated income and exchange rate elasticities for Sydney region ports' full containerised imports. In comparison, projected future containerised trade growth through the Port of Melbourne (4.8 per cent per annum), discussed further below, while projected to be slower than historical growth (5.9 per cent per annum), does not decline as sharply as that of Sydney, principally for two reasons. Firstly, Victorian population growth, a factor in containerised import demand through the Port of Melbourne, is projected to grow relatively faster than New South Wales' population, a factor in Sydney region ports import demand model. Secondly, full containerised import demand is more elastic to changes in income and exchange rates in Sydney than in Melbourne, meaning reductions in GDP, population and the exchange rate result in a larger drop in full containerised imports in Sydney than in Melbourne. Also, imports of empty containers are projected to grow

at a higher rate in Melbourne than in Sydney to service full containerised exports, which is forecast to grow at a relatively higher rate in Melbourne than in Sydney.

Non-containerised trade through Sydney region ports is limited to crude and refined petroleum products, liquids and gas, cement, gypsum and sugar, and accounted for approximately 1.3 per cent of Australia's total non-containerised trade in 2012–13. The volume of total non-containerised trade through Sydney region ports has declined slightly over the last 14 years, from 13.9 million tonnes in 1998–99 to 13.7 million tonnes in 2012–13. While the closure of the Shell oil refinery at Clyde in September 2012 and foreshadowed closure of the Caltex oil refinery at Kurnell, scheduled for mid-2014, will reduce the demand for crude imports, it is anticipated that this trade will be replaced by increased refined petroleum product imports, with little overall impact on import volumes.

The volume of non-containerised exports through Sydney region ports is expected to remain at its current level—0.9 million tonnes—over next 20 years, whereas the combined volume of imports through these ports is projected to increase by 0.7 per cent a year over the same period, to 14.8 million tonnes in 2032–33. As a result, total non-containerised trade through Sydney region ports is projected to increase by 0.7 per cent a year over the next twenty years to 15.7 million tonnes in 2032–33.

Port of Melbourne

The Port of Melbourne is the largest container port in Australia, accounting for 35.1 per cent of Australia's total containerised trade. In 2012–13, total containerised trade through the Port of Melbourne was 2.5 million TEUs.

Total containerised trade through the Port of Melbourne, which has increased by 5.9 per cent a year over the last 14 years, is projected to increase by 4.8 per cent a year over the next 20 years to 6.4 million TEUs in 2032–33. The slightly lower rate of growth projected over the forecast period is due to the lower import growth forecast resulting from projected lower future economic growth in Australia and the assumed depreciation of the Australian dollar against the US dollar. Full container exports and imports are forecast to grow annually by 4.3 and 5.0 per cent over the next 20 years to around 2.0 and 3.0 million TEUs in 2032–33, respectively.

Total non-containerised trade through the Port of Melbourne increased by 1.5 per cent a year over the last 14 years, to 11.8 million tonnes in 2012–13. It is projected to increase by 0.6 per cent a year over the next 20 years, to 13.2 million tonnes in 2032–33. Non-containerised exports and imports through the Port of Melbourne are projected to rise by 0.4 and 0.7 per cent a year over the forecast period to 3.0 and 10.3 million tonnes, respectively.

Port Adelaide

Port Adelaide's total containerised trade, which has increased by 7.7 per cent a year over the last 14 years to 339 000 TEUs in 2012–13, is projected to increase by 5.4 per cent a year over the next 20 years to 972 000 TEUs in 2032–33. The lower projected growth rate over the forecast period is largely due to expected slower economic growth in Australia and its major trading partners. Full container exports and imports are forecast to increase by 5.3 and

5.8 per cent a year over the forecast period, to 400 000 and 395 000 TEUs in 2032–33, respectively.

Total non-containerised trade through Port Adelaide increased by 6.6 per cent a year over the last 14 years to 11.2 million tonnes in 2012–13, and it is projected to increase by 4.6 per cent a year over the next 20 years to 27.3 million tonnes in 2032–33. Non-containerised exports and imports through Port Adelaide are forecast to increase by 4.4 and 4.8 per cent a year over the same period to 14.1 and 13.2 million tonnes in 2032–33, respectively.

Port of Fremantle

Total containerised trade through the Port of Fremantle, which has increased by 6.6 per cent a year over the last 14 years to 670 000 TEUs in 2012–13, is projected to increase by 5.8 per cent a year over the next 20 years, to 2.1 million TEUs in 2032–33. The projected slower economic growth in Australia and its major trading partners is the main factor influencing the slower growth over the forecast period, compared with the historical growth rate over the last 14 years. Full containerised exports are forecast to increase by 3.3 per cent a year over the forecast period to 337 000 TEUs in 2032–33, whereas full containerised imports are projected to increase by 5.9 per cent a year over the same period to 1.0 million TEUs in 2032–33.

Total non-containerised trade through the Port of Fremantle increased by 1.7 per cent a year over the last 14 years, to 25.7 million tonnes in 2012–13. It is projected to increase by 1.1 per cent a year over the next 20 years to 31.9 million tonnes in 2032–33. Non-containerised exports are forecast to increase by 0.9 per cent a year over the forecast period to 17.9 million tonnes in 2032–33; whereas non-containerised imports are projected to increase by 1.4 per cent a year over the same period to 14.0 million tonnes in 2032–33.

Other Ports

'Other Ports' in this study includes all other Australian ports, excluding the five major city ports—Brisbane, Sydney, Melbourne, Adelaide and Fremantle. Among the larger ports that are included in Other Ports are the major iron ore and coal export ports: Port Hedland, Dampier, Port Walcott, Newcastle, Gladstone and Hay Point; and regional ports at: Cairns, Devonport, Burnie, Launceston, Townsville, Hobart, Rockhampton and Darwin.

Total containerised trade through Other Ports increased by 5.7 per cent a year over the last 14 years to 447 000 TEUs in 2012–13. It is projected to increase by 5.1 per cent a year over the next 20 years to 1.2 million TEUs in 2032–33. Full containerised exports are forecast to increase by 2.8 per cent a year during the forecast period to 287 000 TEUs in 2032–33, whereas full containerised imports are projected to increase by 6.0 per cent a year to 436 000 TEUs in 2032–33.

Total non-containerised trade through Other Ports, which increased by 5.9 per cent a year over the last 14 years to around 1.0 billion tonnes in 2012–13, is projected to increase by 4.0 per cent a year over the next 20 years to 2.1 billion tonnes in 2032–33. Non-containerised exports, which account for 93.9 per cent of the total non-containerised trade through Other Ports—predominated by iron ore and coal—are forecast to increase by 4.1 per cent a year over the next 20 years to 2.1 billion tonnes in 2032–33. In contrast, non-containerised imports

through Other Ports are projected to increase by 0.5 per cent a year over the forecast period to 65.4 million tonnes in 2032–33.

All Ports

Across all Australian ports, total containerised trade increased by 6.5 per cent a year over the last 14 years to 7.2 million TEUs in 2012–13, and it is projected to increase by 5.1 per cent a year over the next 20 years to 19.4 million TEUs in 2032–33. The forecast slowing of growth in total containerised trade is largely due to the maturing of Australia's export and import markets, expected slower economic growth in Australia and its major trading partners and the assumed depreciation of the Australian dollar against the US dollar. Full containerised exports and imports are forecast to increase by 4.2 and 5.3 per cent a year over the forecast period to 4.8 and 9.2 million TEUs in 2032–33, respectively.

Australia's non-containerised trade, which includes dry bulk—including coal and iron ore—liquid bulk—primarily oil and gas—bunker fuels and other non-containerised commodities, increased by 5.5 per cent a year over the last 14 years to 1.1 billion tonnes in 2012–13. It is projected to increase by 3.9 per cent a year over the next 20 years to 2.3 billion tonnes in 2032–33. Total non-containerised exports, which account for 89.6 per cent of the total non-containerised trade through all Australian ports, are forecast to increase by 4.1 per cent a year over the next 20 years to 2.1 billion tonnes in 2032–33; whereas non-containerised imports are expected to increase by 1.1 per cent a year over the same period to 138.5 million tonnes in 2032–33.

Cruise shipping forecasts

In this study, econometric models of inbound and outbound sea passenger numbers were used to forecast the number of sea passengers passing through Australian ports. The models, which are specified in terms of population, real income and exchange rates, were estimated using historical data covering the 29-year period from 1983–84 to 2012–13.

The total number of international sea passengers passing through Australian ports has increased by 2.5 per cent a year over the last 29 years to 41 000 passengers in 2012–13. It is projected to increase by 1.8 per cent a year over the next 20 years to 59 100 passengers in 2032–33. Projected slower economic growth in Australia and the USA, and the lower value of the Australian dollar against the US dollar are expected to slow growth in outbound sea passengers but boost growth in inbound sea passengers, compared with the historical growth experienced over the last 29 years. The number of inbound sea passengers, which increased by 1.9 per cent a year over the last 29 years to 15 500 in 2012–13, is projected to increase annually by 2.9 per cent over the forecast period to 27 300 in 2032–33. On the other hand, the number of outbound sea passengers, which increased by 3.0 per cent a year over the last 14 years to 25 500 in 2012–13, is forecast to increase by 1.1 per cent a year over the next 20 years to 31 800 in 2032–33.

CHAPTER 1
Introduction

Australia is an island nation and many of its principal export and import commodities are relatively dense, low-value commodities. Hence, shipping accounts for over 98 per cent of Australia's total trade, by weight. In 2012–13, total trade in commodities through Australian ports was 1.1 billion tonnes, comprising 992.7 million tonnes of exports and 140.2 million tonnes of imports. Sea freight accounted for 99.7 and 98.4 per cent of Australia's total merchandise exports and imports, by mass, respectively, in the same year. Over the past decade trade volumes through Australia's ports have grown by 83.8 per cent. Over the same period container movements through Australia's ports have grown by 64.9 per cent.

Non-containerised cargoes, which include coal, iron ore and the majority of grain exports, currently account for 94.4 per cent of Australia's total sea cargo by mass, whereas containerised cargoes account for 5.6 per cent by mass.

Long-term forecasts of containerised and non-containerised trade are useful to governments and port authorities to inform planning and development of capacity and infrastructure at Australian ports, as well as for assessment and implementation of appropriate security measures at those ports. For these reasons, BITRE has been publishing port-trade forecasts since 2002.

Ports Australia (2013) has also advocated adoption of long-term master planning processes across Australian ports to help improve land use planning and corridor protection in and around ports and, thereby, improve productivity outcomes, increase investment confidence and protect nearby environments. Such plans would typically be informed by current and projected future trade patterns and volumes.

This report presents separate long term forecasts of containerised and non-containerised trade for Australia's five largest capital city ports and, in aggregation, all Other Ports, to 2032–33. The five capital city ports included in this report are the Port of Brisbane, 'Sydney region ports'—comprising Port Botany and Sydney Harbour terminals—the Port of Melbourne, Port Adelaide and the Port of Fremantle. 'Other Ports' refers to all Australian ports excluding the five capital city ports and the term 'All Ports' refers to the total trade across all Australian ports.

The forecasts presented in this report update those previously published by the Bureau of Infrastructure, Transport and Regional Economics in BITRE (2002, 2006 and 2010). The forecasts have been updated on the basis of re-estimated econometric models of containerised and non-containerised export and import demand and the most recent economic outlook and population growth for Australia and its major trading partners. The econometric models were re-estimated by adding recently available data on port-specific trade activity to the historical data series that were used to estimate the models in previous BITRE studies.

This study also updates national-level forecasts of Australia's inbound and outbound sea passenger numbers. However, port-level forecasts of sea passenger numbers could not be developed due to a lack of recent time series data covering port-specific sea passenger movements.

Forecasts of freight and cruise ship movements, last published in BITRE (2006 and 2010), also could not be updated due to lack of recent historical data on ship movements by the size and type of ship (bulk, container or general cargo ship) at the time of preparing the shipping forecasts presented in this report.

Objectives

The main objectives of this study are:

- to forecast the volume of containerised and non-containerised trade at both the port- and national-level, and
- to forecast international sea passenger movements at the national-level.

Outline of the report

The remainder of the report is structured as follows. Chapter 2 presents the econometric models of containerised and non-containerised trade demand, including model specification and parameter estimates, and briefly discusses the implications of the empirical results. Historical time series data on trade, and their sources, as well as assumptions about macroeconomic and population variables, are discussed in Chapter 3.

In Chapter 4, the national and port level forecasts of containerised and non-containerised trade are presented in detail. Forecasts of sea passenger movements are provided in Chapter 5. Chapter 6 discusses the sensitivity of the forecasts to variations in future GDP growth and exchange rate assumptions. Some concluding remarks are presented in Chapter 7.

CHAPTER 2

Freight forecasting models

Introduction

In this study, econometric models were used to forecast containerised and non-containerised trade and sea passenger numbers over the next 20 years. Separate port-specific models were used to forecast containerised and non-containerised trade, developed for each of the five main capital city ports and, in aggregation, all Other Ports in Australia. Forecasts of sea passenger numbers were only produced at the national level, not at the port level, due to the lack of reliable long time-series data on sea passenger numbers through each port. The specification of the forecasting models, and their parameter estimates, are discussed in detail in the later sections of this chapter.

As mentioned in BITRE (2006), econometric models have been preferred over time trend or univariate time-series models to forecast containerised and non-containerised trade at the port level for the reasons that they can accommodate several economic and non-economic explanatory variables, they are easy to estimate, provide superior fit and the estimated parameters can be directly interpreted as elasticities. Econometric models have been widely used in many tourism and transport demand forecasting studies in the past.

In these models, population, income, exchange rates and export and import prices are included as drivers of export and import demand of containerised and non-containerised trade. Separate forecasts for exports and imports of both containerised and non-containerised trade are presented in this report. The models were estimated using annual data and the forecasts are also annual. Importantly, the data used here to forecast port cargo 'exports' and 'imports' also includes domestic cargo movements through ports. Domestic coastal movements comprise only a small share of total movements through ports, and so don't invalidate the port movement forecasts. However, the port 'export' and 'import' estimates presented here will differ from official trade statistics (See Box 1.1).

Unlike in previous BITRE studies, forecasts of ship movements could not be developed due to the unavailability of recent historical data on ship movements, by size and type of ship (bulk, container or general cargo ship) at the time of preparing the shipping forecasts presented in this report.

Australia is also a major exporter of agricultural commodities, particularly grains, meat and livestock, sugar and dairy products. Agricultural export volumes can fluctuate significantly from year-to-year depending on actual climatic conditions, world commodity prices and, most significantly, domestic production volumes. For these commodities, crop planting, weather

conditions and domestic demand are likely to be more relevant indicators of agricultural export volumes than overseas demand. Consequently, the accuracy of export forecasts could arguably be improved by segmenting trade by port and commodity and estimating each component separately. However, this was beyond the scope of this study due principally to the lack of readily available long time-series commodity-level export and import volumes by port. A separate BITRE-study is investigating expected future export and import volumes for major traded commodities through Australian ports (BITRE forthcoming).

Box 1.1 Definition – exports and imports

The port export and import estimates presented in this report are based on Ports Australia's trade statistics, which defines all outgoing cargoes loaded at Australian ports as 'exports' and all incoming cargoes discharged at Australian ports as 'imports'. This includes outgoing and incoming domestic cargoes, shipped by coastal shipping services between Australian ports. This definition differs from the usual national accounting convention that restricts exports and imports purely to overseas trade-related movements, and differs from the treatment in BITRE (2006). Accordingly, this report, as much as possible, distinguishes 'port exports' and 'port imports'—i.e. all port outgoing and incoming cargo—from trade 'exports' and trade 'imports'.

Coastal shipping volumes are around 9 per cent of total port trade volumes, across all Australian ports, and between 16 and 25 per cent of major capital city port volumes, and so the main drivers of total cargo volumes through these ports are predominantly international trade related. Consequently, the main drivers of overall port cargo volumes are predominantly international trade related.

Containerised and non-containerised trade forecasting models

As in previous BITRE port container trade forecasting studies, single equation port-specific models are used in this study to forecast the volume of containerised and non-containerised trade at the port level.

In this study, separate models of full containerised export and import volumes and empty import containers, all measured in twenty-foot equivalent units (TEUs), are estimated separately for each port. Empty export containers are derived as the residual of full and empty imports less full exports. The volumes of full and empty containerised exports and imports are then added to derive total containerised trade in TEUs.

Similarly, separate models of non-containerised exports and imports are derived, to account for the different factors influencing each. The models are then used to forecast volumes of non-containerised exports and imports, which are then combined to derive forecasts of total non-containerised trade at port and national levels.

The econometric models of containerised and non-containerised exports and imports are discussed in the following sections.

Full container exports

The model of full container exports is specified in terms of population, real income, exchange rates and the number of full container imports. The model is presented in equation (2.1).

$$\ln PFUX_{it} = \alpha_{i0} + \alpha_{i1} \ln PGDP_{jt} + \alpha_{i2} \ln EXUSAU_{t} + \alpha_{i3} \ln FUM_{it} + u_{it} \quad (2.1)$$

where,

$PFUX_{it}$ = per capita full container exports from the i-th port of Australia in year t in TEUs;

$PGDP_{jt}$ = per capita real Gross Domestic Product (GDP) in the j-th export destination country in year t in billion US dollars;

$EXUSAU_{t}$ = exchange rate of the US dollar per Australian dollar in year t;

FUM_{it} = full container imports to the i-th port in year t in TEUs;

u = error term;

α's = regression coefficients;

i = i-th port (1 = Port of Brisbane, 2 = Sydney region ports, 3 = Port of Melbourne, 4 = Port of Adelaide and 5 = Port of Fremantle and 6 = Other Ports);

j = j-th export destination country; and

t = time subscript.

Since OECD countries currently account for approximately 43.0 per cent of the total value of Australia's goods and services exports, the population and real income of all OECD countries combined are used as a proxy for the population and real income of export destinations for goods shipped from Brisbane, Sydney, Melbourne, Adelaide and Other Ports. In the case of the Port of Fremantle, Japan was the main export destination for goods shipped from Fremantle over most years of the model estimation period, although China has overtaken Japan more recently. Hence, the population and real income of Japan are used as a proxy for the population and real income of all export markets for modelling exports through Fremantle. In 2011–12, around 29 800 full container export TEUs were destined for China and around 22 000 full container export TEUs for Japan.

Furthermore, most OECD countries are relatively mature export markets. Hence, the use of total OECD population and income to represent Australia's container export destinations is expected to provide more stable long-run elasticities of container export demand.

In Australia, two sizes of containers are most commonly used to transport exports and imports—twenty-foot and forty-foot containers. Although twenty-foot containers are mostly preferred for Australian exports and forty-foot containers for Australian imports, they are to some degree interchangeable, and Australian shippers use a proportion of empty import containers to load their export cargo. Hence, the full container export model also includes the number of import containers (i.e. containers emptied after unloading imported cargo) as one of the explanatory variables. In this study, full container imports are used as a proxy variable for the number of empty import containers available for servicing exports.

In the model, full container exports and real GDP were transformed to per capita equivalent measures to avoid the consequences of a possible collinearity between population and real GDP. The model is empirically estimated using historical data from 1993–94 to 2012–13 and the main estimated regression results are presented in Table 2.1. The results show that the estimated models are a good fit with adjusted R-square values ranging from 0.67 to 0.99, implying that the predictive power of the models is reasonably high.

According to the estimated elasticities, per capita real income is the main driver of full container exports. The estimates imply that a one per cent increase (decrease) in per capita real income in Australia's main export markets will result in an increase (decrease) in per capita full container exports of 3.4 per cent in Brisbane, 2.2 per cent in Sydney, 1.3 per cent in Melbourne, 3.6 per cent in Adelaide, 2.5 per cent in Fremantle and 1.2 per cent across Other Ports. The elasticities also show that full container exports are negatively influenced by the exchange rate in all individual ports and generally positively by the number of import containers for Melbourne, Adelaide, Fremantle and across all Other Ports. The number of import containers is not statistically significant for Brisbane and Sydney.

Table 2.1 Estimated regression statistics of per capita full container export demand

	Elasticity			
Port	Income	Exchange rate	Import containers	Adjusted-R2 value
Brisbane	3.404*	-0.232*	NS	0.98
Sydney	2.230*	-0.108	NS	0.99
Melbourne	1.258*	-0.075*	0.373*	0.99
Adelaide	3.622*	-0.037	0.178	0.97
Fremantle	2.486*	-0.476*	0.620*	0.99
Other Ports	1.194	-0.827*	0.763	0.67

*Statistically highly significant. NS = Statistically not significant.

Source: BITRE estimates.

Full container imports

The econometric model of full container imports presented in equation (2.2) is specified in terms of population, real GDP and exchange rates.

$$\ln PFUM_{it} = \beta_{i0} + \beta_{i1} \ln PGDPAU_t + \beta_{i2} \ln EXUSAU_t + e_{it} \quad (2.2)$$

where,

$PFUM_{it}$ = per capita full container imports to the i-th port in year t in TEUs;

$PGDPAU_t$ = per capita real Gross Domestic Product (GDP) of Australia in year t in million dollars;

$EXUSAU_t$ = exchange rate of the US dollar per Australian dollar in year t;

e = error term;

β's = regression parameters;

i = i-th port (1 = Port of Brisbane, 2 = Sydney region ports, 3 = Port of Melbourne, 4 = Port of Adelaide and 5 = Port of Fremantle and 6 = Other Ports); and

t = time subscript.

In the model, Australian GDP is used as a proxy for the income of local residents, because long-term forecasts are readily available. While Gross State Product (GSP) might provide a more representative measure of local incomes, long-term forecasts of GSP are generally not available, limiting its suitability for long-term forecasting.

Historical time-series data from 1993–94 to 2012–13 were used to estimate the full container import model. The estimated regression statistics of the model presented in Table 2.2 suggest that the model has good predictive power, with adjusted R-square values ranging from 0.90 to 0.99, and the estimated income elasticities are highly statistically significant for all ports. The exchange rate elasticities are significant for all capital city ports, except Fremantle and all Other Ports. While not statistically significant, the exchange rate variable is included in the containerised import model of the Port of Fremantle as it increases the predictive power of the model and the estimated elasticity is of the expected (positive) sign.

Table 2.2 Estimated regression statistics of per capita full container import demand

	Elasticity		
Port	Income	Exchange rate	Adjusted-R2 value
Brisbane	4.485*	0.107**	0.99
Sydney	2.830*	0.238*	0.99
Melbourne	2.596*	0.185*	0.99
Adelaide	4.043*	0.263**	0.96
Fremantle	3.240*	0.040	0.98
Other Ports	4.502*	NS	0.90

*Statistically significant at or below 0.10 level of significance. **Statistically significant at or below 0.30 level of significance.
NS = Statistically not significant.
Source: BITRE estimates.

Real per capita income is observed to be the main driver of full container imports. A one per cent increase (decrease) in per capita real GDP leads per capita full container imports to increase (decrease) by 4.5 per cent in Brisbane, 2.8 per cent in Sydney, 2.6 per cent in Melbourne, 4.0 per cent in Adelaide and 3.2 per cent in Fremantle and 4.5 per cent in Other Ports. Similarly, the estimated exchange rate elasticity implies that the volume of full container imports increases (decreases) with the appreciation (depreciation) of the Australian dollar against the US dollar, although the estimated elasticities are fairly small, implying that changes in the exchange rate have only a small impact on container import volumes.

Empty container imports

Australia's exports generally comprise a larger share of higher density, bulk raw materials and primary products. By contrast, a large proportion of Australia's imports are final manufactures, such as pharmaceuticals and other high value, low density commodities. Forty-foot containers are generally more cost effective for lower density manufactures, where volume constraints are more pressing than mass limits. Conversely, twenty-foot containers are preferred for higher density cargoes, where total container mass is generally the limitation. Consequently, forty-foot containers are generally a higher share of total import containers than of total export containers. Therefore, a proportion of containers used to import commodities are exported empty, and some additional twenty-foot containers imported empty to help service the export task.

Import of empty containers to export Australian commodities depends largely on the volume of full containerised exports and the number of import containers available to transport Australian exports. Hence, the model of empty container imports is specified in terms of the volume of full containerised exports and imports—the latter being used to reflect the number of import containers available to transport Australian exports—as shown in equation (2.3).

$$\ln EMM_{it} = \lambda_{i0} + \lambda_{i1} \ln FUX_{it} + \lambda_{i2} \ln FUM_{it} + \lambda_{i3} \ln D_{it} + w_{it} \quad (2.3)$$

where,

EMM_{it} = empty container imports to the i-th port in year t in TEUs;

FUX_{it} = full containerised exports through the i-th port in year t in TEUs;

FUM_{it} = full containerised imports through the i-th port in year t in TEUs;

D_{it} = dummy variable to capture a large variation in empty container imports to the i-th port in year t;

w_{it} = error term;

λ's = regression parameters;

i = i-th port (1 = Port of Brisbane, 2 = Sydney region ports, 3 = Port of Melbourne, 4 = Port of Adelaide and 5 = Port of Fremantle and 6 = Other Ports); and

t = time subscript.

Historical data from 1993–94 to 2012–13 were used to estimate the model. The estimated regression statistics presented in Table 2.3 suggest that the model is a good fit for all ports

with adjusted R-square values ranging from 0.73 to 0.95. The elasticity of full containerised export volume is highly significant and positive, implying that empty container imports increase (decrease) with an increase (decrease) of the volume of full containerised exports. A one per cent increase (decrease) in the volume of full containerised exports leads empty container imports to increase (decrease) by 1.3 per cent in Brisbane, 2.0 per cent in Sydney, 2.4 per cent in Melbourne, 0.6 per cent in Adelaide, 3.0 per cent in Fremantle and 1.1 per cent in Other Ports.

Similarly, the elasticity of full containerised imports is highly significant and negative for Brisbane, Sydney, Melbourne and Fremantle but not for Adelaide and Other Ports, implying that the volume of empty container imports increases (decreases) with a decrease (increase) of the volume of full containerised imports through Brisbane, Sydney, Melbourne and Fremantle. A one per cent increase (decrease) in the volume of full containerised imports will lead empty container imports to decrease (increase) by 0.5 per cent in Brisbane, 1.2 per cent in Sydney, 1.3 per cent in Melbourne and 1.9 per cent in Fremantle. The volume of full containerised imports does not appear to influence empty container imports in Port of Adelaide and Other Ports.

Table 2.3 Estimated regression statistics of empty container import demand

	Elasticity		
Port	FC Exports	FC Imports	Adjusted-R2 value
Brisbane	1.344*	-0.548*	0.78
Sydney	1.978*	-1.241*	0.74
Melbourne	2.373*	-1.269*	0.93
Adelaide	0.640*	NS	0.95
Fremantle	3.030*	-1.889*	0.86
Other Ports	1.072*	NS	0.73

FC = Full Containerised. *Statistically highly significant at or below 0.10 level of significance.
NS = Statistically not significant.
Source: BITRE estimates.

Empty container exports

As already mentioned, there are significantly more full import containers than full export containers through Australian ports, and greater use of forty-foot containers for imports than for exports. Consequently, a large volume of containers are exported empty.

Empty export containers have been derived as the residual of full and empty container imports less full container exports and the estimated number of containers that are damaged and/or used for local purposes (equation 2.4). Some containers are damaged during shipment and some are retained in Australia for local transportation and/or non-transportation uses, such as storage, accommodation, etc.

$$EMX_{it} = FUM_{it} + EMM_{it} - FUX_{it} + DLU_{it} \quad (2.4)$$

where,

EMX_{it} = empty container exports from the i-th port in year t in TEUs;

FUM_{it} = full container imports to the i-th port in year t in TEUs;

EMM_{it} = empty container imports to the i-th port in year t in TEUs;

FUX_{it} = full container exports from the i-th port in year t in TEUs;

DLU_{it} = containers that are damaged and/or retained in Australia for local usages in year t in TEUs;

i = i-th port (1 = Port of Brisbane, 2 = Sydney region ports, 3 = Port of Melbourne, 4 = Port of Adelaide and 5 = Port of Fremantle and 6 = Other Ports); and

t = time subscript.

Non-containerised exports

The model of non-containerised exports, which is specified in terms of population, real income, exchange rates and real export prices, is presented in equation (2.5).

$$\ln PBX_{it} = \delta_{i0} + \delta_{i1} \ln PGDP_{jt} + \delta_{i2} \ln EXUSAU_{t} + \delta_{i3} \ln XPR_{t} + m_{it} \quad (2.5)$$

where,

PBX_{it} = per capita non-containerised exports from the i-th port in year t in thousand tonnes;

$PGDP_{jt}$ = per capita real Gross Domestic Product (GDP) in the j-th export destination country in year t in billion US dollars;

$EXUSAU_{t}$ = exchange rate of the US dollar per Australian dollar in year t;

XPR_{t} = real export prices at the national level in year t;

m_{it} = error term;

δ's = regression parameters;

i = i-th port (1 = Port of Brisbane, 2 = Sydney region ports, 3 = Port of Melbourne, 4 = Port of Adelaide and 5 = Port of Fremantle and 6 = Other Ports);

j = j-th export destination country; and

t = time subscript.

China is Australia's largest export destination accounting for 29.4 per cent of Australia's total exports by value ($249.2 billion) in 2012. Iron ore and concentrates dominated Australia's exports to China, accounting for 52.8 per cent of the total exports to China, followed by coal 9.3 per cent, gold 7.5 per cent and crude petroleum 3.3 per cent. Accordingly, real Chinese GDP was used as the proxy for the real income of people living in Australia's export destination countries in the model of non-containerised exports.

The model of non-containerised exports is estimated using historical data, from 1993–94 to 2011–12. According to the estimated regression results presented in Table 2.4, the model is a relatively good fit for non-containerised exports through Brisbane, Melbourne, Adelaide and Other Ports, but fit non-containerised exports through Sydney and Port of Fremantle less well, mainly due to significant annual fluctuations in historical export volumes through these ports.

Table 2.4 Estimated regression statistics of non-containerised export demand

	Elasticity			
Port	Income	Exchange rate	Export price	Adjusted-R2 value
Brisbane	0.493*	-0.219**	NS	0.93
Sydney	NS	NS	-0.130	0.19
Melbourne	NS	NS	-0.954**	0.72
Adelaide	1.296**	-0.957*	NS	0.86
Fremantle	NS	NS	-0.087**	0.34
Other Ports	0.707*	NS	-0.217*	0.98

*Statistically significant at or below 0.10 level of significance. **Statistically significant at or below 0.30 level of significance.
NS = Statistically not significant.
Source: BITRE estimates.

The volume of non-containerised exports through Sydney region ports has fluctuated by as much as 47.9 per cent, from year-to-year over the period 1998–99 and 2012–13, while the volume of non-containerised exports through the Port of Fremantle has fluctuated by as much as 61.9 per cent, from year-to-year over the same period (see Figure 2.1).

The regression results indicate that the foreign real income (proxied by real Chinese GDP) was a statistically significant driver of non-containerised exports from the Port of Brisbane, Port Adelaide and Other Ports, but not from Sydney, Melbourne and the Port of Fremantle. Real Chinese GDP was observed as being significantly correlated with non-containerised exports through the Port of Brisbane and Other Ports, but not with non-containerised exports through Port Adelaide. Real GDP of the OECD region was found to have a significant correlation with non-containerised exports through Port Adelaide. One possible reason for not observing a significant relationship between Chinese real income and Port Adelaide's non-containerised exports could be that grain is the largest non-containerised export commodity passing though Port Adelaide and that China is not a dominant export destination of Australian grain—it was ranked as the fourth largest grain export destination after Indonesia, Vietnam and South Korea, between October 2011 and 31 March 2012.

Figure 2.1 Non-containerised exports through the Port of Fremantle and Sydney region ports, 1998–99 to 2012–13

Sources: Ports Australia (2013b).

The estimated income elasticities imply that a one per cent increase (decrease) in overseas per capita real income will result in a 0.5 per cent increase (decrease) in the volume of non-containerised exports from the Port of Brisbane, 1.3 per cent for Port Adelaide and 0.7 per cent for Other Ports.

Similarly, the estimated regression results suggest that exchange rates are statistically significant drivers of non-containerised exports through the Port of Brisbane and Port Adelaide; whereas real export prices are statistically significant drivers of non-containerised exports through the Port of Melbourne, the Port of Fremantle and Other Ports. The estimated exchange rates and export price elasticities imply that a one per cent depreciation (appreciation) of the Australian dollar against the US dollar will lead to an increase (decrease) in non-containerised exports by 0.2 per cent in Brisbane and 1.0 per cent in Adelaide; whereas a one per cent decrease (increase) in real export prices will result in a 0.1 per cent increase (decrease) in the volume of non-containerised exports from Sydney and Fremantle, 1.0 per cent from Melbourne and 0.2 per cent from all Other Ports.

Non-containerised imports

The model of non-containerised imports is specified in terms of population, real GDP, real import prices and a time trend term, which is included as a proxy for variables that affect the volume of non-containerised imports but are not directly observable. It is likely to capture the influence of changes in consumer preferences for non-containerised import goods.

The model of non-containerised imports is presented in equation (2.6).

$$\ln PBM_{it} = \theta_{i0} + \theta_{i1} \ln PGDPAU_t + \theta_{i2} MPR_t + \theta_{i3} T_t + n_{it} \quad (2.6)$$

where,

PBM_{it} = per capita non-containerised imports to the i-th port in year t in thousand tonnes;

$PGDPAU_t$ = per capita real Gross Domestic Product (GDP) of Australia in year t in million dollars;

MPR_t = real import prices at the national level in year t;

T = time trend variable;

n = error term;

θ's = regression parameters;

i = i-th port (1 = Port of Brisbane, 2 = Sydney region ports, 3 = Port of Melbourne, 4 = Port of Adelaide and 5 = Port of Fremantle and 6 = Other Ports);

j = j-th export destination country; and

t = time subscript.

The model is estimated using historical data, from 1998–99 to 2011–12, and the estimated regression results are presented in Table 2.5. The results show that the model is a relatively good fit for non-containerised imports through Sydney, Adelaide, Fremantle and Other Ports, with the adjusted R-square values ranging from 0.61 to 0.92, but does fit the cases of Brisbane and Melbourne nearly as well.

Real per capita income is observed to be the main driver of non-containerised imports in all five capital city ports and Other Ports. A one per cent increase (decrease) in per capita real income will increase (decrease) the per capita volume of non-containerised imports by 0.4 per cent in Brisbane, 2.2 per cent in Sydney, 2.9 per cent in Melbourne, 4.0 per cent in Adelaide, 0.9 per cent in Fremantle and 1.8 per cent in Other Ports. Similarly, a one per cent increase (decrease) in real import prices will lead to a decrease (increase) in the volume of non-containerised imports by 0.1 per cent for Brisbane and Adelaide, 1.3 per cent for Melbourne, 0.6 per cent for Fremantle and 0.3 per cent for Other Ports.

The estimated coefficient of the time trend variable is found to be negative and statistically significant for all ports bar Port Adelaide, implying that there has been a sustained trend decline in the volume of non-containerised imports across most ports over the last 14 years.

Table 2.5 Estimated regression statistics of non-containerised import demand

	Elasticity			
Port	Income	Import price	Time trend	Adjusted-R2 value
Brisbane	0.380*	-0.058	-0.008*	0.31
Sydney	2.181*	NS	-0.040*	0.77
Melbourne	2.905*	-1.342	-0.052*	0.52
Adelaide	3.982*	-0.077	NS	0.92
Fremantle	0.854*	-0.569*	-0.024*	0.77
Other Ports	1.757*	-0.314*	-0.040*	0.61

*Statistically significant at or below 0.10 level of significance. NS = Statistically not significant.
Source: BITRE estimates.

Sea passenger forecasting models

As in the previous BITRE port forecasting studies (BITRE 2002 and 2006), econometric models of inbound and outbound sea passengers were estimated and used to forecast Australia's inbound and outbound sea passenger numbers at the national level. Port-level models could not be estimated due to the lack of long historical time-series data on sea passenger numbers at the port level. Outbound and inbound sea passengers are recorded by port of first arrival and last departure, respectively, and do count multiple port visits by individuals.

The econometric inbound and outbound sea passenger models are discussed below.

Inbound sea passengers

The econometric model of inbound sea passenger demand is specified in terms of population, real income, exchange rates and a dummy variable, to capture the impact of SARS on passenger numbers in 2002–03, in equation (2.7).

$$\ln PISP_t = \psi_1 + \psi_2 \ln PGDPUS_t + \psi_3 \ln EXUSAU_t + \psi_4 DSARS_t + \omega_t \quad (2.7)$$

where,

$PISP_t$ = per capita inbound sea passenger numbers in year t;

$PGDPUS_t$ = per capita real GDP of the USA in year t;

$EXUSAU_t$ = exchange rate of the US dollar per Australian dollar in year t;

$DSARS_t$ = dummy variable used to capture the influence of Severe Acute Respiratory Syndrome (SARS) on Australia's inbound sea passenger numbers in 2002–03;

ω_t = error term;

ψ's = regression parameters; and

t = time subscript.

The USA dominates Australia's inbound sea passenger movements; hence, USA real GDP is used as a proxy for the income of sea passengers visiting Australia. Since long time-series data on sea travel costs are not available, the influence of travel prices on inbound sea passengers could not be included in the inbound sea passenger forecasting model. The exchange rate variable is included in the model to incorporate its influence on the number of inbound sea passengers. A lower value of the Australian dollar against the US dollar will tend to attract more sea passengers to Australia.

The model was estimated using 30 years of historical data, covering the period 1983–84 to 2012–13. The estimated regression statistics, which are presented in Table 2.6, indicate that the model is a reasonably good fit with an adjusted R-square value of 0.58. The estimated coefficients are highly significant and have expected signs. They show that inbound sea passenger demand is positively influenced by the per capita real income of passengers and negatively by the exchange rate of the Australian dollar measured in terms of the US dollar.

The estimated income elasticity implies that a one per cent increase (decrease) in real income will increase (decrease) the number of inbound sea passengers by 1.2 per cent. Similarly, the estimated exchange rate elasticity suggests that a one per cent depreciation (appreciation) of the Australian dollar against the US dollar will lead to a 1.0 per cent increase (decrease) in the number of inbound sea passengers.

Table 2.6 Estimated regression statistics of sea passenger demand

	Elasticity		
Passenger type	Income	Exchange rate	Adjusted-R2 value
Inbound	1.197*	-0.983*	0.58
Outbound	1.284*	1.353*	0.61

*Statistically significant at or below 0.10 level of significance.

Source: BITRE estimates.

Outbound sea passengers

The econometric model of outbound sea passenger demand is specified in terms of population, real income and exchange rates. A dummy variable is also included to capture the impact of SARS on outbound sea passenger numbers in 2002–03, in equation (2.8).

$$\ln POSP_t = \mu_1 + \mu_2 \ln PGDPAU_t + \mu_3 \ln EXUSAU_t + \mu_4 DSARS_t + k_t \quad (2.8)$$

where,

$POSP_t$ = per capita outbound sea passenger numbers in year t;

$PGDPAU_t$ = per capita real Gross Domestic Product (GDP) of Australia in year t in million dollars;

$EXUSAU_t$ = exchange rate of the US dollar per Australian dollar;

$DSARS_t$ = Dummy variable used to capture the influence of Severe Acute Respiratory Syndrome (SARS) on Australia's outbound sea passenger numbers in 2002–03;

k = error term;

μ's = regression parameters; and

t = time subscript.

The model was estimated using 30 years of historical data, from 1983–84 to 2012–13, and the estimated regression results are shown in Table 2.6. According to the results, the model is a good fit with an adjusted R-square value of 0.61, and the estimated income and exchange rate elasticities are highly significant, implying that outbound sea passenger demand is positively influenced by per capital real income and exchange rates. A one per cent increase (decrease) in per capita real income will lead to a 1.3 per cent increase (decrease) in the number of outbound sea passengers; whereas a one per cent appreciation (depreciation) of the Australian dollar against the US dollar will lead to a 1.4 per cent increase (decrease) in the number of outbound sea passengers.

CHAPTER 3

Freight modelling data and assumptions

Data

The econometric models of containerised and non-containerised trade were estimated using historical data on containerised and non-containerised exports and imports, empty containers, population, GDP, exchange rates, export prices and import prices. Historical data on exports and imports of full and empty containers were obtained from Ports Australia (2014), Port of Brisbane (2013a & 2013b), Sydney Ports (2013), Port of Melbourne (2013 & 2014), Flinders Ports (2014) and Fremantle Ports (2013). Sea passenger movement estimates were obtained from ABS (2013b). GDP, exchange rates, export prices and import prices were sourced from Deloitte Access Economics (2014), Australian population estimates from ABS (2014), and OECD region, USA and Japanese population estimates from OECD (2014a & 2014b) and IMF (2014).

Assumptions

Long-run assumptions about likely future population, GDP, exchange rates, export and import prices and model parameters are required to develop the long-run forecasts of containerised and non-containerised trade and sea passenger numbers. These assumptions are presented in the following sections.

Macroeconomic and population

Assumptions about future Australian population and real GDP growth are based on ABS (2013a) and the Treasury (2010 and 2014), respectively. Assumptions about future population and real GDP growth for Japan, USA and the OECD region were obtained from OECD (2014b) and IMF (2014). All other macroeconomic assumptions are based on Deloitte Access Economics (2014).

ABS and OECD projections of population growth and Treasury projections of long-term Australian GDP growth cover the entire forecast horizon considered in this report. Projections of likely future overseas GDP growth, export and import prices and exchange rates, however, are generally only available for a ten-year horizon (i.e. out to 2023–24). For these variables, the forecast growth rates are generally assumed to be the same or marginally lower than those in year 2023–24. The forecast assumptions are shown in Tables 3.1 to 3.4. For simplicity, Australian average import and export prices are assumed to remain broadly unchanged beyond 2023–24.

Table 3.1 Economic growth rates

Year	Real GDP					Export prices	Import prices	Exchange rate
	Australia	OECD	Japan	USA	China			
				(per cent)				(US$/AU$)
2008–09	1.7	-2.8	-5.3	-3.6	9.4	19.7	11.1	0.79
2009–10	2.0	0.3	0.7	-0.2	9.8	-15.5	-11.6	0.88
2010–11	2.2	2.6	1.9	2.7	9.8	17.2	-3.0	0.97
2011–12	3.6	1.9	1.5	2.2	8.5	1.1	0.8	1.03
2012–13	2.7	1.0	0.2	1.8	7.8	-9.5	0.1	1.04
2013–14	**2.4**	**2.2**	**1.9**	**2.4**	**7.5**	**4.6**	**9.0**	**0.92**
2014–15	**2.6**	**2.8**	**1.3**	**3.0**	**7.3**	**-4.2**	**1.2**	**0.93**
2015–16	**3.0**	**2.8**	**1.4**	**2.7**	**7.2**	**-0.3**	**2.6**	**0.90**
2016–17	**3.0**	**2.8**	**1.4**	**2.3**	**7.1**	**1.7**	**3.0**	**0.88**
2017–18	**3.0**	**2.8**	**1.4**	**2.3**	**7.0**	**1.2**	**3.3**	**0.85**
2018–19	**3.2**	**2.8**	**1.4**	**2.3**	**6.9**	**0.7**	**2.2**	**0.84**
2019–20	**3.2**	**2.8**	**1.4**	**2.3**	**6.8**	**0.6**	**1.5**	**0.83**
2020–21	**3.2**	**2.7**	**1.4**	**2.3**	**6.7**	**0.7**	**1.2**	**0.82**
2021–22	**3.1**	**1.3**	**0.7**	**1.1**	**3.2**	**0.3**	**0.5**	**0.82**
2022–23	**3.1**	**2.7**	**1.4**	**2.3**	**6.5**	**0.4**	**0.5**	**0.82**
2023–24	**3.1**	**2.7**	**1.5**	**2.2**	**7.0**	**0.0**	**0.0**	**0.82**
2024–25	**2.9**	**2.5**	**1.3**	**2.2**	**6.8**	**0.0**	**0.0**	**0.80**
2025–26	**2.7**	**2.4**	**1.3**	**2.2**	**6.8**	**0.0**	**0.0**	**0.79**
2026–07	**2.5**	**2.3**	**1.3**	**2.2**	**6.8**	**0.0**	**0.0**	**0.78**
2027–28	**2.3**	**2.3**	**1.2**	**2.2**	**6.6**	**0.0**	**0.0**	**0.77**
2028–29	**2.3**	**2.3**	**1.2**	**2.2**	**6.6**	**0.0**	**0.0**	**0.76**
2029–30	**2.2**	**2.3**	**1.2**	**2.2**	**6.6**	**0.0**	**0.0**	**0.75**
2030–31	**2.2**	**2.3**	**1.1**	**2.2**	**6.5**	**0.0**	**0.0**	**0.75**
2031–32	**2.2**	**2.2**	**1.1**	**2.2**	**6.5**	**0.0**	**0.0**	**0.75**
2032–33	**2.2**	**2.2**	**1.1**	**2.2**	**6.5**	**0.0**	**0.0**	**0.75**
Annual average								
1992–93 to 2012–13	3.4	2.2	0.8	2.7	9.8	2.4	-0.7	0.75
2012–13 to 2032–33	**2.7**	**2.5**	**1.3**	**2.3**	**6.7**	**0.3**	**1.2**	**0.82**

* Numbers in bold are forecasts.

Sources: Treasury (2010 & 2014), OECD (2014b), IMF (2014) and Deloitte Access Economics (2014).

Australia's real GDP grew by an average of 3.4 per cent a year over the last 20 years (Table 3.1). Treasury projects it will increase by an annual average of 2.7 per cent a year over the forecast period (Treasury 2010 & 2014).

With regard to exchange rates, the value of the Australian dollar is assumed to decrease against the US dollar over the forecast period, from US$1.04 per Australian dollar in 2012–13 to US$0.75 per Australian dollar in 2032–33, similar to the long-term average exchange rate between 1992–93 and 2012–13 (Table 3.1). A lower Australian dollar, against the US dollar,

increases the cost to Australians of imports and improves the competitiveness of Australia's exports.

Australia's population grew by an average annual rate of 1.3 per cent a year over the last 20 years (Table 3.2). It is projected to grow by an average of 1.5 per cent a year over the next 20 years to 2032–33. The population of Australia's major trading partner countries are projected to increase relatively slowly, by an average of 0.5 per cent across all OECD countries, albeit declining in absolute terms in some countries (e.g. the population of Japan is projected to decline by, an average, 0.4 per cent per annum over the next 20 years).

Table 3.2 Population growth rates

Year	Australia	OECD	Japan	USA
		(per cent)		
2008–09	2.1	0.7	0.0	0.9
2009–10	1.6	0.6	0.0	0.8
2010–11	1.4	0.6	-0.1	0.7
2011–12	1.7	0.6	-0.2	0.7
2012–13	1.8	0.6	-0.1	0.3
2013–14	**1.7**	**0.6**	**-0.2**	**0.7**
2014–15	**1.8**	**0.6**	**-0.2**	**0.8**
2015–16	**1.8**	**0.6**	**-0.3**	**0.8**
2016–17	**1.7**	**0.6**	**-0.3**	**0.8**
2017–18	**1.7**	**0.5**	**-0.3**	**0.8**
2018–19	**1.7**	**0.5**	**-0.4**	**0.8**
2019–20	**1.6**	**0.5**	**-0.4**	**0.8**
2020–21	**1.6**	**0.5**	**-0.4**	**0.8**
2021–22	**1.6**	**0.5**	**-0.4**	**0.8**
2022–23	**1.5**	**0.5**	**-0.4**	**0.8**
2023–24	**1.5**	**0.5**	**-0.4**	**0.8**
2024–25	**1.5**	**0.4**	**-0.4**	**0.8**
2025–26	**1.4**	**0.4**	**-0.4**	**0.8**
2026–07	**1.4**	**0.4**	**-0.4**	**0.8**
2027–28	**1.4**	**0.4**	**-0.4**	**0.8**
2028–29	**1.4**	**0.4**	**-0.4**	**0.8**
2029–30	**1.3**	**0.4**	**-0.4**	**0.8**
2030–31	**1.3**	**0.4**	**-0.4**	**0.8**
2031–32	**1.3**	**0.3**	**-0.4**	**0.8**
2032–33	**1.3**	**0.3**	**-0.4**	**0.8**
Annual average				
1992–93 to 2012–13	1.3	0.7	0.1	1.0
2012–13 to 2032–33	**1.5**	**0.5**	**-0.4**	**0.8**

* Numbers in bold are forecasts.

Sources: ABS (2013a), OECD (2014b), IMF (2014) and Deloitte Access Economics (2014).

Of the five mainland States, with capital city ports included in this study, Western Australia and Queensland are forecast to experience relatively stronger population growth than New South Wales, Victoria and South Australia. The populations of Western Australia and Queensland are projected to increase by 2.5 and 1.8 per cent per annum, respectively, over the next 20 years, while the population of Victoria is projected to grow by 1.5 per cent a year on average, New South Wales by 1.1 per cent per annum and South Australia by 0.9 per cent per annum (Table 3.3).

Table 3.3 State population growth rates in Australia

Year	Qld	NSW	Vic	SA	WA
			(per cent)		
1998–99	2.6	1.6	2.2	1.3	3.2
2007–08	1.8	1.3	1.7	1.1	2.3
2008–09	1.6	1.0	1.4	0.8	2.7
2009–10	2.0	1.2	1.7	1.0	3.6
2010–11	1.9	1.4	1.9	0.9	3.4
2011–12	2.3	1.1	1.6	1.2	3.0
2012–13	2.1	1.3	1.8	1.0	3.1
2013–14	**2.0**	**1.3**	**1.8**	**1.1**	**3.0**
2014–15	**2.0**	**1.3**	**1.8**	**1.0**	**2.9**
2015–16	**2.0**	**1.3**	**1.7**	**1.0**	**2.8**
2016–17	**1.9**	**1.3**	**1.7**	**1.0**	**2.8**
2017–18	**1.9**	**1.2**	**1.7**	**1.0**	**2.7**
2018–19	**1.9**	**1.2**	**1.6**	**1.0**	**2.6**
2019–20	**1.8**	**1.2**	**1.6**	**0.9**	**2.6**
2020–21	**1.8**	**1.2**	**1.6**	**0.9**	**2.5**
2021–22	**1.8**	**1.1**	**1.5**	**0.9**	**2.4**
2022–23	**1.7**	**1.1**	**1.5**	**0.9**	**2.4**
2023–24	**1.7**	**1.1**	**1.5**	**0.8**	**2.3**
2024–25	**1.7**	**1.1**	**1.4**	**0.8**	**2.3**
2025–26	**1.6**	**1.1**	**1.4**	**0.8**	**2.2**
2026–07	**1.6**	**1.0**	**1.4**	**0.8**	**2.2**
2027–28	**1.6**	**1.0**	**1.3**	**0.8**	**2.1**
2028–29	**1.5**	**1.0**	**1.3**	**0.7**	**2.1**
2029–30	**1.5**	**1.0**	**1.3**	**0.7**	**2.0**
2030–31	**1.5**	**0.9**	**1.3**	**0.7**	**2.0**
2031–32	**1.9**	**1.1**	**1.3**	**0.8**	**1.9**
2032–33	**1.9**	**1.1**	**1.3**	**0.8**	**1.9**
Annual average					
1992–93 to 2012–13	2.1	1.0	1.2	0.7	2.0
2012–13 to 2032–33	**1.8**	**1.1**	**1.5**	**0.9**	**2.5**

* Numbers in bold are forecasts.

Sources: ABS (2013a).

CHAPTER 4

Forecasts of containerised and non-containerised trade through Australia's major ports

Introduction

This chapter outlines the forecasts of containerised and non-containerised trade through Australia's major ports. As previously discussed, the forecasts are based purely on the econometric demand models outlined in Chapter 2. The potential influence of supply-side factors, such as port capacity and shipping service supply, has not been taken into account in the development of the forecasts due to the lack of long time-series data on supply-side variables influencing port activities. Hence, these forecasts are unconstrained forecasts.

Port of Brisbane

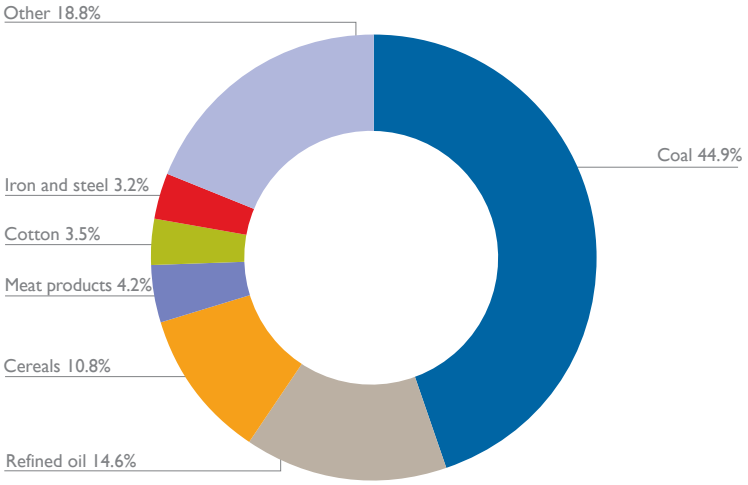
The Port of Brisbane, which is managed by the Port of Brisbane Pty Ltd, is the third largest container port in Australia, after Melbourne and Sydney, accounting for 14.9 per cent of Australia's total containerised trade, measured in TEUs, in 2012–13.

Total trade through the Port of Brisbane increased by 11.9 per cent to 37.2 million tonnes in 2011–12—containerised trade increasing by 2.8 per cent to 1.0 million TEUs and non-containerised trade increasing by 14.0 per cent to 28.5 million tonnes over this period. Although total trade growth slowed in 2012–13, due principally to the slowing of growth in bulk exports and refined oil imports in that year—total trade increased by 1.0 per cent in 2012–13—containerised trade increased more strongly in 2012–13, increasing by 6.4 per cent to 1.1 million TEUs over the same period.

In 2012–13, 51.7 per cent of total trade (by mass) through the Port of Brisbane were exports and the remaining 48.3 per cent were imports. The main commodities exported through the Port of Brisbane in 2012–13 were coal, refined oil, cereals, meat products, cotton, and iron and steel (Figure 4.1). Similarly, the main commodities imported through the Port of Brisbane in 2012–13 were crude oil, refined oil, cement, and iron and steel (Figure 4.2).

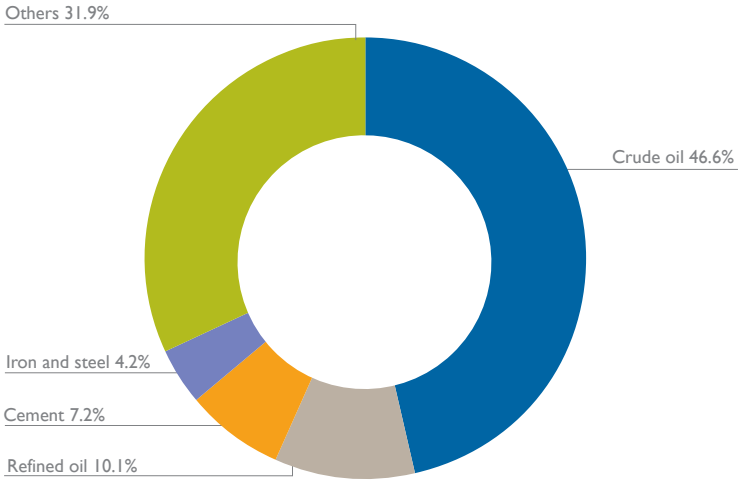
Goods such as meat products, cotton, paper and wood pulp, timber and cereals are exported in containers, whereas household items, building products, electric equipment, paper and wood pulp and iron and steel are imported in containers.

Figure 4.1 Main export commodities exported through the Port of Brisbane, 2012–13



Source: Port of Brisbane (2013a).

Figure 4.2 Main import commodities through the Port of Brisbane, 2012–13

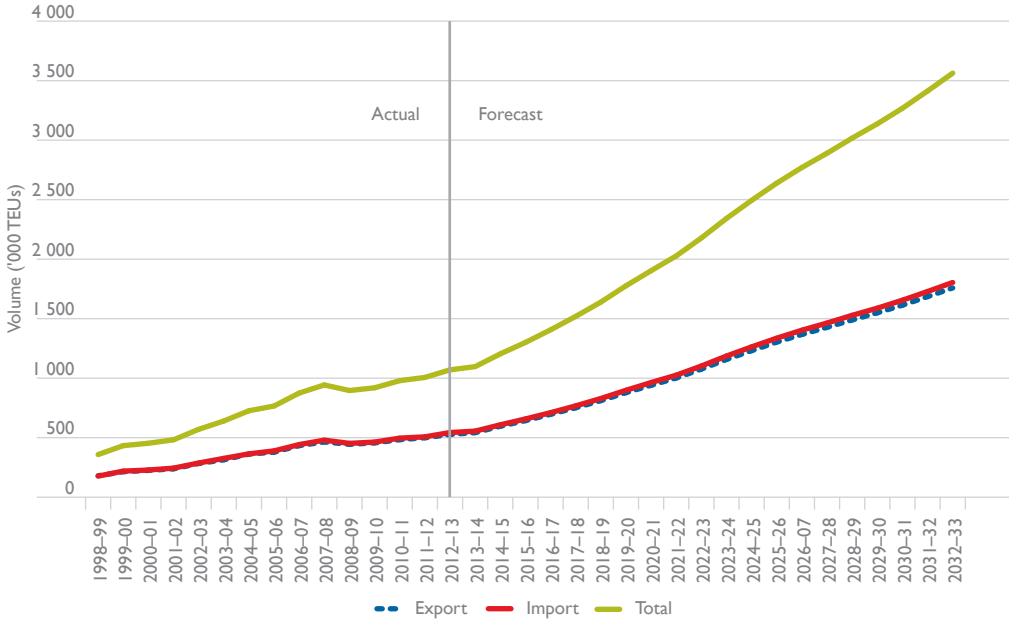


Source: Port of Brisbane (2013a).

Containerised trade

The total containerised trade of Port of Brisbane has increased by an average of 8.1 per cent per annum over the last 14 years, from 358 000 TEUs in 1998–99 to 1.1 million TEUs in 2012–13, largely due to high import growth, resulting from high population growth and improved economic conditions in South East Queensland, and high export growth, resulting from the continuation of the strong economic performance in Brisbane's major export destinations. Containerised exports and imports increased annually by 8.0 and 8.3 per cent, respectively, over the same period, to 527 000 and 543 000 TEUs in 2012–13 (Figure 4.3 and Table 4.1).

Figure 4.3 Containerised trade: Port of Brisbane



Sources: Ports Australia (2014) and BITRE estimates.

In 2012–13, full and empty containers accounted for 63.6 and 36.4 per cent of the total containerised exports through the Port of Brisbane. Full containerised exports, which increased by an average of 5.8 per cent a year over the last 14 years, are projected to increase by 5.0 per cent a year over the next 20 years, from 335 000 TEUs in 2012–13 to 890 000 TEUs in 2032–33, mainly due to a positive economic outlook for the major export destination countries of Brisbane. OECD region GDP, which increased by 2.2 per cent a year over the last 14 years, is forecast to increase by 2.5 per cent a year over the next 20 years.

Moreover, expected strong economic growth in China and India is likely to have a positive influence on the volume of containerised exports through the Port of Brisbane.

Of total containerised imports to the Port of Brisbane, about 88.4 per cent are full containers and the remaining 11.6 per cent are empty containers. Full containerised imports, which increased by an average of 10.1 per cent a year over the last 14 years, are forecast to increase by 6.6 per cent a year over the next 20 years, from 480 000 TEUs in 2012–13 to 1.7 million TEUs in 2032–33. The projected strong growth in full containerised imports is the result of the positive long-term economic outlook for Australia, the expected depreciation of the Australian dollar against the US dollar and projected strong population growth in South East Queensland over the forecast period. Real Australian GDP is projected to increase by 2.7 per cent a year over the forecast period. The value of the Australian dollar has been assumed to decrease from US$1.04 (per Australian dollar) in 2012–13 to US$0.75 in 2029–30 and onwards. The population of Queensland is projected to increase by 1.8 per cent a year over the forecast period.

Table 4.1 Containerised trade: Port of Brisbane

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 TEUs)			
1998–99	153	27	180	124	53	177	358
2008–09	271	173	444	378	75	452	896
2009–10	258	198	456	405	58	463	919
2010–11	283	199	483	434	62	496	979
2011–12	314	186	499	450	57	507	1006
2012–13	335	192	527	480	63	543	1070
2013–14	***323***	***219***	***542***	***488***	***67***	***555***	***1097***
2014–15	**358**	**238**	**596**	**547**	**62**	**608**	**1204**
2015–16	**386**	**257**	**643**	**593**	**64**	**657**	**1300**
2016–17	**421**	**275**	**696**	**643**	**67**	**710**	**1406**
2017–18	**449**	**302**	**751**	**698**	**69**	**767**	**1519**
2018–19	**474**	**337**	**811**	**759**	**69**	**829**	**1639**
2019–20	**504**	**374**	**878**	**826**	**72**	**898**	**1776**
2020–21	**506**	**434**	**940**	**895**	**68**	**963**	**1903**
2021–22	**538**	**463**	**1001**	**956**	**70**	**1025**	**2027**
2022–23	**572**	**504**	**1076**	**1031**	**71**	**1102**	**2178**
2023–24	**604**	**553**	**1157**	**1114**	**72**	**1186**	**2342**
2024–25	**637**	**594**	**1231**	**1190**	**73**	**1263**	**2494**
2025–26	**669**	**633**	**1303**	**1262**	**74**	**1336**	**2639**
2026–07	**696**	**671**	**1367**	**1328**	**74**	**1403**	**2770**
2027–28	**732**	**695**	**1427**	**1387**	**76**	**1463**	**2890**
2028–29	**766**	**723**	**1489**	**1450**	**77**	**1528**	**3017**
2029–30	**794**	**755**	**1549**	**1511**	**78**	**1588**	**3137**
2030–31	**823**	**790**	**1613**	**1577**	**78**	**1655**	**3268**
2031–32	**862**	**823**	**1685**	**1648**	**80**	**1728**	**3413**
2032–33	**890**	**868**	**1758**	**1723**	**81**	**1804**	**3563**
Annual average growth rate (per cent)							
1998–99 to 2012–13	5.8	14.9	8.0	10.1	1.3	8.3	8.1
2012–13 to 2032–33	**5.0**	**7.8**	**6.2**	**6.6**	**1.3**	**6.2**	**6.2**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

The projected growth in full containerised imports also results in an increase in the number of empty containers to be exported from Australia for reuse. Full container exports are not projected to grow as strongly, and from a lower base, contributing to an imbalance between full import and export containers. Exports of empty containers, which increased by an average of 14.9 per cent a year over the last 14 years, are projected to increase by 7.8 per cent a year over the next 20 years, from 192 000 TEUs in 2012–13 to 868 000 TEUs in 2032–33.

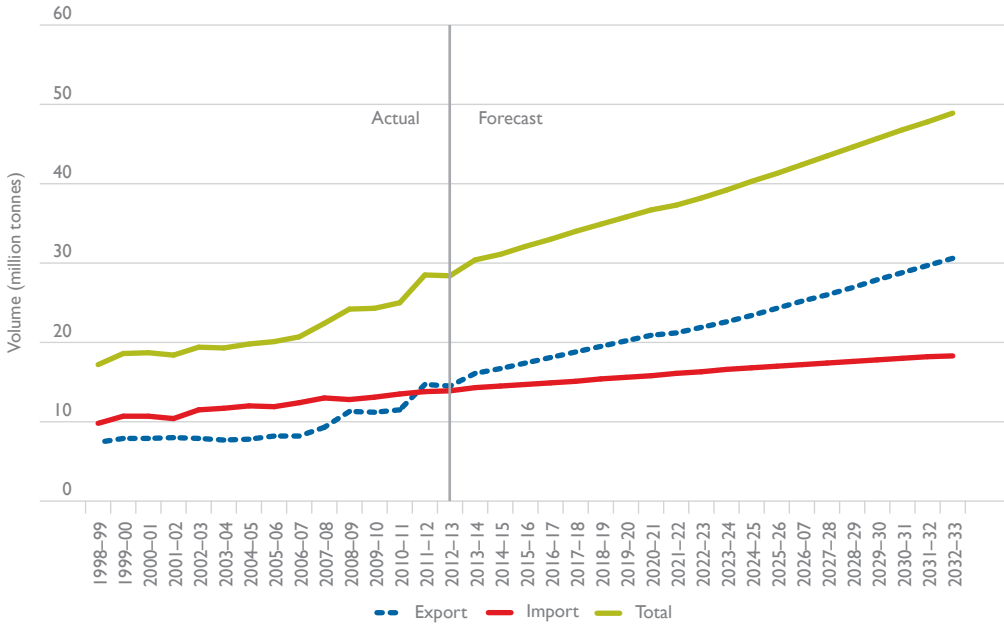
Despite the increase in the number of empty export containers, the demand for empty import containers is projected to continue to grow to service the growing demand for containerised exports. The volume of empty import containers, which increased by 1.3 per cent a year over the last 14 years, is projected to rise by 1.3 per cent a year over the forecast period, from 63 000 TEUs in 2012–13 to 81 000 in 2032–33.

Overall, BITRE projects an increase of 6.2 per cent a year in total containerised trade through the Port of Brisbane over the next 20 years to 3.6 million TEUs in 2032–33.

Non-containerised trade

In 2012–13, 28.4 million tonnes of non-containerised commodities were shipped through the Port of Brisbane, including 14.5 million tonnes of exports and 13.9 million tonnes of imports (Figure 4.4 and Table 4.2). Major export commodities include coal and refined oil, which account for 60.1 and 19.5 per cent, respectively, of Brisbane's total non-containerised exports. Major import commodities also include crude oil and refined oil, which account for 60.7 and 13.2 per cent, respectively, of Brisbane's total non-containerised imports.

Figure 4.4 Non-containerised trade: Port of Brisbane



Sources: Ports Australia (2014) and BITRE estimates.

The volume of total non-containerised trade through the Port of Brisbane in 2011–12 increased by 14.0 per cent over the previous year, largely due to an increase of 28.1 per cent in non-containerised exports and 2.0 per cent in non-containerised imports, principally increased exports of refined oil (up 12.6 per cent), cereals (up 15.0 per cent) and cotton (up 22.6 per cent) and increased imports of break bulk motor vehicles (up 11.8 per cent), crude oil (up 6.2 per cent) and paper and wood chips (up 60 per cent) (Port of Brisbane 2013a). However, the performance of the export and import sectors was not as strong in 2012–13. The volume of non-containerised exports through the Port of Brisbane decreased

by 6.7 per cent in 2012–13; whereas the volume of non-containerised imports through the port increased by 1.0 per cent in that year, resulting in the volume of total non-containerised trade through the Port of Brisbane declining by 0.4 per cent in the year.

Table 4.2 Non-containerised trade: Port of Brisbane

Year	Export	Import	Total
	(million tonnes)		
1998–99	7.4	9.8	17.2
2008–09	11.3	12.8	24.2
2009–10	11.2	13.1	24.3
2010–11	11.5	13.5	25.0
2011–12	14.7	13.8	28.5
2012–13	14.5	13.9	28.4
2013–14	**16.1**	**14.3**	**30.4**
2014–15	**16.7**	**14.5**	**31.1**
2015–16	**17.4**	**14.7**	**32.1**
2016–17	**18.1**	**14.9**	**33.0**
2017–18	**18.8**	**15.1**	**34.0**
2018–19	**19.5**	**15.4**	**34.9**
2019–20	**20.2**	**15.6**	**35.8**
2020–21	**20.9**	**15.8**	**36.7**
2021–22	**21.2**	**16.1**	**37.3**
2022–23	**21.9**	**16.3**	**38.2**
2023–24	**22.6**	**16.6**	**39.2**
2024–25	**23.4**	**16.8**	**40.3**
2025–26	**24.3**	**17.0**	**41.3**
2026–07	**25.2**	**17.2**	**42.4**
2027–28	**26.0**	**17.4**	**43.5**
2028–29	**26.9**	**17.6**	**44.6**
2029–30	**27.9**	**17.8**	**45.7**
2030–31	**28.8**	**18.0**	**46.8**
2031–32	**29.7**	**18.2**	**47.8**
2032–33	**30.6**	**18.3**	**48.9**
Annual average growth rate (per cent)			
1998–99 to 2012–13	4.9	2.6	3.7
2012–13 to 2032–33	**3.8**	**1.4**	**2.8**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Total non-containerised trade through the Port of Brisbane, which increased by an average of 3.7 per cent a year over the last 14 years, is forecast to increase by 2.8 per cent a year over the next 20 years to 48.9 million tonnes in 2032–33 (Figure 4.2 and Table 4.2). The main reason for the lower growth forecast is the slowing of growth in non-containerised exports

and imports. The volume of non-containerised exports, which increased by 4.9 per cent a year over the last 14 years, is forecast to increase by 3.8 per cent a year over the next 20 years, from 14.5 million tonnes in 2012–13 to 30.6 million tonnes in 2032–33, with the projected rise in export prices and a relatively strong Australian dollar being the main factors dampening projected future growth over the forecast period. The growth in exports will be driven by export of coal, refined oil, meat products, iron and steel, timber and woodchips. Average real export prices are projected to increase by 0.3 per cent a year over the forecast period, whereas the exchange rate is expected to remain around or above US 80 cents per Australian dollar over the next 15 years and around US 75 cents per Australian dollar over the last five years of the forecast period.

The volume of non-containerised imports, which increased by 2.6 per cent a year over the last 14 years, is projected to rise by 1.4 per cent a year over the forecast period, from 13.9 million tonnes in 2012–13 to 18.3 million tonnes in 2032–33, largely due to the expected lower growth in real GDP and higher growth in import prices in Australia over the forecast period, compared with the corresponding growth rates over the last 14 years.

Sydney Region Ports

In April 2013, operation of Port Botany (and Port Kembla) was privatised—under a 99-year operating lease awarded to the NSW Ports Consortium. Sydney Ports Corporation—the previous owner and operator of Port Botany—retained ownership and operation of Sydney Harbour, and White Bay and Glebe Island terminals. The trade volumes and forecasts presented in this section include all containerised and non-containerised freight through Port Botany, Sydney Harbour, and Glebe Island and White Bay terminals.

Port Botany is Australia's second largest container port, accounting for 29.7 per cent of Australia's total container trade measured in TEUs. Sydney region ports' non-containerised trade is limited to crude and refined oil, liquid and gas, cement, gypsum, salt and sugar and accounts for only 1.2 per cent of Australia's total non-containerised trade.

In 2012–13, total trade through Sydney region ports declined by 1.6 per cent to 29.6 million mass tonnes, including 2.1 million TEUs of containerised trade and 13.6 million tonnes of non-containerised trade. Containerised and non-containerised trade account for 53.9 and 46.1 per cent of total trade in total tonnes through Sydney region ports, respectively.

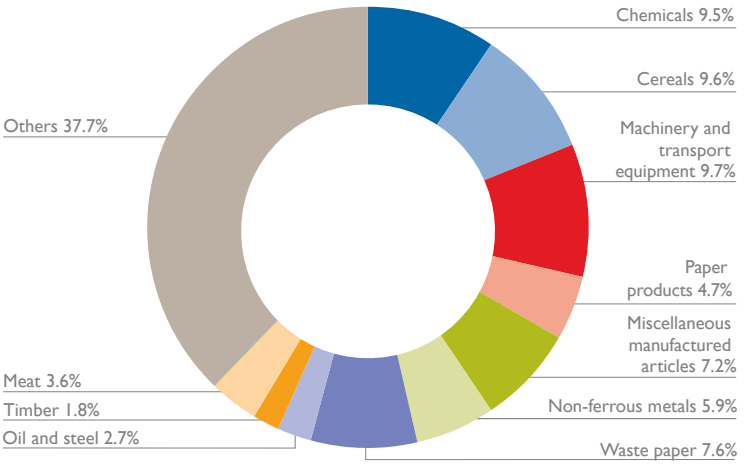
Containerised trade is evenly distributed between exports (49.5 per cent) and imports (50.5 per cent), but non-containerised trade is largely dominated by imports, which account for 93.5 per cent of Sydney region ports' total non-containerised trade.

Containerised trade

The volume of total containerised trade through Port Botany in 2012–13 included 1.0 million TEUs of exports and 1.1 million TEUs of imports (Ports Australia 2013). The main containerised export commodities (by mass) through Port Botany in 2012–13 were machinery and transport equipment, cereals, chemicals, waste paper, miscellaneous manufactured articles, non-ferrous metals, paper products, meat, iron & steel and timber (Figure 4.5). Similarly, the main containerised import commodities through Sydney region ports in 2012–13 were

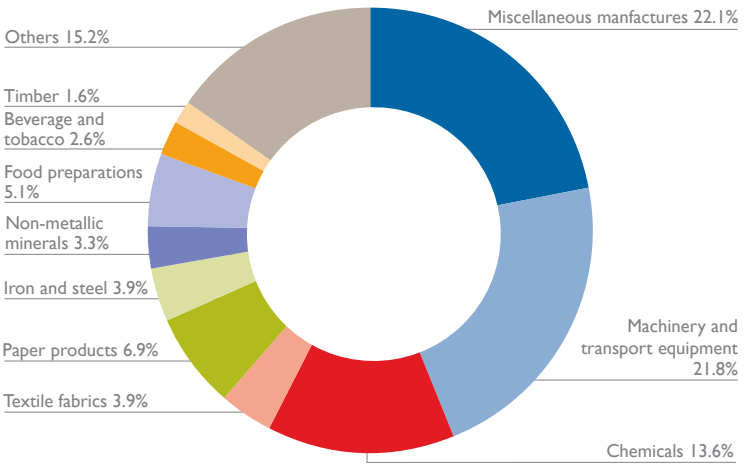
miscellaneous manufactures, machinery and transport equipment, chemicals, paper products, food preparations, textile fabrics, iron and steel, non-metallic minerals, beverages and tobacco and timber (Figure 4.6).

Figure 4.5 Main containerised export commodities through Sydney region ports, 2012–13



Source: Sydney Ports (2013).

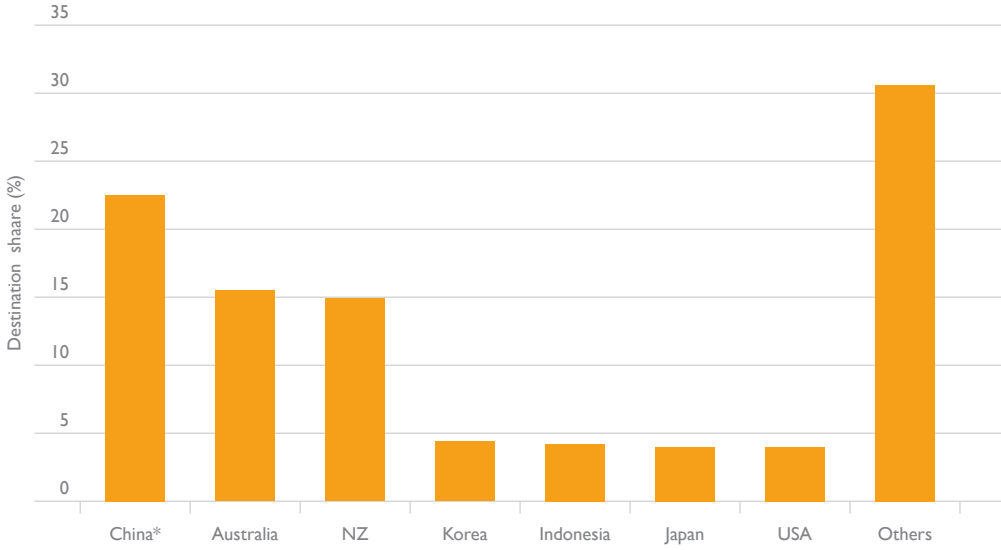
Figure 4.6 Main containerised import commodities through Sydney region ports, 2012–13



Source: Sydney Ports (2013).

The main destinations of containerised exports from Sydney region ports in 2012–13 were New Zealand, Vietnam, the USA, Taiwan, China and Singapore (Figure 4.7), whereas the main origins of containerised imports were China, the USA, Thailand, Japan, Hong Kong, Malaysia, Germany and New Zealand (Figure 4.8).

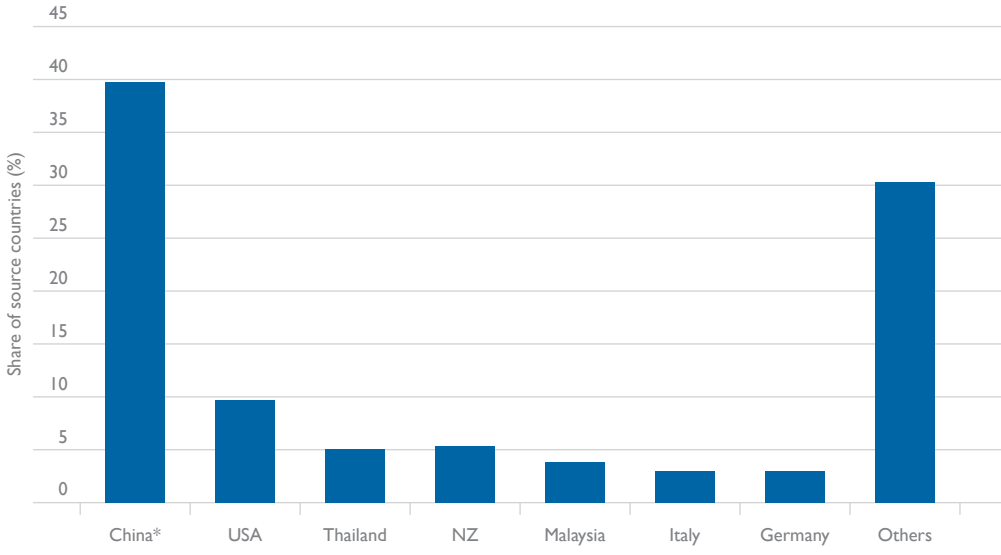
Figure 4.7 Sydney region ports' full containerised export share, by destination country, 2012–13



*Includes Hong Kong.

Source: Sydney Ports (2013).

Figure 4.8 Sydney region ports' full containerised import share by originating country, 2012–13



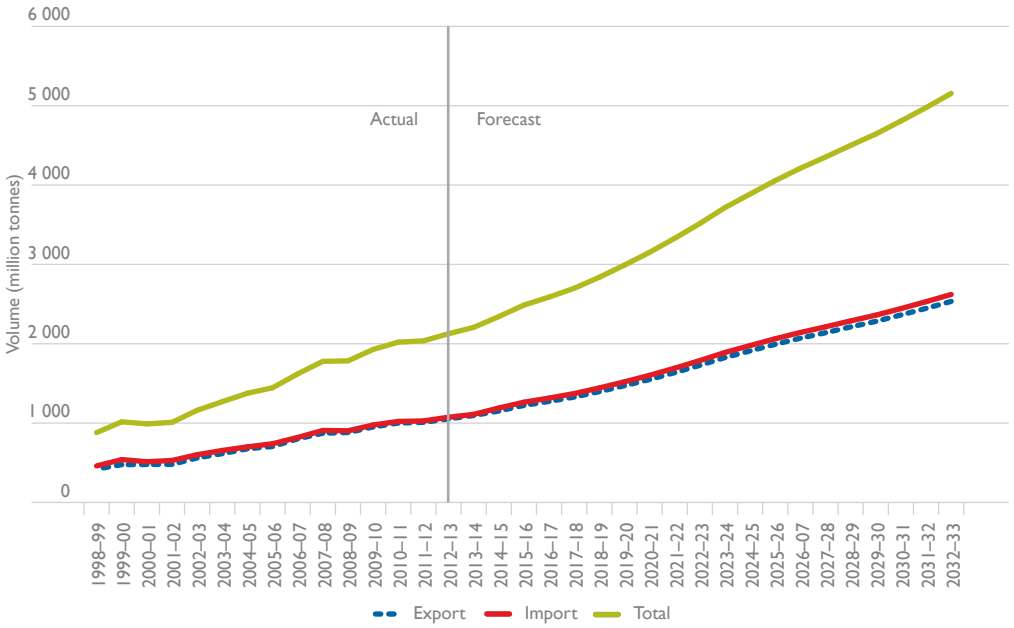
*Includes Hong Kong.

Source: Sydney Ports (2013).

Sydney region ports' full containerised exports, which account for 42.1 per cent of the total containerised exports through Sydney region ports, have increased by an average of 3.8 per cent a year over the last 14 years, from 263 000 TEUs in 1998–99 to 443 000 TEUs in 2012–13 (Figure 4.9 and Table 4.3). However, growth is forecast to be slightly slower—

3.4 per cent a year—over the forecast period, due to assumed slower average growth in Australia's main export markets and a slightly higher exchange rate—average of US$0.82 per Australian dollar—over the forecast period, compared with the average exchange rate of US$0.75 per Australian dollar over the last 20 years. The volume of full containerised exports is projected to increase to 869 000 TEUs in 2032–33.

Figure 4.9 Containerised trade: Sydney region ports



Sources: Ports Australia (2014) and BITRE estimates.

On the other hand, empty export containers, which account for 57.9 per cent of total containerised exports, are projected to increase by 5.2 per cent a year over the next 20 years, from 609 000 TEUs in 2012–13 to 1.7 million TEUs in 2032–33, driven principally by growth in import container volumes.

On the basis of the forecast growth of full and empty export containers, Sydney region ports' total (full plus empty) export containers, which have increased by an average of 6.8 per cent a year over the last 14 years, from 420 000 TEUs in 1998–99 to 1.1 million TEUs in 2012–13, are projected to increase by 4.5 per cent a year over the next 20 years to 2.5 million TEUs in 2032–33.

Based on the assumed growth in real income and the slightly lower value of the Australian dollar, the volume of full containerised imports is projected to increase by 4.6 per cent per year over the next 20 years, from 1.1 million TEUs in 2012–13 to 2.6 million TEUs in 2032–33.

As mentioned in Chapter 2, a small volume of empty containers are imported to Australia to service Australia's commodity exports. Empty container imports to Sydney region ports declined by an average of 4.8 per cent a year over the last 14 years. However, it is projected to increase slightly (an average of 1.3 per cent per a year) over the next 20 years, from 10 000 TEUs in 2012–13 to 13 000 TEUs in 2032–33.

Full containerised imports account for 99.0 per cent of the total (full plus empty) containerised imports through Sydney region ports. Hence, growth in total containerised imports is dictated by growth in full containerised imports. The volume of total containerised imports to Sydney region ports increased by an average of 6.2 per cent a year over the last 14 years, from 460 000 TEUs in 1998–99 to 1.1 million TEUs in 2012–13, and is forecast to increase by 4.6 per cent a year over the forecast period to 2.6 million TEUs in 2032–33. The significantly slower projected growth in total containerised trade through Sydney region ports (4.5 per cent per annum), in comparison with recent historical trends (6.5 per cent per annum), is driven primarily by projected slower domestic GDP growth and the assumed fall in the exchange rate, in combination with the relatively high estimated income and exchange rate elasticities for Sydney region ports' full containerised imports.

Table 4.3 Containerised trade: Sydney region ports

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 TEUs)			
1998–99	263	157	420	440	21	460	880
2008–09	442	439	881	876	26	903	1784
2009–10	443	509	951	951	25	976	1928
2010–11	459	541	1000	1000	20	1021	2020
2011–12	455	553	1009	1017	10	1027	2036
2012–13	443	609	1052	1064	10	1074	2126
2013–14	***436***	***660***	***1096***	***1101***	***9***	***1110***	***2206***
2014–15	**447**	**706**	**1152**	**1180**	**10**	**1190**	**2342**
2015–16	**464**	**759**	**1223**	**1254**	**10**	**1263**	**2487**
2016–17	**477**	**796**	**1273**	**1305**	**10**	**1315**	**2588**
2017–18	**496**	**832**	**1328**	**1362**	**10**	**1372**	**2699**
2018–19	**504**	**892**	**1396**	**1433**	**10**	**1443**	**2838**
2019–20	**532**	**939**	**1471**	**1510**	**10**	**1520**	**2991**
2020–21	**545**	**1004**	**1549**	**1593**	**10**	**1602**	**3152**
2021–22	**576**	**1061**	**1636**	**1682**	**10**	**1692**	**3329**
2022–23	**596**	**1132**	**1728**	**1777**	**10**	**1788**	**3515**
2023–24	**613**	**1213**	**1826**	**1880**	**10**	**1890**	**3716**
2024–25	**632**	**1278**	**1910**	**1967**	**10**	**1977**	**3887**
2025–26	**662**	**1331**	**1993**	**2052**	**10**	**2063**	**4056**
2026–07	**694**	**1376**	**2070**	**2131**	**11**	**2142**	**4212**
2027–28	**727**	**1412**	**2139**	**2202**	**12**	**2213**	**4353**
2028–29	**762**	**1450**	**2212**	**2276**	**12**	**2288**	**4500**
2029–30	**799**	**1483**	**2282**	**2348**	**13**	**2360**	**4643**
2030–31	**835**	**1528**	**2363**	**2430**	**13**	**2443**	**4807**
2031–32	**847**	**1599**	**2446**	**2517**	**13**	**2530**	**4976**
2032–33	**869**	**1664**	**2534**	**2608**	**13**	**2621**	**5155**
Annual average growth rate (per cent)							
1998–99 to 2012–13	3.8	10.2	6.8	6.5	-4.8	6.2	6.5
2012–13 to 2032–33	**3.4**	**5.2**	**4.5**	**4.6**	**1.3**	**4.6**	**4.5**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

The projected positive growth in containerised exports and imports will result in average growth of 4.5 per cent a year in the volume of total (exports plus imports) containerised trade through Sydney region ports over the next 20 years to 5.2 million TEUs in 2032–33.

Non-containerised trade

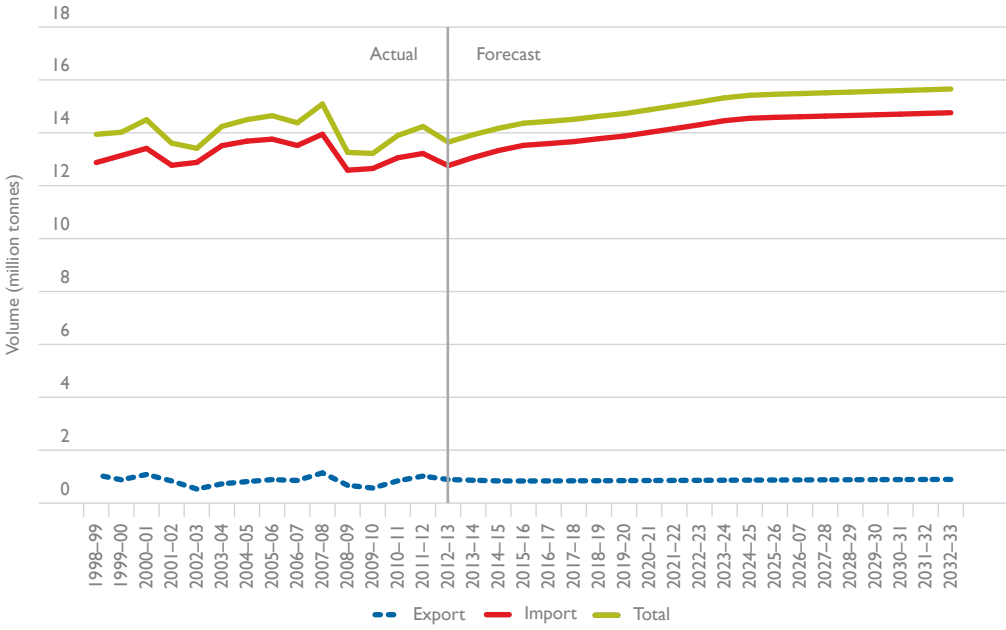
Sydney region ports' non-containerised trade is also dominated by imports, which account for 93.5 per cent of total non-containerised trade. Non-containerised exports comprise the other 6.5 per cent. Oil dominates the non-containerised trade of Sydney region ports, accounting for 86.9 per cent of the total non-containerised exports and 88.4 per cent of the total non-containerised imports (Sydney Ports 2013). In 2012–13, Sydney region ports imported 5.7 million tonnes of crude oil and 5.5 million tonnes of refined oil, and it exported 146 000 tonnes of crude oil and 628 000 tonnes of refined oil. Other major non-containerised commodities traded through Sydney region ports are cement, gypsum, salt, sugar, bulk liquids and gas.

The volume of non-containerised exports through Sydney region ports has declined by an average of 1.3 per cent a year over the last 14 years, from 1.1 million tonnes in 1998–99 to 0.9 million tonnes in 2012–13 (Figure 4.10 and Table 4.4). Although the expected higher economic growth in Australia's export destinations and lower growth in Australia's export prices over the forecast period, compared with the corresponding growth rates over the last 14 years, is expected to have a positive influence on non-containerised exports through Sydney region ports, the closure of the Shell oil refinery at Clyde in September 2012 and foreshadowed closure of the Caltex oil refinery at Kurnell, scheduled for mid-2014, will reduce both the demand for crude imports and potentially also crude and refined petroleum product exports. This could significantly reduce the total volume of non-containerised exports over the forecast horizon, given that refined exports comprised approximately 70 per cent of total non-containerised exports. The volume of non-containerised exports through Sydney region ports is projected to remain at its current level—0.9 million tonnes—over the next 20 years.

The volume of non-containerised imports, which declined by 0.1 per cent a year over the last 14 years, is projected to rise by 0.7 per cent, from 12.8 million tonnes in 2012–13 to 14.8 million tonnes in 2032–33, largely due to continuing positive economic growth in Australia and an expected increase in refined petroleum product import demand following the closure of the Shell oil refinery at Clyde in September 2012 and scheduled 2014 closure of the Caltex oil refinery at Kurnell.

Overall, total non-containerised trade through Sydney region ports is projected to increase slightly, from 13.7 million tonnes in 2012–13 to 15.7 million tonnes by 2032–33, implied average annual growth of 0.7 per cent a year over that period.

Figure 4.10 Non-containerised trade: Sydney region ports



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.4 Non-containerised trade: Sydney region ports

Year	Export	Import	Total
	(million tonnes)		
1998–99	1.1	12.9	13.9
2008–09	0.7	12.6	13.3
2009–10	0.6	12.7	13.2
2010–11	0.8	13.1	13.9
2011–12	1.0	13.2	14.2
2012–13	0.9	12.8	13.7
2013–14	**0.9**	**13.1**	**13.9**
2014–15	**0.8**	**13.3**	**14.2**
2015–16	**0.8**	**13.5**	**14.4**
2016–17	**0.8**	**13.6**	**14.4**
2017–18	**0.8**	**13.7**	**14.5**
2018–19	**0.8**	**13.8**	**14.6**
2019–20	**0.9**	**13.9**	**14.7**
2020–21	**0.9**	**14.0**	**14.9**
2021–22	**0.9**	**14.2**	**15.0**
2022–23	**0.9**	**14.3**	**15.2**
2023–24	**0.9**	**14.5**	**15.3**
2024–25	**0.9**	**14.6**	**15.4**
2025–26	**0.9**	**14.6**	**15.5**
2026–07	**0.9**	**14.6**	**15.5**
2027–28	**0.9**	**14.6**	**15.5**
2028–29	**0.9**	**14.7**	**15.5**
2029–30	**0.9**	**14.7**	**15.6**
2030–31	**0.9**	**14.7**	**15.6**
2031–32	**0.9**	**14.7**	**15.6**
2032–33	**0.9**	**14.8**	**15.7**
Annual average growth rate (per cent)			
1998–99 to 2012–13	-1.3	-0.1	-0.2
2012–13 to 2032–33	**0.0**	**0.7**	**0.7**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Port of Melbourne

The Port of Melbourne, which is managed by the Port of Melbourne Corporation, is the largest container port in Australia in terms of trade volume. It accounts for 35.1 per cent of Australia's total containerised trade. In 2012–13, total containerised trade through the Port of Melbourne was 2.5 million TEUs.

In 2012–13, total (i.e. containerised plus non-containerised) trade through the Port of Melbourne declined by 2.3 per cent over 2011–12 to 35.1 million tonnes. This included a drop in total containerised trade of 2.6 per cent to 2.5 million TEUs. Both containerised exports and imports through the port declined by 2.8 and 2.4 per cent, to 1.2 and 1.3 million TEUs, respectively.

Containerised trade

Port of Melbourne (2014) reports the main containerised export commodities shipped through the Port of Melbourne in 2012–13 were (by mass):

- cereal grains, paperboards and fibreboards
- dairy products, fruit and vegetables
- pulp and wastepaper
- miscellaneous manufactures
- beverages
- paper and newsprint
- stockfeed and meat

The main containerised import commodities (by mass) were (Port of Melbourne 2014):

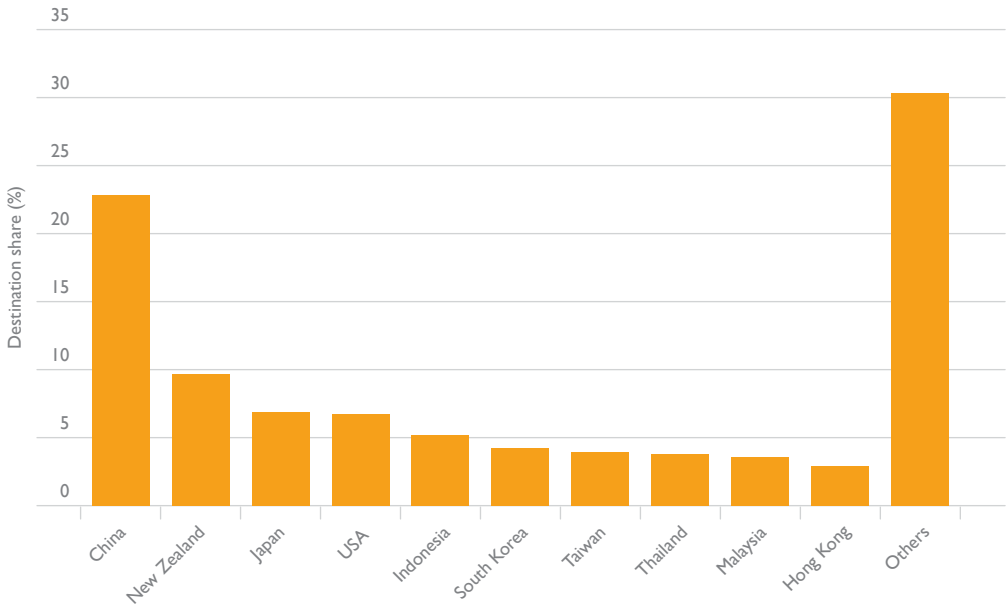
- miscellaneous manufactures
- furniture
- electrical equipment
- fruit and vegetables
- paper and newsprint
- clothing
- machinery
- metal manufactures
- motor vehicle parts
- toys and sporting goods

The top five export destinations for commodities exported from the Port of Melbourne are China, New Zealand, Japan, the USA and Indonesia (Figure 4.11), whereas the top five origins of commodities imported through the Port of Melbourne are China, the USA, New Zealand, Thailand and Germany (Figure 4.12).

Notwithstanding the drop in trade volumes in 2012–13, the volume of containerised trade through the Port of Melbourne has increased over the last 14 years by an average of 5.9 per cent a year, from 1.1 million TEUs in 1998–99 to 2.5 million TEUs in 2012–13 (Figure 4.13 and Table 4.5). It is projected to increase by 4.8 per cent a year over the next 20 years to 6.4 million TEUs in 2032–33. The volume of total containerised exports and imports are projected to grow at the same rate—4.8 per cent a year—over the forecast period to around 3.2 million TEUs each by 2032–33.

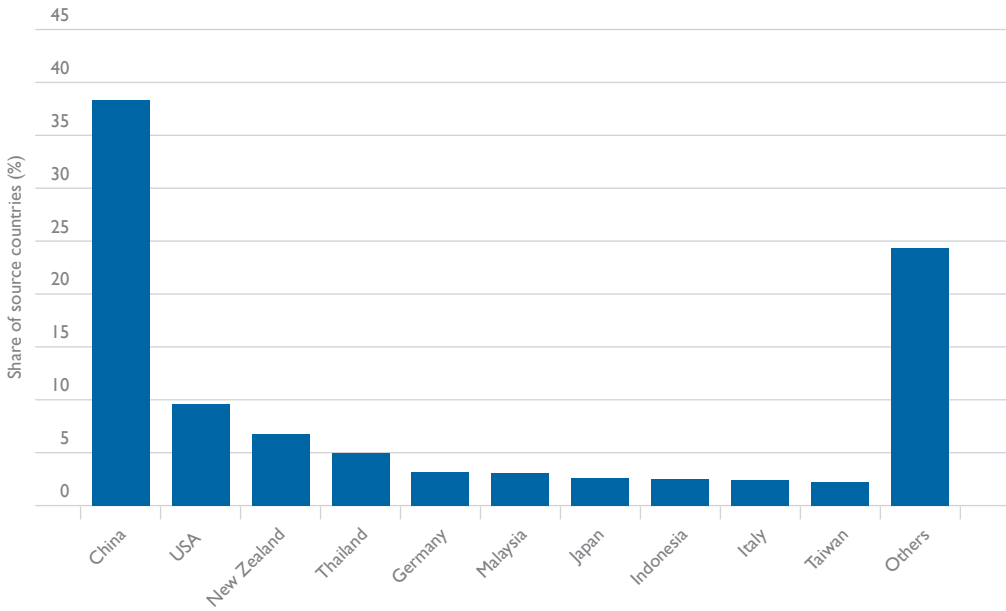
Full and empty containers account for 69.4 and 30.6 per cent of total containerised exports through the Port of Melbourne, respectively. Full containerised exports, which increased by 5.0 per cent a year over the last 14 years, are projected to grow by 4.3 per cent a year over the next 20 years, from 863 000 TEUs in 2012–13 to around 2.0 million TEUs in 2032–33, driven by the continuing positive economic outlook for Australia's export destination countries, mainly China and the OECD.

Figure 4.11 Port of Melbourne full containerised export share, by destination country, 2012–13



Source: Port of Melbourne (2014).

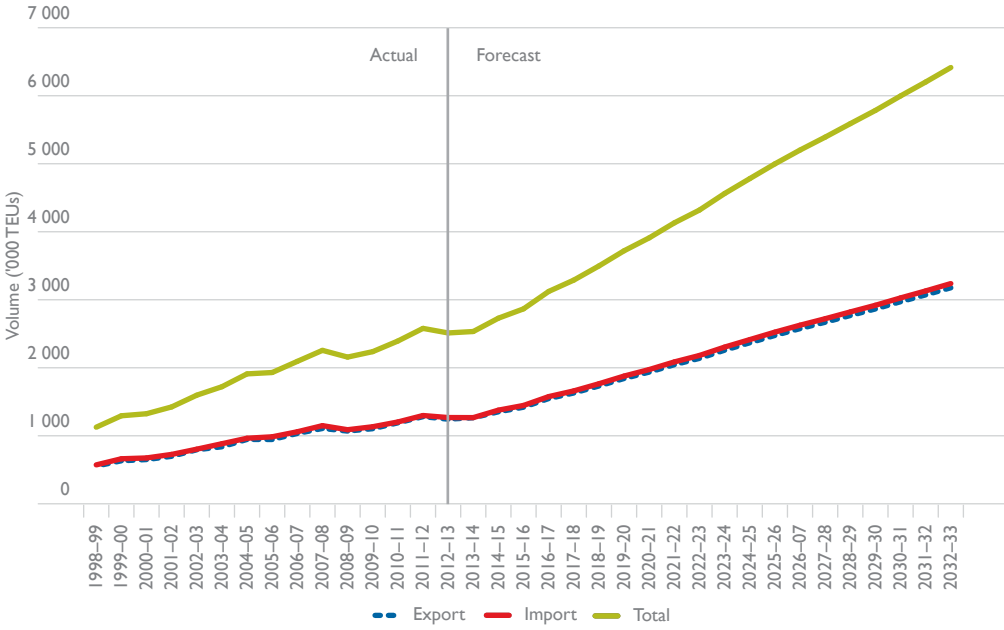
Figure 4.12 Port of Melbourne full containerised import share, by originating country, 2012–13



Source: Port of Melbourne (2014).

About 90.0 per cent of total containerised imports to the Port of Melbourne are full containers, and the remaining 10 per cent are empty containers. Full containerised imports increased by 6.1 per cent a year over the last 14 years, and are projected to increase by 5.0 per cent a year over the next 20 years, from 1.1 million TEUs in 2012–13 to around 3.0 million TEUs in 2032–33. Continuing economic growth in Australia, at a slightly slower rate than the historical average, is the main reason for slightly slower projected growth in full containerised imports over the forecast period.

Figure 4.13 Containerised trade: Port of Melbourne



Sources: Ports Australia (2014) and BITRE estimates.

Imports of empty containers are projected to increase by 3.1 per cent a year over the forecast period, from 133 000 TEUs in 2012–13 to 243 000 TEUs in 2032–33. On the other hand, exports of empty containers, the residual of full and empty import containers less full export containers, are forecast to increase by 5.8 per cent a year over the forecast period, from 381 000 TEUs in 2012–13 to 1.2 million TEUs in 2032–33.

Non-containerised trade

In 2012–13, the volume of non-containerised trade through the Port of Melbourne was 11.8 million tonnes, largely dominated by imports. Imports accounted for 76.4 per cent and exports 23.6 per cent of the total non-containerised trade, respectively.

The main non-containerised export commodities, by volume, through the Port of Melbourne in 2012–13 were (Ports Australia 2014):

- grains
- oil and petroleum
- steel
- motor vehicles
- wool

The main non-containerised import commodities, by volume, through the Port of Melbourne in 2012–13 were (PMC 2013):

- crude oil,
- motor vehicles,
- petroleum products,
- cement and
- transport equipment

Table 4.5 Containerised trade: Port of Melbourne

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 EUs)			
1998–99	437	117	554	497	75	572	1126
2008–09	713	356	1069	980	108	1089	2157
2009–10	767	337	1104	1035	98	1133	2237
2010–11	806	384	1190	1090	113	1203	2393
2011–12	885	395	1281	1167	131	1298	2579
2012–13	863	381	1244	1135	133	1268	2512
2013–14	***879***	***386***	***1265***	***1132***	***135***	***1267***	***2533***
2014–15	**892**	**461**	**1352**	**1241**	**135**	**1377**	**2729**
2015–16	**934**	**486**	**1420**	**1310**	**136**	**1446**	**2866**
2016–17	**990**	**557**	**1547**	**1439**	**137**	**1576**	**3122**
2017–18	**1036**	**593**	**1629**	**1521**	**140**	**1660**	**3289**
2018–19	**1097**	**635**	**1732**	**1619**	**146**	**1765**	**3497**
2019–20	**1161**	**681**	**1842**	**1725**	**153**	**1878**	**3720**
2020–21	**1200**	**735**	**1936**	**1822**	**153**	**1974**	**3910**
2021–22	**1266**	**779**	**2045**	**1925**	**161**	**2086**	**4131**
2022–23	**1331**	**807**	**2138**	**2012**	**169**	**2181**	**4319**
2023–24	**1400**	**858**	**2258**	**2129**	**175**	**2304**	**4562**
2024–25	**1469**	**898**	**2367**	**2231**	**183**	**2414**	**4781**
2025–26	**1537**	**938**	**2475**	**2331**	**193**	**2524**	**4998**
2026–07	**1606**	**970**	**2575**	**2425**	**201**	**2626**	**5201**
2027–28	**1675**	**994**	**2669**	**2510**	**211**	**2721**	**5391**
2028–29	**1749**	**1019**	**2768**	**2600**	**221**	**2821**	**5589**
2029–30	**1824**	**1040**	**2865**	**2687**	**232**	**2919**	**5784**
2030–31	**1900**	**1071**	**2971**	**2785**	**242**	**3027**	**5997**
2031–32	**1979**	**1093**	**3072**	**2888**	**242**	**3130**	**6202**
2032–33	**1996**	**1180**	**3176**	**2995**	**243**	**3238**	**6415**
Annual average growth rate (per cent)							
1998–99 to 2012–13	5.0	8.8	6.0	6.1	4.2	5.8	5.9
2012–13 to 2032–33	**4.3**	**5.8**	**4.8**	**5.0**	**3.1**	**4.8**	**4.8**

*Numbers in bold are forecasts.

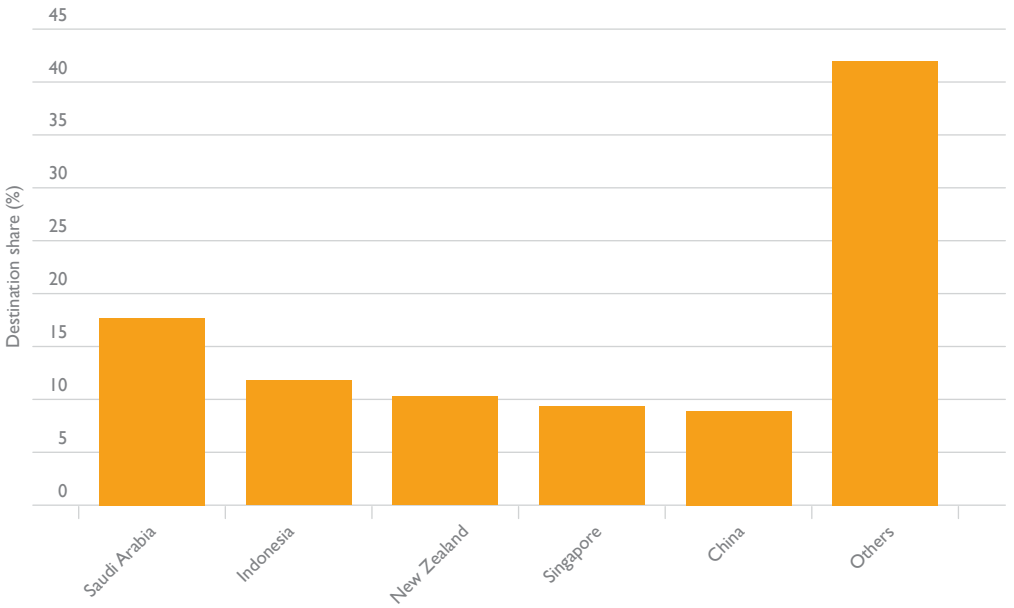
Sources: Ports Australia (2014) and BITRE estimates.

The main destinations of non-containerised exports through the Port of Melbourne in 2011–12 were Saudi Arabia, Indonesia, New Zealand, Singapore and China (Figure 4.14), while the main origins of non-containerised imports through the Port of Melbourne in 2011–12 were Japan, Gabon, Singapore, Thailand and Indonesia (Figure 4.15).

Total non-containerised trade (exports plus imports) through the Port of Melbourne, which increased by 1.5 per cent a year over the last 14 years to 11.8 million tonnes in 2012–13, is forecast to increase by 0.6 per cent a year over the next 20 years to 13.2 million tonnes in 2032–33 (Figure 4.16 and Table 4.6).

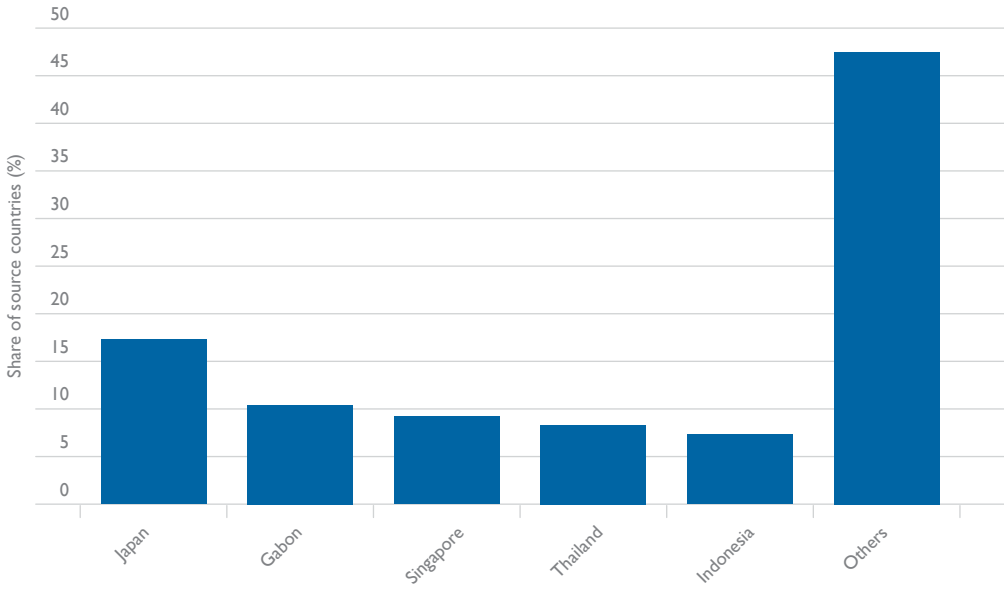
Non-containerised exports through the Port of Melbourne, which increased by 1.3 per cent a year over the last 14 years to 2.8 million tonnes in 2012–13, are predicted to increase by 0.4 per cent a year over the next 20 years to 3.0 million tonnes in 2032–33, mainly due to the positive economic outlook for Australia's export destinations. Scheduled closure of domestic car manufacturing plants in Melbourne and Adelaide over the next three years is expected to curtail motor vehicle exports through the Port of Melbourne and Port Adelaide. However, its effect on total non-containerised exports through the Port of Melbourne, while not insignificant, will be relatively small as motor vehicles exports currently account for 8.5 per cent of total non- containerised exports (by mass) through the Port of Melbourne. Exports of other non-containerised commodities—e.g. wheat, canola and barley—are expected to increase to compensate the loss of shipment of car exports.

Figure 4.14 Port of Melbourne non-containerised export share, by destination country, 2012–13



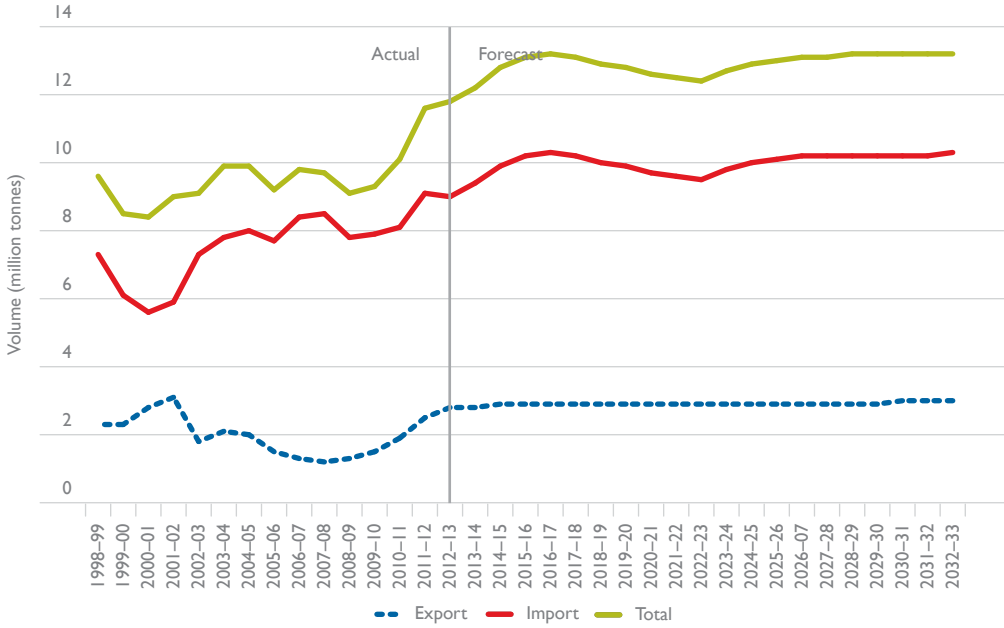
Source: Port of Melbourne (2014).

Figure 4.15 Port of Melbourne non-containerised import share, by originating country, 2012–13



Source: Port of Melbourne (2014).

Figure 4.16 Non-containerised trade: Port of Melbourne



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.6 Non-containerised trade: Port of Melbourne

Year	Export	Import	Total
	(million tonnes)		
1998–99	2.3	7.3	9.6
2008–09	1.3	7.8	9.1
2009–10	1.5	7.9	9.3
2010–11	1.9	8.1	10.1
2011–12	2.5	9.1	11.6
2012–13	2.8	9.0	11.8
2013–14	**2.8**	**9.4**	**12.2**
2014–15	**2.9**	**9.9**	**12.8**
2015–16	**2.9**	**10.2**	**13.1**
2016–17	**2.9**	**10.3**	**13.2**
2017–18	**2.9**	**10.2**	**13.1**
2018–19	**2.9**	**10.0**	**12.9**
2019–20	**2.9**	**9.9**	**12.8**
2020–21	**2.9**	**9.7**	**12.6**
2021–22	**2.9**	**9.6**	**12.5**
2022–23	**2.9**	**9.5**	**12.4**
2023–24	**2.9**	**9.8**	**12.7**
2024–25	**2.9**	**10.0**	**12.9**
2025–26	**2.9**	**10.1**	**13.0**
2026–07	**2.9**	**10.2**	**13.1**
2027–28	**2.9**	**10.2**	**13.1**
2028–29	**2.9**	**10.2**	**13.2**
2029–30	**2.9**	**10.2**	**13.2**
2030–31	**3.0**	**10.2**	**13.2**
2031–32	**3.0**	**10.2**	**13.2**
2032–33	**3.0**	**10.3**	**13.2**
Annual average growth rate (per cent)			
1998–99 to 2012–13	1.3	1.5	1.5
2012–13 to 2032–33	**0.4**	**0.7**	**0.6**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Similarly, non-containerised imports, which increased by 1.5 per cent a year over the last 14 years to 9.0 million tonnes in 2012–13, are projected to increase by 0.7 per cent a year to 10.3 million tonnes in 2032–33. The slowing of the Australian economy over the forecast period is the main reason for the projected slower growth in non-containerised imports over the forecast period.

Port Adelaide

Port Adelaide, which is managed by Flinders Ports Pty Ltd (FPPL), is the major gateway for exports and imports of containerised and non-containerised cargoes to and from South Australia. Port Adelaide's major trading regions are Northern Europe, the United Kingdom (UK), the Mediterranean, Africa, the USA, Japan, South Korea, South East Asia and the Middle East.

In 2012–13, Port Adelaide's total trade was 15.2 million tonnes, comprising exports of 8.6 million tonnes (56.6 per cent by mass) and imports of 6.6 million tonnes (43.4 per cent by mass). Although total containerised trade through Port Adelaide increased by 4.7 per cent in 2012–13, over 2011–12, total trade volumes through Port Adelaide declined by 3.2 per cent to 15.2 million tonnes in the same year due to a decline of 5.5 per cent in its non-containerised trade.

The main export commodities through Port Adelaide in 2012–13 were:

- grain
- general cargo
- gypsum
- vegetables
- legumes
- oilseeds
- scrap metal
- concentrates
- lead zinc
- copper
- uranium
- salt
- fruit
- cars
- stock feed
- timber
- soda ash and
- iron and steel

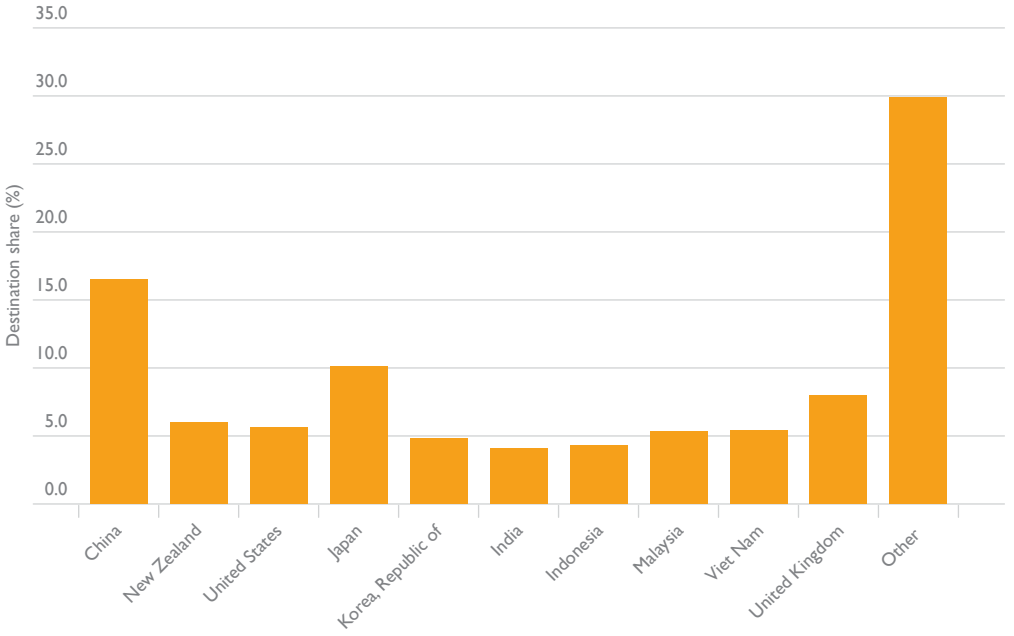
The main import commodities through Port Adelaide in 2012–13 were:

- petroleum
- gas
- general cargo
- fertilisers
- limestone
- iron and steel
- sulphur
- chemicals and
- cars

Containerised trade

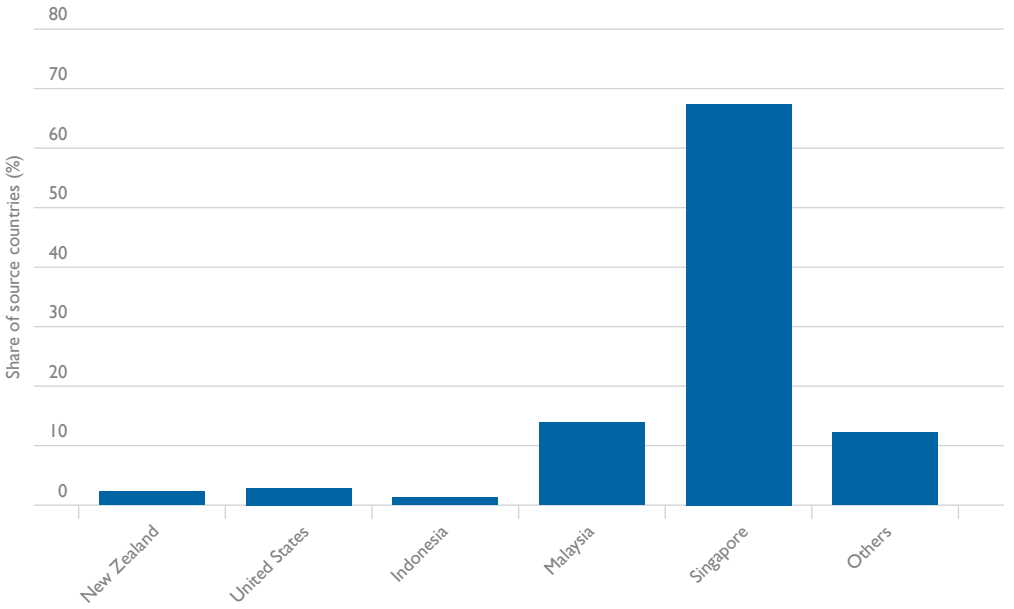
The main destinations of commodities exported from Port Adelaide are China, New Zealand, the USA, Japan, South Korea, India, Indonesia, Malaysia, Vietnam and the United Kingdom (Figure 4.17), whereas the main origins of commodities imported through the Port Adelaide are New Zealand, the USA, Indonesia, Malaysia and Singapore (Figure 4.18).

Figure 4.17 Port Adelaide full containerised export share, by destination country, 2012–13



Source: Flinders Ports (2014).

Figure 4.18 Port Adelaide full containerised import share, by originating country, 2012–13

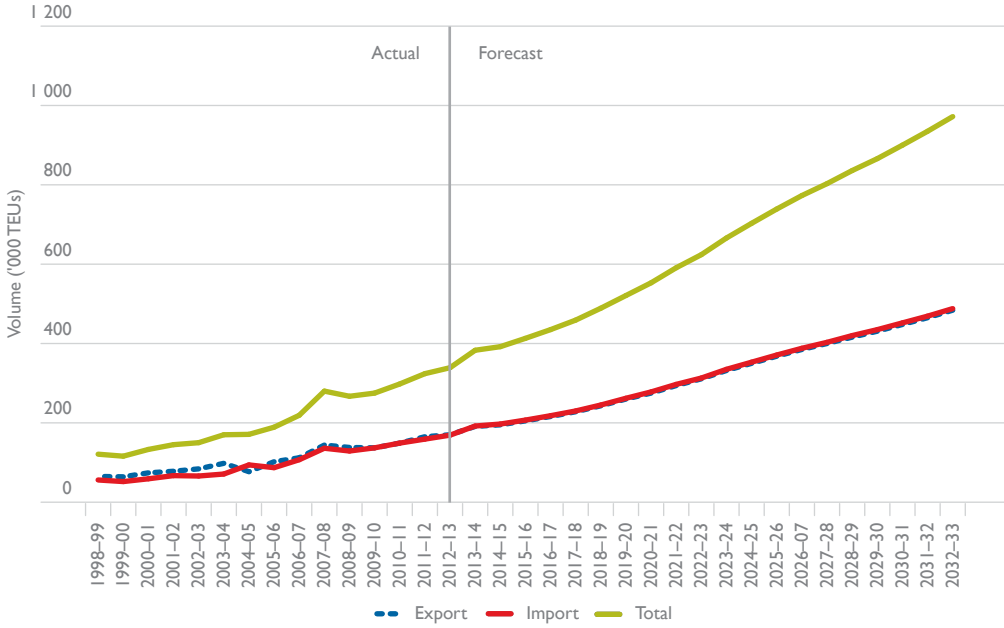


Source: Flinders Ports (2014).

Growth in total containerised trade through Port Adelaide has been strong, approximately 7.7 per cent a year over the last 14 years. However, such strong growth is not projected to continue over the forecast period. Total containerised trade is forecast to increase by 5.4 per cent a year over the next 20 years, from 339 000 TEUs in 2012–13 to around 1.0 million TEUs in 2032–33 (Figure 4.19 and Table 4.7).

Total containerised exports through Port Adelaide increased by 7.1 per cent a year over the last 14 years, from 65 000 TEUs in 1998–99 to 170 000 TEUs in 2012–13, and are projected to increase by 5.4 per cent a year over the next 20 years to 484 000 TEUs in 2032–33.

Figure 4.19 Containerised trade: Port Adelaide



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.7 Containerised trade: Port Adelaide

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 TEUs)			
1998–99	54	11	65	39	17	56	121
2008–09	116	23	138	75	54	129	267
2009–10	119	19	137	90	48	137	275
2010–11	125	23	149	105	44	149	298
2011–12	137	27	165	118	41	159	324
2012–13	142	29	170	127	42	169	339
2013–14	*158*	*33*	*191*	*140*	*52*	*192*	*383*
2014–15	**159**	**36**	**195**	**148**	**49**	**197**	**392**
2015–16	**169**	**37**	**205**	**156**	**51**	**207**	**413**
2016–17	**180**	**37**	**216**	**165**	**54**	**218**	**435**
2017–18	**191**	**37**	**228**	**174**	**57**	**230**	**459**
2018–19	**205**	**39**	**243**	**186**	**60**	**245**	**489**
2019–20	**219**	**41**	**260**	**199**	**63**	**262**	**521**
2020–21	**226**	**49**	**275**	**213**	**65**	**278**	**553**
2021–22	**244**	**50**	**294**	**229**	**68**	**297**	**591**
2022–23	**257**	**53**	**311**	**243**	**70**	**313**	**624**
2023–24	**274**	**57**	**332**	**261**	**73**	**335**	**666**
2024–25	**290**	**60**	**350**	**277**	**76**	**353**	**703**
2025–26	**305**	**63**	**368**	**293**	**79**	**371**	**739**
2026–07	**320**	**64**	**385**	**307**	**81**	**388**	**773**
2027–28	**336**	**64**	**400**	**320**	**84**	**403**	**803**
2028–29	**352**	**64**	**416**	**333**	**86**	**420**	**836**
2029–30	**365**	**66**	**431**	**346**	**88**	**435**	**866**
2030–31	**379**	**70**	**448**	**362**	**90**	**452**	**900**
2031–32	**388**	**77**	**465**	**378**	**92**	**469**	**935**
2032–33	**400**	**84**	**484**	**395**	**93**	**488**	**972**
Annual average growth rate (per cent)							
1998–99 to 2012–13	7.2	7.0	7.1	8.8	6.7	8.2	7.7
2012–13 to 2032–33	**5.3**	**5.5**	**5.4**	**5.8**	**4.1**	**5.5**	**5.4**

* Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Presently, full and empty containers account for 83.1 and 16.9 per cent of total containerised exports through Port Adelaide, respectively. Full container exports, which increased by 7.2 per cent a year over the last 14 years, are forecast to increase by 5.3 per cent a year over the next 20 years to 400 000 TEUs in 2032–33. The slower projected growth over the forecast period is due to slower economic growth in Australia's main export destination countries and an assumed high value of Australian dollar, against the US dollar, over the forecast period.

In 2012–13, around 29 000 empty TEUs were exported from Port Adelaide. The number is projected to increase by 5.5 per cent a year over the next 20 years to 84 000 in 2032–33.

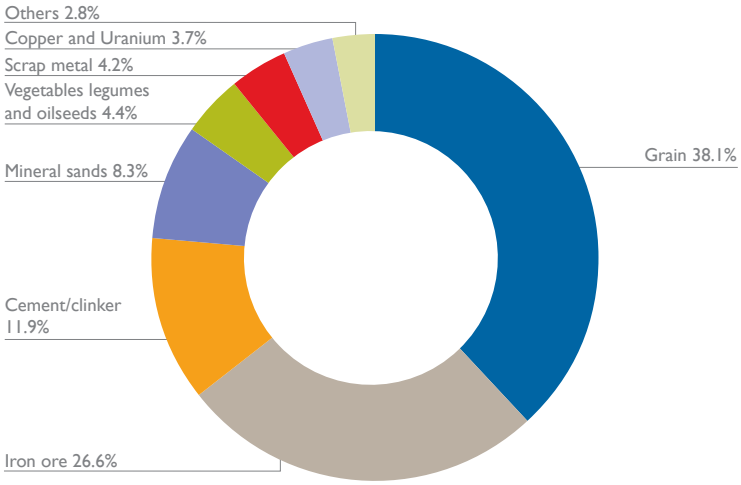
Port Adelaide's total containerised imports, which increased by 8.2 per cent a year over the last 14 years, from 56 000 TEUs in 1998–99 to 169 000 TEUs in 2012–13, are projected to increase by 5.5 per cent per annum over the forecast period to 488 000 TEUs in 2032–33. Full and empty container imports account for 75.3 and 24.7 per cent of the total containerised imports, respectively. They are projected to increase by 5.8 and 4.1 per cent a year, respectively, over the next 20 years to 395 000 and 93 000 TEUs in 2032–33.

Non-containerised trade

Exports accounted for 53.6 per cent (by volume) and imports 46.4 per cent of Port Adelaide's total non-containerised trade in 2012–13. The main non-containerised commodities exported through Port Adelaide in 2013 were grain, limestone, iron ore, cement/clinker, mineral sands, vegetables, legumes, oilseeds, scrap metal, copper and uranium (Figure 4.20). The main non-containerised commodities imported through Port Adelaide in 2013 were petroleum and gas, limestone, fertilisers, general cargo, iron and steel (Figure 4.21).

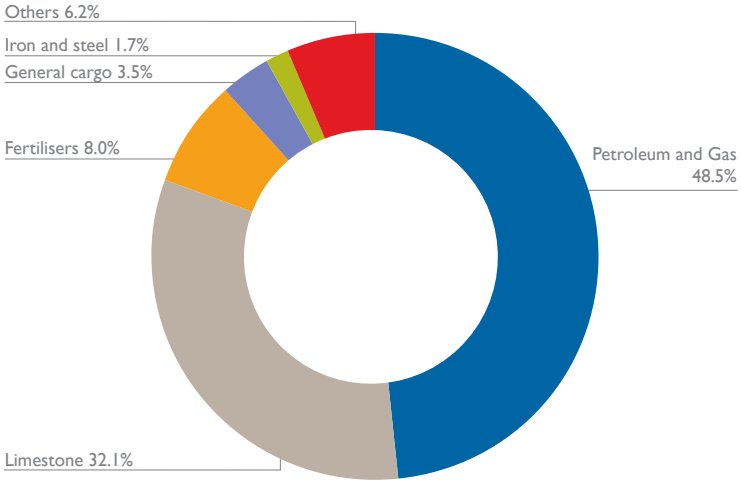
Total non-containerised trade through Port Adelaide grew by 6.6 per cent per annum over the last 14 years, from 4.6 million tonnes in 1998–99 to 11.2 million tonnes in 2012–13 (Figure 4.22 and Table 4.8). This strong growth is the result of a surge in non-containerised exports in 2009–10, 2010–11 and 2011–12, which grew by 52.3, 27.7 and 48.1 per cent in those three years, mainly due to strong domestic grain growing conditions, driving increased grain exports in these three years, and exceptionally strong exports of iron ore, cement/clinker, copper, uranium and livestock. Total non-containerised exports have increased by 6.5 per cent a year over the last 14 years to 6.0 million tonnes in 2012–13. However, such high growth in non-containerised exports through Port Adelaide is not expected to continue over the forecast period due to the expected slowing of many Asian economies, including China, and the recent high grain export volumes, reflecting exceptional growing conditions experienced in South Australia in that period. Port Adelaide's total non-containerised exports are projected to increase by 4.4 per cent a year over the next 20 years to 14.1 million tonnes in 2032–33.

Figure 4.20 Main non-containerised export commodities through Port Adelaide, 2012–13



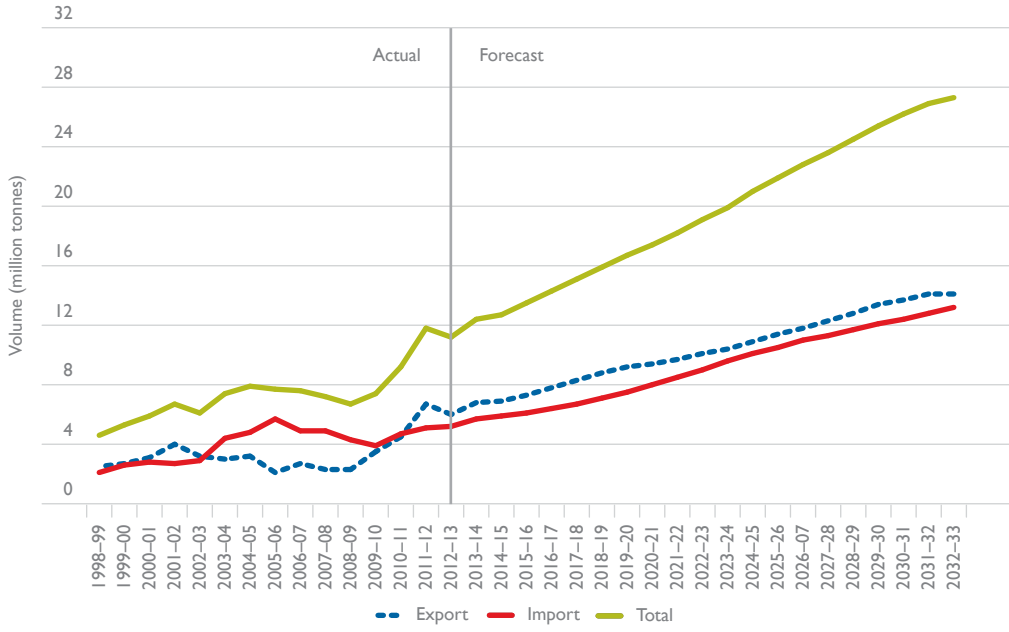
Source: Flinders Port (2014).

Figure 4.21 Main non-containerised import commodities through Port Adelaide, 2012–13



Source: Flinders Port (2014).

Figure 4.22 Non-containerised trade: Port Adelaide



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.8 Non-containerised trade: Port Adelaide

Year	Export	Import	Total
	(million tonnes)		
1998–99	2.5	2.1	4.6
2008–09	2.3	4.3	6.7
2009–10	3.5	3.9	7.4
2010–11	4.5	4.7	9.2
2011–12	6.7	5.1	11.8
2012–13	6.0	5.2	11.2
2013–14	**6.8**	**5.7**	**12.4**
2014–15	**6.9**	**5.9**	**12.7**
2015–16	**7.3**	**6.1**	**13.5**
2016–17	**7.8**	**6.4**	**14.3**
2017–18	**8.3**	**6.7**	**15.1**
2018–19	**8.8**	**7.1**	**15.9**
2019–20	**9.2**	**7.5**	**16.7**
2020–21	**9.4**	**8.0**	**17.4**
2021–22	**9.7**	**8.5**	**18.2**
2022–23	**10.1**	**9.0**	**19.1**
2023–24	**10.4**	**9.6**	**19.9**
2024–25	**10.9**	**10.1**	**21.0**
2025–26	**11.4**	**10.5**	**21.9**
2026–07	**11.8**	**11.0**	**22.8**
2027–28	**12.3**	**11.3**	**23.6**
2028–29	**12.8**	**11.7**	**24.5**
2029–30	**13.4**	**12.1**	**25.4**
2030–31	**13.7**	**12.4**	**26.2**
2031–32	**14.1**	**12.8**	**26.9**
2032–33	**14.1**	**13.2**	**27.3**
Annual average growth rate (per cent)			
1998–99 to 2012–13	6.5	6.7	6.6
2012–13 to 2032–33	**4.4**	**4.8**	**4.6**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

The volume of non-containerised imports through Port Adelaide increased by 6.7 per cent a year over the last 14 years to 5.2 million tonnes in 2012–13, and is projected to increase by 4.8 per cent a year over the next 20 years to 13.2 million tonnes in 2032–33. The expected lower growth forecast is largely due to the slowing of the Australian economy and an expected rise in average import prices over the forecast period. Real average import prices, which declined by 0.7 per cent a year over the last 14 years, are assumed to rise by 1.2 per cent a year over the forecast period.

As in the case of the Port of Melbourne, scheduled closure of domestic car manufacturing plants in Adelaide over the next three years would be expected to impact motor vehicle exports through Port Adelaide. However, it is likely to have only a minimal effect on total non-containerised exports through Port Adelaide as motor vehicle exports account for only 0.5 per cent of total non-containerised exports (by mass) through Port Adelaide—most motor vehicles exports are shipped through the Port of Melbourne. Export of other non-containerised commodities—grain, iron ore, limestone, cement/clinker and mineral sands—is expected to increase to compensate the loss of shipment of car exports through Port Adelaide.

Total non-containerised trade through Port Adelaide is forecast to increase by 4.6 per cent per annum over the next 20 years, from 11.2 million tonnes in 2012–13 to 27.3 million tonnes in 2032–33.

Port of Fremantle

The Port of Fremantle, which is managed by Fremantle Port Authority (trading as Fremantle Ports), is the main general cargo port of Western Australia. In 2012–13, total trade through the port was around 32.0 million tonnes, comprising around 18 million tonnes of exports and 14.0 million tonnes of imports.

The main commodities (containerised plus non-containerised) exported through the Port of Fremantle in 2012–13 were grain, iron ore, alumina, refined petroleum and coal. Combined, they account for 80.8 per cent of the total volume all commodities exported through the Port of Fremantle (Fremantle Ports 2013).

The main commodities (containerised plus non-containerised) imported through the Port of Fremantle in 2012–13 were:

- crude petroleum
- refined petroleum
- caustic soda
- cement clinker
- phosphates
- sulphur
- iron and steel products
- chemicals and related products
- manufactures of metal
- slag residue

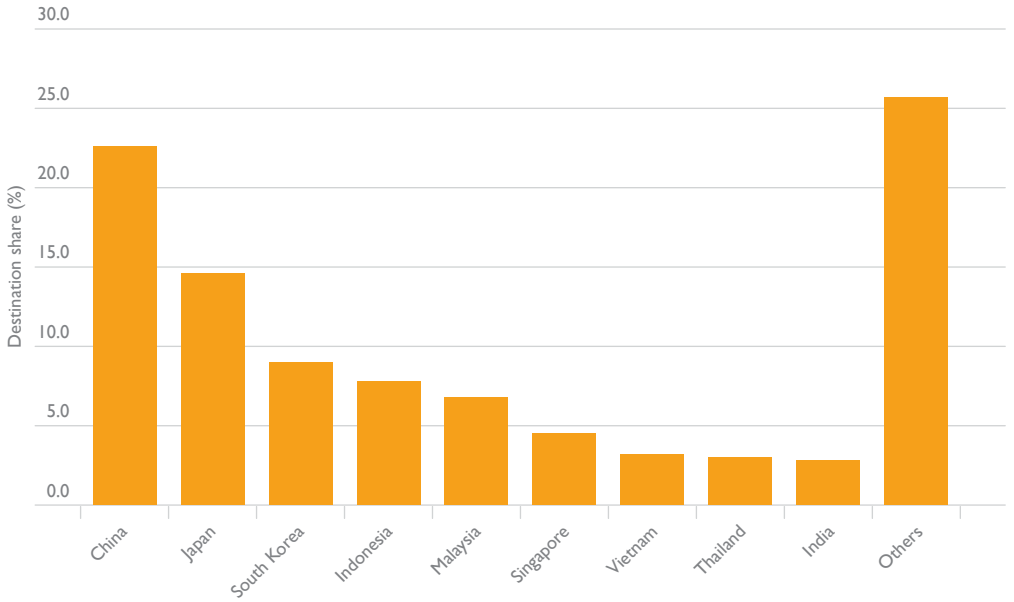
The main trading regions and trade share (i.e. containerised and non-containerised trade combined) of the Port of Fremantle in 2012–13 were:

- East Asia (34.0 per cent)
- South-East Asia (23.0 per cent)
- Middle East (16.0 per cent)
- Australia (12.0 per cent)
- Southern Asia (4.0 per cent)
- UK and Europe (4.0 per cent)
- North America (3.0 per cent)
- Africa (2.0 per cent)
- Others (2.0 per cent)

Containerised trade

The main destinations of containerised commodities exported from the Port of Fremantle are China, Singapore, Malaysia, Japan, South Korea, Indonesia, Thailand, Vietnam and India (Figure 4.23). The main origins of commodities imported through the Port of Fremantle are China, the USA, Thailand, Malaysia, South Korea, Indonesia, Singapore, Germany and other Australian ports (Figure 4.24).

Figure 4.23 Port of Fremantle full containerised export share, by destination country, 2012–13

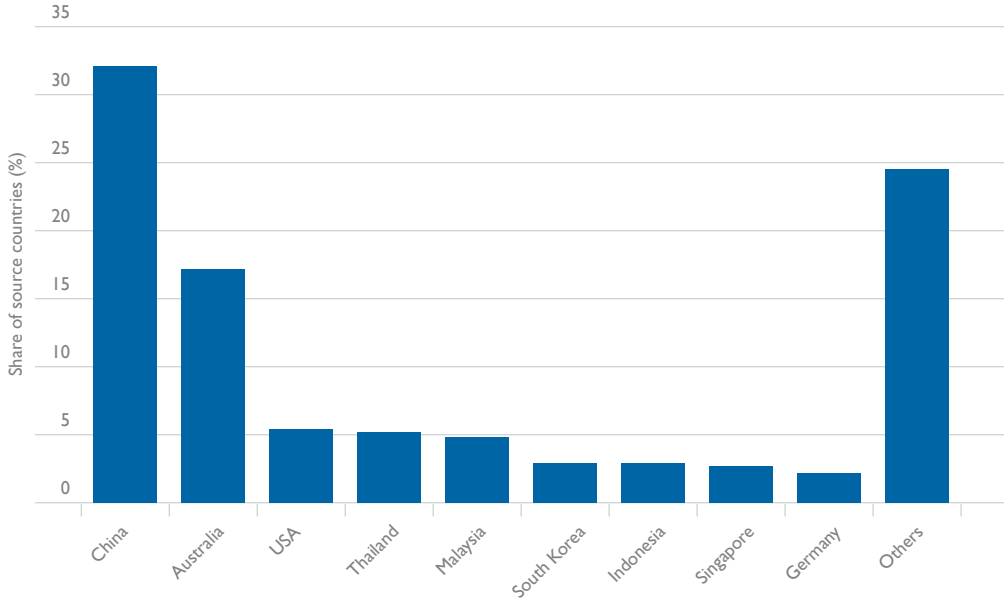


Source: Fremantle Ports (2013).

Total containerised trade through the Port of Fremantle increased by 6.6 per cent a year over the last 14 years, from 276 000 TEUs in 1998–99 to 670 000 TEUs in 2012–13. It is forecast to increase by 5.8 per cent a year over the next 20 years to 2.1 million TEUs in 2032–33 (Figure 4.25 and Table 4.9).

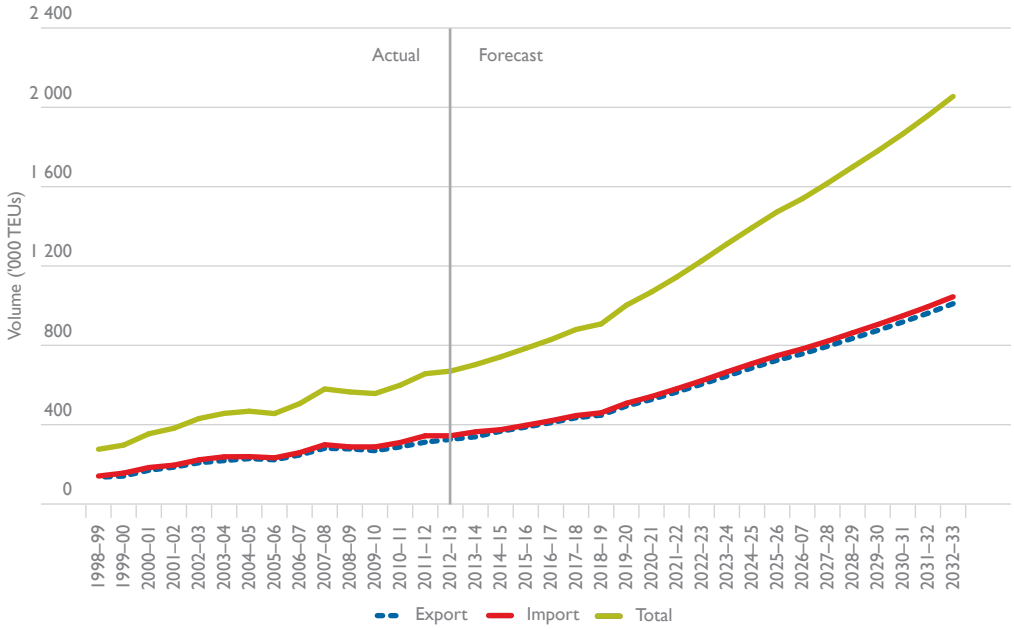
Total containerised exports, which increased by 6.5 per cent a year over the last 14 years, are forecast to increase by 5.8 per cent a year over the next 20 years, from 326 000 TEUs in 2012–13 to 1.0 million TEUs in 2032–33. Full export containers accounted for 53.5 per cent and empty export containers 46.5 per cent of total containerised exports through the Port of Fremantle in 2012–13. Full and empty container exports are projected to increase by 3.3 and 7.7 per cent a year, to 337 000 and 672 000 TEUs, respectively, by 2032–33.

Figure 4.24 Port of Fremantle full containerised import share, by originating country, 2012–13



Source: Fremantle Ports (2013).

Figure 4.25 Containerised trade: Port of Fremantle



Sources: Ports Australia (2014) and BITRE estimates.

Total containerised imports through the Port of Fremantle, which increased by 6.6 per cent a year over the last 14 years to 344 000 TEUs in 2012–13, are forecast to increase by 5.7 per cent per annum during the forecast period to 1.0 million TEUs in 2032–33. Full containerised imports increased by 8.1 per cent a year over the last 14 years to 330 000 TEUs in 2012–13 and are forecast to increase by 5.9 per cent a year over the forecast period to 1.0 million TEUs in 2032–33. Empty container imports through the Port of Fremantle are projected to increase by 0.5 per cent a year over the next 20 years to 15 000 TEUs in 2032–33.

Non-containerised trade

In 2012–13, the Port of Fremantle handled 25.7 million tonnes of non-containerised trade, which has increased by 1.7 per cent a year over the last 14 years. Total non-containerised trade is forecast to increase by 1.1 per cent over the next 20 years to 31.9 million tonnes in 2032–33 (Figure 4.26 and Table 4.10).

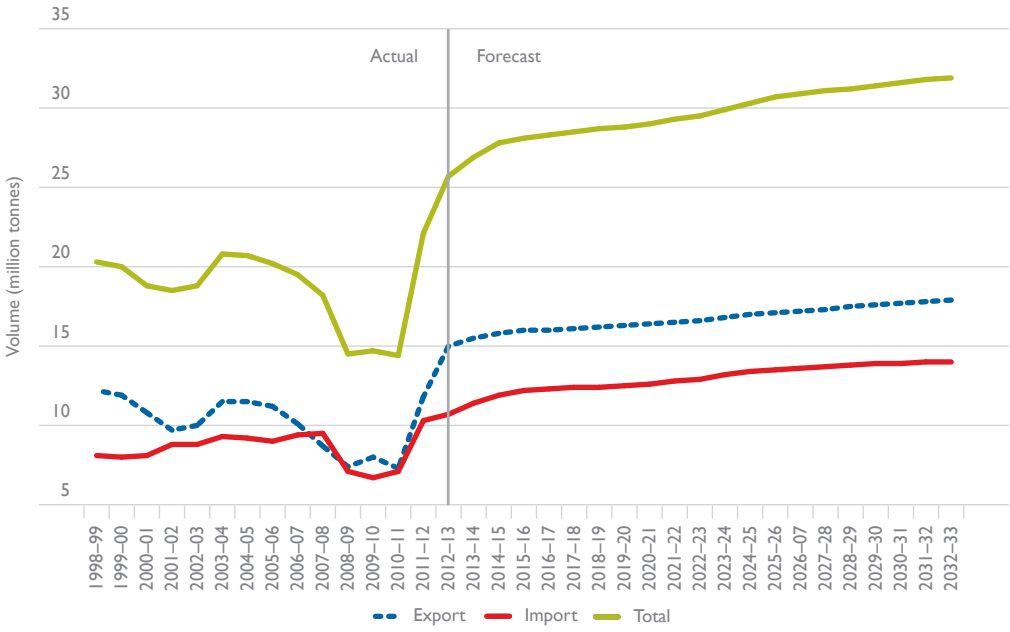
Table 4.9 Containerised trade: Port of Fremantle

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 TEUs)			
1998–99	105	30	135	111	30	141	276
2008–09	191	87	278	256	32	288	565
2009–10	179	90	269	264	25	288	557
2010–11	169	120	288	293	17	310	599
2011–12	161	152	312	330	14	344	657
2012–13	175	152	326	330	14	344	670
2013–14	***206***	***133***	***339***	***341***	***23***	***364***	***703***
2014–15	**210**	**157**	**367**	**353**	**22**	**375**	**742**
2015–16	**212**	**176**	**388**	**376**	**21**	**397**	**785**
2016–17	**219**	**191**	**410**	**400**	**20**	**420**	**829**
2017–18	**228**	**207**	**435**	**425**	**20**	**446**	**880**
2018–19	**228**	**220**	**448**	**441**	**19**	**460**	**908**
2019–20	**232**	**262**	**494**	**492**	**16**	**508**	**1002**
2020–21	**234**	**293**	**527**	**527**	**15**	**542**	**1069**
2021–22	**238**	**325**	**564**	**565**	**16**	**581**	**1144**
2022–23	**249**	**354**	**604**	**605**	**17**	**622**	**1226**
2023–24	**259**	**386**	**645**	**649**	**17**	**666**	**1311**
2024–25	**271**	**415**	**686**	**691**	**17**	**708**	**1393**
2025–26	**281**	**444**	**725**	**731**	**17**	**748**	**1473**
2026–07	**290**	**467**	**757**	**765**	**17**	**782**	**1539**
2027–28	**299**	**496**	**795**	**804**	**17**	**821**	**1617**
2028–29	**308**	**527**	**835**	**846**	**17**	**863**	**1699**
2029–30	**318**	**558**	**875**	**888**	**17**	**905**	**1780**
2030–31	**324**	**594**	**918**	**932**	**16**	**949**	**1866**
2031–32	**330**	**632**	**962**	**980**	**16**	**995**	**1958**
2032–33	**337**	**672**	**1010**	**1030**	**15**	**1045**	**2055**
Annual average growth rate (per cent)							
1998–99 to 2012–13	3.7	12.3	6.5	8.1	-5.2	6.6	6.6
2012–13 to 2032–33	**3.3**	**7.7**	**5.8**	**5.9**	**0.5**	**5.7**	**5.8**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Figure 4.26 Non-containerised trade: Port of Fremantle



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.10 Non-containerised trade: Port of Fremantle

Year	Export	Import	Total
	(million tonnes)		
1998–99	12.2	8.1	20.3
2008–09	7.4	7.1	14.5
2009–10	8.0	6.7	14.7
2010–11	7.3	7.1	14.4
2011–12	11.8	10.3	22.1
2012–13	15.0	10.7	25.7
2013–14	**15.5**	**11.4**	**26.9**
2014–15	**15.8**	**11.9**	**27.8**
2015–16	**16.0**	**12.2**	**28.1**
2016–17	**16.0**	**12.3**	**28.3**
2017–18	**16.1**	**12.4**	**28.5**
2018–19	**16.2**	**12.4**	**28.7**
2019–20	**16.3**	**12.5**	**28.8**
2020–21	**16.4**	**12.6**	**29.0**
2021–22	**16.5**	**12.8**	**29.3**
2022–23	**16.6**	**12.9**	**29.5**
2023–24	**16.8**	**13.2**	**29.9**
2024–25	**17.0**	**13.4**	**30.3**
2025–26	**17.1**	**13.5**	**30.7**
2026–07	**17.2**	**13.6**	**30.9**
2027–28	**17.3**	**13.7**	**31.1**
2028–29	**17.5**	**13.8**	**31.2**
2029–30	**17.6**	**13.9**	**31.4**
2030–31	**17.7**	**13.9**	**31.6**
2031–32	**17.8**	**14.0**	**31.8**
2032–33	**17.9**	**14.0**	**31.9**
Annual average growth rate (per cent)			
1998–99 to 2012–13	1.5	2.0	1.7
2012–13 to 2032–33	**0.9**	**1.4**	**1.1**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Non-containerised export volumes through the Port of Fremantle are heavily influenced by grain export volumes, which are, in turn, subject to grain growing conditions in the south west of Western Australia. Non-containerised exports, which currently account for 58.3 per cent of total non-containerised trade through the Port of Fremantle, increased by 1.5 per cent a year over the last 14 years to 15.0 million tonnes in 2012–13. They are projected to grow by 0.9 per cent a year over the next 20 years to 17.9 million tonnes in 2032–33.

Non-containerised imports, which grew by 2.0 per cent a year over the last 14 years to 10.7 million tonnes in 2012–13, are projected to rise by 1.4 per cent a year to 14.0 million tonnes in 2032–33.

Other Ports

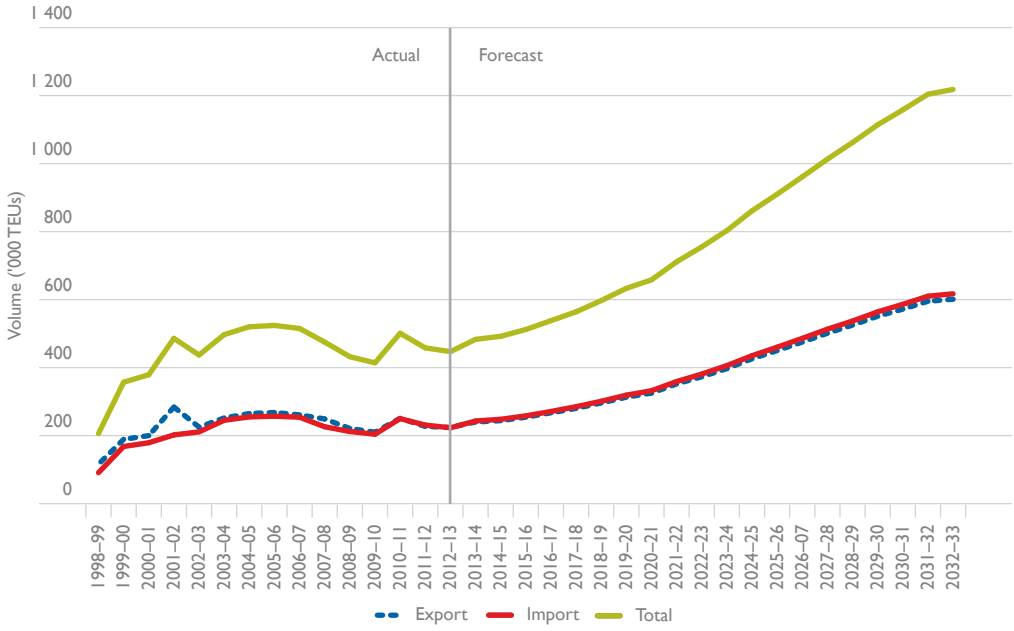
As defined in Chapter 1, 'Other Ports' are defined here to include all other Australian ports, excluding the mainland state capital city ports—Port of Brisbane, Sydney region ports, Port of Melbourne, Port Adelaide and Port of Fremantle. Major ports grouped in Other Ports include: Cairns, Devonport, Burnie, Launceston, Townsville, Hobart, Rockhampton and Darwin and Australia's major coal and iron ore export ports —Port Hedland, Dampier, Port Walcott, Newcastle, Gladstone, Hay Point and Abbot Point. Other Ports currently account for 86.8 per cent of Australia's total sea trade by volume and 88.8 per cent of Australia's total non-containerised trade by volume—dominated by iron ore and coal.

In 2012–13, total trade through Other Ports was 983.6 million tonnes. Exports dominated, accounting for 93.8 per cent of the total trade through Other Ports.

Containerised trade

Containerised trade through Other Ports accounts for around 6.2 per cent of Australia's total containerised trade, and has increased by 5.7 per cent a year over the last 14 years, from 206 000 TEUs in 1998–99 to 447 000 TEUs in 2012–13 (Figure 4.27 and Table 4.11). Full containerised exports from Other Ports grew by 3.2 per cent a year and full containerised imports by 6.1 per cent a year over the same period, to 167 000 and 136 000 TEUs respectively, in 2012–13.

Figure 4.27 Containerised trade: Other Ports



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.11 Containerised trade: Other Ports

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 TEUs)			
1998–99	107	8	116	59	31	91	206
2008–09	159	61	221	143	69	212	432
2009–10	149	61	210	144	61	204	414
2010–11	174	78	251	166	84	250	501
2011–12	163	64	227	146	86	231	458
2012–13	167	58	224	136	87	223	447
2013–14	*171*	*69*	*240*	*139*	*104*	*243*	*483*
2014–15	**170**	**74**	**244**	**145**	**103**	**248**	**492**
2015–16	**172**	**82**	**254**	**153**	**105**	**258**	**512**
2016–17	**178**	**88**	**267**	**163**	**109**	**271**	**538**
2017–18	**184**	**96**	**280**	**173**	**112**	**285**	**564**
2018–19	**190**	**106**	**296**	**185**	**116**	**301**	**597**
2019–20	**197**	**116**	**313**	**198**	**121**	**319**	**633**
2020–21	**195**	**131**	**325**	**213**	**120**	**332**	**658**
2021–22	**213**	**140**	**352**	**228**	**131**	**359**	**711**
2022–23	**220**	**153**	**373**	**245**	**136**	**381**	**755**
2023–24	**226**	**171**	**397**	**266**	**140**	**406**	**803**
2024–25	**240**	**186**	**426**	**286**	**149**	**435**	**861**
2025–26	**248**	**202**	**450**	**305**	**155**	**460**	**910**
2026–07	**260**	**215**	**475**	**324**	**162**	**486**	**961**
2027–28	**274**	**226**	**501**	**340**	**172**	**513**	**1013**
2028–29	**284**	**240**	**525**	**358**	**179**	**537**	**1062**
2029–30	**298**	**253**	**551**	**376**	**188**	**564**	**1114**
2030–31	**303**	**269**	**572**	**394**	**192**	**586**	**1158**
2031–32	**308**	**286**	**595**	**414**	**195**	**610**	**1204**
2032–33	**287**	**313**	**601**	**436**	**181**	**617**	**1218**
Annual average growth rate (per cent)							
1998–99 to 2012–13	3.2	14.8	4.8	6.1	7.6	6.6	5.7
2012–13 to 2032–33	**2.8**	**8.8**	**5.0**	**6.0**	**3.7**	**5.2**	**5.1**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

Since China accounts 31.6 per cent of Australia's exports and the Chinese economy is expected to grow by an annual average of 6.7 per cent over the next 20 years, Australia's exports are projected to grow positively over the forecast period. Full and empty container exports through Other Ports are projected to grow by 2.8 and 8.8 per cent a year over the forecast period, to 287 000 and 313 000 TEUs in 2032–33, respectively. As a result, total container (full plus empty) exports through Other Ports are forecast to increase by 5.0 per cent a year over the next 20 years to 601 000 TEUs in 2032–33.

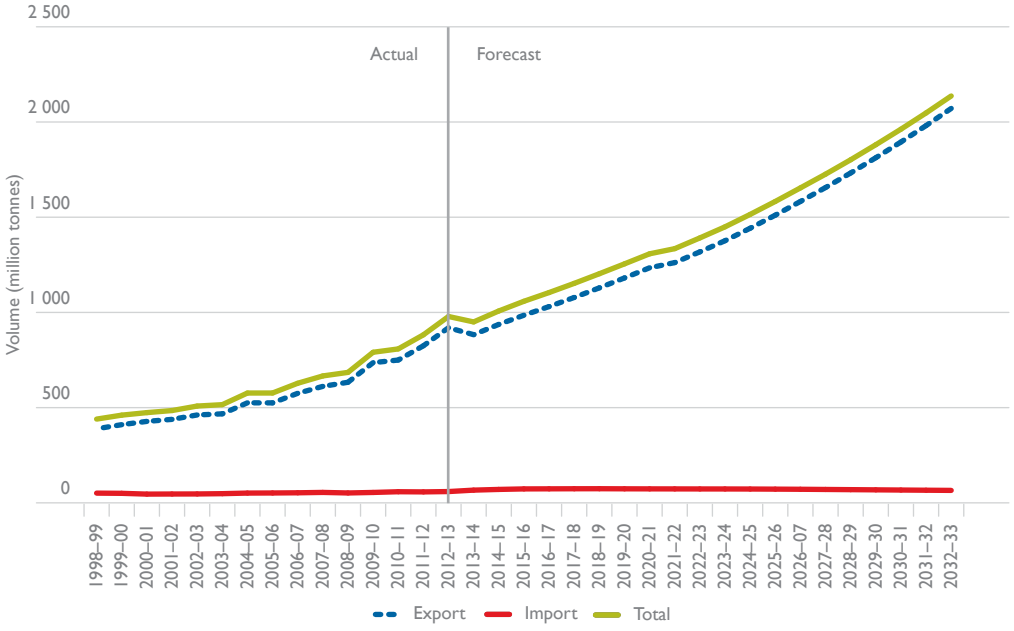
Full containerised imports through Other Ports are projected to grow by 6.0 per cent a year over the next 20 years to 436 000 TEUs in 2032–33, whereas empty container imports are projected to increase by 3.7 per cent a year over the same period to 181 000 TEUs in 2032–33. Total containerised imports through Other Ports are forecast to increase by 5.2 per cent a year over the next 20 years to 617 000 TEUs in 2032–33.

The volume of total containerised trade through Other Ports is projected to increase by 5.1 per cent a year over the next 20 years, from 447 000 TEUs in 2012–13 to 1.2 million TEUs in 2032–33.

Non-containerised trade

In 2012–13, Other Ports handled a total of 978.7 million tonnes of non-containerised trade, including 919.4 million tonnes of non-containerised exports—dominated by iron ore and coal exports—and 59.3 million tonnes of non-containerised imports (Figure 4.28 and Table 4.12).

Figure 4.28 Non-containerised trade: Other Ports



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.12 Non-containerised trade: Other Ports

Year	Export	Import	Total
	(million tonnes)		
1998–99	388.9	51.0	439.8
2008–09	633.2	51.9	685.1
2009–10	736.2	54.6	790.8
2010–11	749.9	58.4	808.3
2011–12	826.3	56.0	882.3
2012–13	919.4	59.3	978.7
2013–14	**883.3**	**66.8**	**950.1**
2014–15	**937.1**	**70.5**	**1007.6**
2015–16	**985.3**	**73.2**	**1058.5**
2016–17	**1030.7**	**73.6**	**1104.3**
2017–18	**1078.5**	**74.0**	**1152.5**
2018–19	**1129.0**	**74.2**	**1203.1**
2019–20	**1181.1**	**73.7**	**1254.9**
2020–21	**1234.4**	**73.4**	**1307.8**
2021–22	**1261.6**	**73.2**	**1334.8**
2022–23	**1318.1**	**73.0**	**1391.2**
2023–24	**1376.5**	**72.9**	**1449.4**
2024–25	**1442.0**	**72.6**	**1514.6**
2025–26	**1510.7**	**72.0**	**1582.7**
2026–07	**1582.6**	**71.3**	**1653.9**
2027–28	**1655.8**	**70.3**	**1726.0**
2028–29	**1732.3**	**69.3**	**1801.6**
2029–30	**1812.4**	**68.3**	**1880.7**
2030–31	**1894.9**	**67.3**	**1962.2**
2031–32	**1981.1**	**66.3**	**2047.5**
2032–33	**2071.3**	**65.4**	**2136.7**
Annual average growth rate (per cent)			
1998–99 to 2012–13	6.3	1.1	5.9
2012–13 to 2032–33	**4.1**	**0.5**	**4.0**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

The volume of total non-containerised trade, which increased by 5.9 per cent a year over the last 14 years, is forecast to increase by 4.0 per cent a year over the next 20 years to 2.1 billion tonnes in 2032–33. Non-containerised exports, which include Australia's iron ore and coal export trades, increased by 6.3 per cent a year over the last 14 years, and are projected to increase by 4.1 per cent a year over the forecast period to 2.1 billion tonnes in 2032–33. Non-containerised imports, which increased by 1.1 per cent a year over the last 14 years, are projected to increase by 0.5 per cent a year over the forecast period to 65.4 million tonnes in 2032–33.

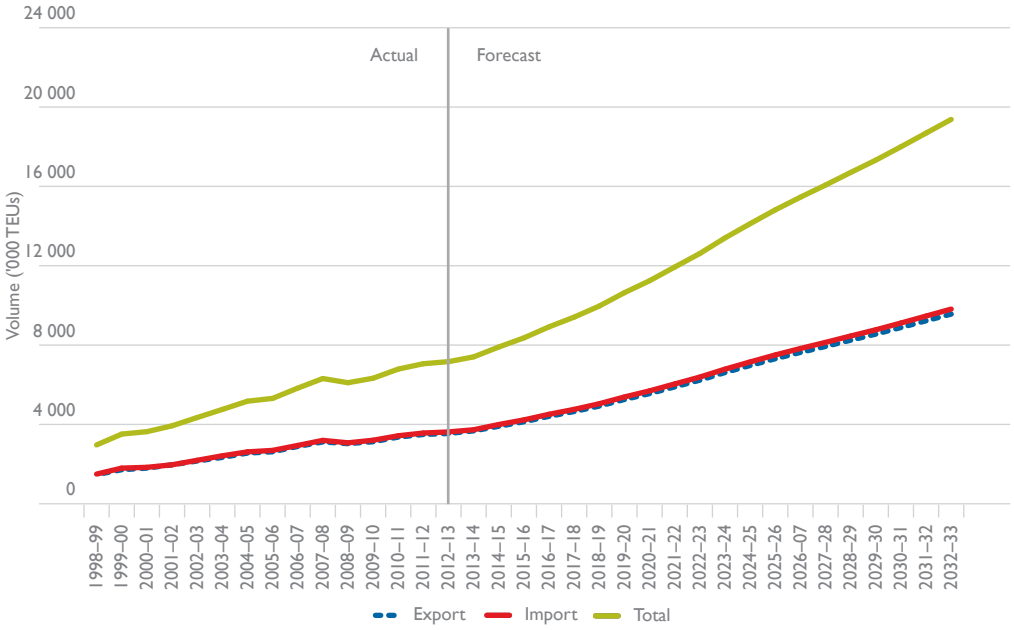
All ports

Aggregated across All Ports, the total volume of trade through Australian ports increased by 9.5 per cent in 2012–13, over 2011–12, to 1.1 billion tonnes, due to strong growth in exports (Ports Australia 2013). The volume of exports through Australian ports grew 10.9 per cent to 992.7 million tonnes in 2012–13, while the volume of imports increased by 0.8 per cent, to 140.2 million tonnes in 2012–13.

Containerised trade

Across All Ports, the volume of Australia's total containerised trade has increased by 6.5 per cent a year over the last 14 years to 7.2 million TEUs in 2012–13 (Figure 4.29 and Table 4.13). Full containerised exports grew by 4.7 per cent a year and full containerised imports by 7.0 per cent a year over the same period, to 2.1 and 3.3 million TEUs in 2012–13.

Figure 4.29 Containerised trade: All Ports



Sources: Ports Australia (2014) and BITRE estimates.

With the positive economic outlook for Australia and its major trading partners, Australia's exports and imports are projected to grow positively over the forecast period. Full and empty container exports through all Australian ports are projected to grow by 4.1 and 6.3 per cent a year, respectively, over the forecast period to 4.8 million TEUs each in 2032–33. As a result, total container (full plus empty) exports through All Ports are forecast to increase by 5.1 per cent a year over the next 20 years to 9.6 million TEUs in 2032–33.

Full containerised imports, which increased by 7.0 per cent a year over the last 14 years, are projected to grow by 5.3 per cent a year over the forecast period, from 3.3 million TEUs in 2012–13 to 9.2 million TEUs in 2032–33. Empty container imports are projected to increase

by 3.0 per cent a year over the next 20 years to 0.6 million TEUs. Total containerised (full plus empty) imports through All Ports are forecast to increase by 5.1 per cent a year over the next 20 years to 9.8 TEUs in 2032–33.

The volume of total containerised trade through All Ports is projected to increase by 5.1 per cent a year over the next 20 years, from 7.2 million TEUs in 2012–13 to 19.4 million TEUs, in 2032–33.

Table 4.13 Containerised trade: All Ports

Year	Exports			Imports			Total
	Full	Empty	Total	Full	Empty	Total	trade
				('000 TEUs)			
1998–99	1119	350	1469	1271	226	1497	2966
2008–09	1891	1139	3031	2708	365	3072	6103
2009–10	1914	1213	3127	2888	314	3203	6329
2010–11	2016	1345	3361	3088	340	3428	6789
2011–12	2115	1378	3493	3227	340	3567	7060
2012–13	2124	1420	3544	3272	349	3621	7165
2013–14	***2174***	***1500***	***3674***	***3341***	***390***	***3731***	***7405***
2014–15	**2235**	**1672**	**3907**	**3614**	**381**	**3995**	**7902**
2015–16	**2337**	**1797**	**4134**	**3842**	**386**	**4228**	**8362**
2016–17	**2465**	**1943**	**4408**	**4114**	**396**	**4511**	**8919**
2017–18	**2584**	**2067**	**4651**	**4352**	**407**	**4759**	**9410**
2018–19	**2697**	**2228**	**4925**	**4623**	**420**	**5043**	**9968**
2019–20	**2845**	**2413**	**5257**	**4950**	**434**	**5384**	**10642**
2020–21	**2906**	**2646**	**5553**	**5262**	**430**	**5692**	**11244**
2021–22	**3075**	**2817**	**5892**	**5585**	**455**	**6040**	**11933**
2022–23	**3227**	**3003**	**6230**	**5914**	**473**	**6388**	**12617**
2023–24	**3377**	**3238**	**6615**	**6299**	**487**	**6786**	**13401**
2024–25	**3538**	**3431**	**6969**	**6642**	**508**	**7150**	**14119**
2025–26	**3702**	**3610**	**7312**	**6975**	**527**	**7502**	**14815**
2026–07	**3865**	**3764**	**7629**	**7280**	**547**	**7827**	**15456**
2027–28	**4044**	**3888**	**7931**	**7564**	**572**	**8136**	**16067**
2028–29	**4222**	**4023**	**8245**	**7864**	**593**	**8457**	**16702**
2029–30	**4398**	**4154**	**8553**	**8155**	**616**	**8771**	**17324**
2030–31	**4563**	**4321**	**8885**	**8480**	**632**	**9112**	**17997**
2031–32	**4715**	**4510**	**9225**	**8824**	**639**	**9462**	**18687**
2032–33	**4780**	**4783**	**9562**	**9187**	**627**	**9814**	**19377**
Annual average growth rate (per cent)							
1998–99 to 2012–13	4.7	10.5	6.5	7.0	3.1	6.5	6.5
2012–13 to 2032–33	**4.1**	**6.3**	**5.1**	**5.3**	**3.0**	**5.1**	**5.1**

*Numbers in bold are forecasts.

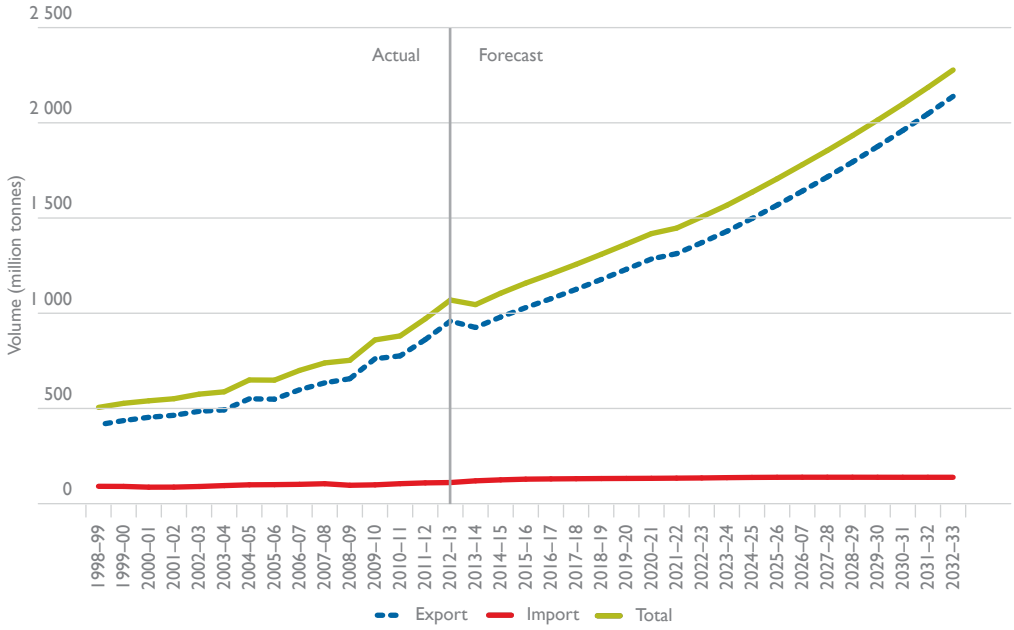
Sources: Ports Australia (2014) and BITRE estimates.

Non-containerised trade

Australia's total non-containerised trade stood at 1.1 billion tonnes in 2012–13, which included 958.6 million tonnes of non-containerised exports (89.6 per cent) and 110.9 million tonnes of non-containerised imports (10.4 per cent) (Figure 4.30 and Table 4.14). Exports dominate Australia's non-containerised trade in volume terms.

Total non-containerised trade, which increased by 5.5 per cent a year over the last 14 years, is projected to increase by 3.9 per cent a year over the next 20 years to 2.3 billion tonnes in 2032–33. Non-containerised exports, which increased by 6.2 per cent a year over the last 14 years, are forecast to grow by 4.1 per cent a year during the forecast period to 2.1 billion tonnes in 2032–33. Non-containerised imports, which increased by 1.4 per cent a year over the last 14 years, are forecast to increase by 1.1 per cent a year over the forecast period to 138.5 million tonnes in 2032–33.

Figure 4.30 Non-containerised trade, 1993–94 to 2024-25: All Ports



Sources: Ports Australia (2014) and BITRE estimates.

Table 4.14 Non-containerised trade: All Ports

Year	Export	Import	Total
	(million tonnes)		
1998–99	414.3	91.1	505.5
2008–09	656.2	96.6	752.8
2009–10	761.0	98.8	859.8
2010–11	776.0	104.9	880.9
2011–12	861.6	109.1	970.6
2012–13	958.6	110.9	1069.4
2013–14	**925.3**	**119.9**	**1045.2**
2014–15	**980.2**	**125.0**	**1105.2**
2015–16	**1029.8**	**128.7**	**1158.4**
2016–17	**1076.5**	**130.0**	**1206.5**
2017–18	**1125.6**	**131.0**	**1256.7**
2018–19	**1177.4**	**131.9**	**1309.3**
2019–20	**1230.8**	**132.5**	**1363.2**
2020–21	**1285.1**	**133.1**	**1418.2**
2021–22	**1313.1**	**134.0**	**1447.1**
2022–23	**1370.8**	**135.0**	**1505.9**
2023–24	**1430.4**	**136.6**	**1567.0**
2024–25	**1497.6**	**137.8**	**1635.4**
2025–26	**1567.8**	**138.5**	**1706.3**
2026–07	**1641.3**	**138.8**	**1780.1**
2027–28	**1716.0**	**138.8**	**1854.8**
2028–29	**1794.2**	**138.8**	**1932.9**
2029–30	**1875.9**	**138.6**	**2014.5**
2030–31	**1959.9**	**138.5**	**2098.4**
2031–32	**2047.6**	**138.5**	**2186.2**
2032–33	**2139.0**	**138.5**	**2277.5**
Annual average growth rate (per cent)			
1998–99 to 2011–12	6.2	1.4	5.5
2011–12 to 2032–33	**4.1**	**1.1**	**3.9**

*Numbers in bold are forecasts.

Sources: Ports Australia (2014) and BITRE estimates.

CHAPTER 5

Forecasts of sea passengers

Introduction

This chapter presents BITRE forecasts of international sea passenger numbers, which are based on re-estimated demand parameters and the current economic outlook for Australia and overseas sea passenger market. A detailed discussion of the global and the Australian cruise passenger markets was provided in BITRE (2006) and previous BITRE forecasts of sea passengers published in BITRE (2006 and 2010).

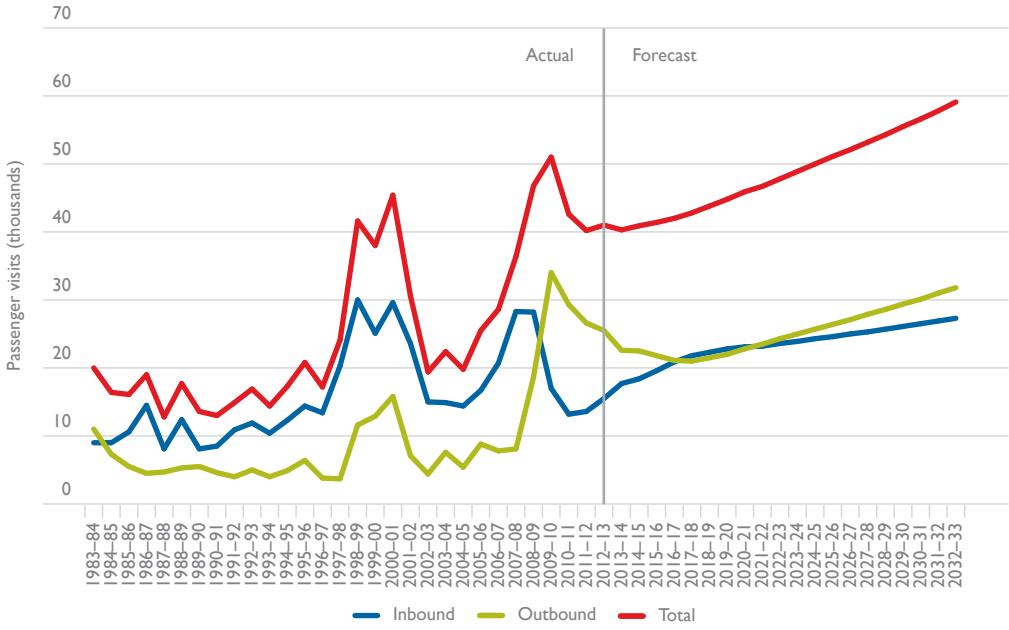
Box 5.1 Sea passenger movement estimates

While inbound and outbound cruise passengers may have more than one port call at Australian ports, as they have to clear Customs at each port visited, outbound and inbound sea passenger numbers are recorded by port of first arrival and last departure, respectively. The estimates of international sea passenger movements through Australian ports presented in Figure 5.1 and Table 5.1 are based purely on the number of passengers arriving in and departing from Australia by first point of entry or last point of exit, respectively.

Growth in international sea passenger movements

According to historical data available since the early 1980s, the number of inbound and outbound sea passengers passing through Australian ports has fluctuated significantly with no clearly observable trend (Figure 5.1). Total international sea passenger numbers through Australian ports remained relatively flat between 1983–84 and 1996–97, and then increased significantly between 1998–99 and 2000–01. However, passenger numbers declined again, to around pre-1998 levels, in 2001–02 and 2002–03. This period is shortly after the September 11 terrorist attacks in the USA and the Severe Acute Respiratory Syndrome (SARS) epidemic in Asia. As mentioned in BTRE (2006), the operations of several international cruise ships were moved to Australia to avoid the SARS epidemic in Asia, which may account for part of the increase in passenger numbers through Australian ports in 2001–02 and subsequent decline thereafter. However, this only partially offset the adverse impact of the September 11 terrorist attacks and the SARS epidemic on Australia's international sea passenger numbers. The number of total sea passengers again grew strongly between 2004–05 and 2009–10, but declined sharply in 2010–11 and 2011–12, possibly due to the Global Financial Crisis (GFC) which severely reduced inbound sea passenger numbers in 2009–10 and 2010–11 and outbound passenger numbers in 2010–11.

Figure 5.1 Inbound and outbound sea passenger numbers



Sources: ABS (2013b) and BITRE estimates.

Forecasts of sea passenger and cruise ship visits

Based on the projected positive economic outlook for Australia and the OECD, and continuing economic recovery following the GFC, the outlook for Australia's inbound and outbound sea travel market appears to be positive.

The number of inbound sea passengers increased annually by 1.9 per cent a year over the last 30 years, from 9 000 passenger arrivals in 1983–84 to 15 500 in 2012–13. It is forecast to increase by 2.9 per cent a year over the next 20 years to 27 300 passenger arrivals in 2032–33 (Figure 5.1 and Table 5.1). On the other hand, the number of outbound sea passengers, which increased by 3.0 per cent a year over the last 30 years, from 11 000 passengers in 1983–84 to 25 500 in 2012–13, is projected to increase by 1.1 per cent a year over the next 20 years to 31 800 passengers in 2032–33.

The total (inbound plus outbound) number of sea passengers increased by an average annual rate of 2.5 per cent a year over the last 30 years, from 20 000 in 1983–84 to 41 000 in 2012–13. It is forecast to increase by 1.8 per cent a year over the forecast period to 59 100 in 2032–33.

Table 5.1 Short-term international sea passengers: All Ports

Year	Inbound	Outbound	Total
	(thousands)		
1983–84	9.0	11.0	20.0
2007–08	28.3	8.1	36.4
2008–09	28.2	18.7	46.8
2009–10	17.0	34.0	51.0
2010–11	13.2	29.3	42.6
2011–12	13.6	26.6	40.2
2012–13	15.5	25.5	41.0
2013–14	**17.7**	**22.6**	**40.3**
2014–15	**18.4**	**22.5**	**40.9**
2015–16	**19.6**	**21.8**	**41.4**
2016–17	**20.9**	**21.1**	**42.0**
2017–18	**21.8**	**21.0**	**42.8**
2018–19	**22.3**	**21.5**	**43.8**
2019–20	**22.8**	**22.0**	**44.8**
2020–21	**23.1**	**22.8**	**45.9**
2021–22	**23.2**	**23.5**	**46.7**
2022–23	**23.6**	**24.3**	**47.8**
2023–24	**23.9**	**25.0**	**48.9**
2024–25	**24.3**	**25.7**	**50.0**
2025–26	**24.6**	**26.4**	**51.1**
2026–27	**25.0**	**27.1**	**52.1**
2027–28	**25.3**	**27.9**	**53.2**
2028–29	**25.7**	**28.6**	**54.3**
2029–30	**26.1**	**29.4**	**55.5**
2030–31	**26.5**	**30.1**	**56.6**
2031–32	**26.9**	**31.0**	**57.8**
2032–33	**27.3**	**31.8**	**59.1**
Annual average growth rate (per cent):			
1983–84 to 2012–13	1.9	3.0	2.5
2012–13 to 2032–33	**2.9**	**1.1**	**1.8**

*Numbers in bold are forecasts.

Sources: ABS (2013b) and BITRE estimates.

CHAPTER 6
Sensitivity analysis

Introduction

The most recent long-term population and macroeconomic projections for Australia and its major trading partners were used to derive the containerised and non-containerised trade forecasts in Chapter 4. However, significant variability in economic growth and exchange rates has been observed over the last two decades, particularly the unexpected shocks of the Asian financial crisis, Global Financial Crisis, the ongoing political uncertainty in the Middle East and recent tensions in Eastern Europe. Hence, sensitivity analysis was carried out to assess the possible impact of variations in likely future economic growth and exchange rates on likely future containerised and non-containerised trade through Australian ports. The sensitivity analysis results are compared here with the base case forecasts presented in Chapter 4.

Sensitivity analysis on economic growth

Two alternative economic growth scenarios were considered—a high-growth scenario and a low-growth scenario. The scenario assumptions used were:

High-growth scenario: Average annual GDP growth in Australia and all OECD countries was assumed to be 0.5 percentage points higher than in the base case—i.e. average growth of 3.2 per cent per annum between 2012–13 and 2032–33 in Australia and 3.0 per cent per annum across all OECD countries.

Low-growth scenario: Average annual GDP growth in Australia and all OECD countries was assumed to be 0.5 percentage points lower than in the base case—i.e. average growth of 2.2 per cent per annum between 2012–13 and 2032–33 in Australia and 2.0 per cent per annum across all OECD countries.

Under the high growth scenario, total containerised trade through all Australian ports is projected to increase annually by 6.8 per cent a year, and under the low growth scenario by 3.5 per cent a year over the next 20 years, compared with growth of 5.1 per cent per annum under the base case scenario (Table 6.1). The impact of higher/lower average annual GDP growth on containerised trade varies by port, with the annual average growth rate ranging between 6.0 and 8.5 per cent per year under the high economic growth scenario and, between 3.0 and 4.1 per cent per year under the low economic growth scenario.

Table 6.1 Total containerised trade through Australian ports, 2012–13 to 2032–33, under alternative GDP growth scenarios

Port	Base case	High growth scenario	Low growth scenario	High growth scenario	Low growth scenario
	Average annual growth rate (per cent per annum)			Difference (percentage points)	
Brisbane	6.2	8.5	4.0	2.3	-2.2
Sydney	4.5	6.0	3.1	1.4	-1.4
Melbourne	4.8	6.1	3.5	1.3	-1.3
Adelaide	5.4	7.4	3.5	2.0	-1.9
Fremantle	5.8	7.5	4.1	1.7	-1.7
Other Ports	5.1	7.6	3.0	2.5	-2.1
All Ports	5.1	6.8	3.5	1.7	-1.6
	Forecast cumulative trade volume (million TEUs)			Difference (per cent)	
Brisbane	45.6	60.0	35.5	31.7	-22.1
Sydney	72.5	85.7	61.8	18.2	-14.7
Melbourne	89.0	104.0	77.1	16.8	-13.4
Adelaide	13.1	16.4	10.5	25.7	-19.7
Fremantle	26.0	31.8	21.3	22.3	-18.1
Other Ports	16.2	21.4	12.5	31.9	-23.3
All Ports	262.3	319.3	218.7	21.7	-16.6

Source: BITRE estimates.

Total non-containerised trade though all Australian ports over the next 20 years would increase annually by 3.92 and 3.80 per cent under the high and low economic growth scenarios, respectively, compared with growth of 3.85 per cent per annum under the base case scenario (Table 6.2).

Table 6.2 Total non-containerised trade through Australian ports, 2012–13 to 2032–33, under alternative GDP growth scenarios

Port	Base case	High growth scenario	Low growth scenario	High growth scenario	Low growth scenario
	Average annual growth rate (per cent per annum)			Difference (percentage points)	
Brisbane	2.8	2.8	2.7	0.1	-0.1
Sydney	0.7	1.7	-0.3	1.0	-1.0
Melbourne	0.6	1.7	-0.5	1.1	-1.1
Adelaide	4.6	5.7	3.7	1.1	-0.9
Fremantle	1.1	1.3	0.9	0.2	-0.2
Other Ports	4.0	4.0	4.0	0.0	0.0
All Ports	3.85	3.92	3.80	0.1	-0.1
	Forecast cumulative trade volume (million tonnes)			Difference (per cent)	
Brisbane	784.0	790.7	777.4	0.9	-0.8
Sydney	301.0	335.6	271.0	11.5	-10.0
Melbourne	258.3	291.2	231.0	12.8	-10.6
Adelaide	394.9	444.3	357.3	12.5	-9.5
Fremantle	595.8	607.8	584.4	2.0	-1.9
Other Ports	29519.8	29652.9	29400.6	0.5	-0.4
All Ports	31868.9	32141.4	31635.1	0.9	-0.7

Source: BITRE estimates.

Sensitivity analysis on exchange rates

The Australian dollar reached parity with the US dollar in December 2010 and has remained strong since then, due in part to the resources boom in Australia and very low interest rates in Europe and the US. However, the value of the Australian dollar could vary depending upon world economic conditions, especially in China, Europe and the US. Hence, the impact of a change in the value of the Australian dollar on containerised and non-containerised trade through Australian ports has been analysed with the following two alternative exchange rate scenarios

High exchange rate scenario: The Australian dollar remains at par with the US dollar over the forecast period.

Low exchange rate scenario: The Australian dollar gradually declines from its current level to US 50 cents per Australian dollar in 2029–30 and remains at that level thereafter.

The sensitivity analysis results suggest that changes in exchange rate assumptions have only a minimal impact on total containerised and non-containerised trade passing through Australian ports, mainly because overall containerised and non-containerised trade volumes are relatively inelastic to changes in exchange rates. However, changes in exchange rates have a more significant effect when considered from the perspective of imports and exports.

Total containerised trade through all Australian ports would increase annually by 5.3 per cent under the high exchange rate scenario and 4.9 per cent under the low exchange rate scenario over the next 20 years, compared with growth of 5.1 per cent per annum under the base case scenario (Table 6.3). Similarly, total non-containerised trade through all Australian ports would increase annually by 3.84 per cent under the high exchange rate scenario and 3.87 per cent under the low exchange rate scenario over the forecast, compared with growth of 3.85 per cent per annum under the base case scenario (Table 6.4).

The impact of variations in exchange rate assumptions on containerised and non-containerised trade varies by port. The annual average growth rate of containerised trade ranges from 4.6 per cent per annum in Other Ports to 6.3 per cent per annum at the Port of Brisbane under the high exchange rate scenario and, from 4.0 per cent per annum for Sydney region ports to 6.2 per cent per annum for Other Ports under the low exchange rate scenario. Similarly, the annual average growth rate of non-containerised trade ranges from 0.6 per cent per annum for the Port of Melbourne to 4.0 per cent per annum for Other Ports under the high exchange rate scenario and, from 0.6 per cent per annum for the Port of Melbourne to 5.7 per cent per annum for Port Adelaide under the low exchange rate scenario.

Table 6.3 Total containerised trade through Australian ports, 2012–13 to 2032–33, under alternative exchange rate scenarios

Port	Base case	High exchange rate scenario	Low exchange rate scenario	High exchange rate scenario	Low exchange rate scenario
	Average annual growth rate (per cent per annum)			Difference (percentage points)	
Brisbane	6.2	6.3	6.0	0.1	-0.2
Sydney	4.5	4.9	4.0	0.3	-0.5
Melbourne	4.8	5.0	4.5	0.2	-0.3
Adelaide	5.4	5.7	5.0	0.3	-0.5
Fremantle	5.8	5.8	5.8	0.0	0.0
Other Ports	5.1	4.6	6.2	-0.5	1.0
All Ports	5.1	5.3	4.9	0.2	-0.2
	Forecast cumulative trade volume (million TEUs)			Difference (per cent)	
Brisbane	45.6	46.7	44.8	2.6	-1.8
Sydney	72.5	76.4	67.9	5.5	-6.3
Melbourne	89.0	92.3	85.8	3.7	-3.6
Adelaide	13.1	13.7	12.3	4.9	-6.0
Fremantle	26.0	25.9	26.0	-0.3	0.1
Other Ports	16.2	14.8	19.0	-8.9	17.1
All Ports	262.3	269.9	255.7	2.9	-2.5

Source: BITRE estimates.

Table 6.4 Total non-containerised trade through Australian ports, 2012–13 to 2032–33, under alternative exchange rate scenarios

Port	Base case	High exchange rate scenario	Low exchange rate scenario	High exchange rate scenario	Low exchange rate scenario
	Average annual growth rate (per cent per annum)			Difference (percentage points)	
Brisbane	2.8	2.6	3.1	-0.2	0.3
Sydney	0.7	0.7	0.7	0.0	0.0
Melbourne	0.6	0.6	0.6	0.0	0.0
Adelaide	4.6	3.9	5.7	-0.7	1.2
Fremantle	1.1	1.1	1.1	0.0	0.0
Other Ports	4.0	4.0	4.0	0.0	0.0
All Ports	3.85	3.84	3.87	-0.01	0.02
	Forecast cumulative trade volume (million tonnes)			Difference (per cent)	
Brisbane	784.0	762.8	813.7	-2.7	3.8
Sydney	301.0	301.0	301.0	0.0	0.0
Melbourne	258.3	258.3	258.3	0.0	0.0
Adelaide	394.9	355.4	463.4	-10.0	17.4
Fremantle	595.8	595.8	595.8	0.0	0.0
Other Ports	29519.8	29519.8	29519.8	0.0	0.0
All Ports	31868.9	31808.0	31967.5	-0.2	0.3

Source: BITRE estimates.

CHAPTER 7

Forecast performance and concluding remarks

Forecast performance

In this chapter, BITRE's long-term forecasts of containerised and non-containerised trade through Australian ports presented in this report are compared with previous BITRE (2002, 2006 and 2010) forecasts of containerised and non-containerised trade. Since forecasts of containerised and non-containerised trade for Australian ports prepared by other organisations are not publicly available, the BITRE forecasts could not be compared with forecasts of other organisations.

The current BITRE forecasts are consistent with the BITRE forecasts published in 2002 and 2006 at both the national and individual port level and with 2010 at the national level (Table 7.1, Figure 7.1 and Figure 7.2). The differences in forecast growth rates across the various BITRE studies are due to changes in the estimated demand parameters resulting from the difference in the historical period used to estimate containerised and non-containerised trade models, revisions to actual and differences in forecast growth in GDP, population, exchange rates, prices of exports and imports across the various reports. The port-level forecasts published in BITRE (2010) are slightly lower than the current forecasts, and those published in BITRE (2002 and 2006), largely due to differences in the choice of income variable and the timing of preparation of macroeconomic projections. Real GDP of Australia's export destination countries, which is the key driver of Australian exports, is proxied by real GDP of G7 countries in BITRE (2002), real GDP of OECD countries in this study and BITRE (2006), and aggregated real regional GDP in BITRE (2010). Similarly, Australia's national real GDP has been used as key driver of Australia's imports in this study and BITRE (2002), whereas national real GNE and real state final demand were used as the key driver of Australia's port-level imports in BITRE (2006) and BITRE (2010), respectively. Moreover, long-term projections of real GDP and final demand that were used in BITRE (2010) to derive forecasts were relatively low as they were developed during the period of the Asian financial crisis and the Global Financial Crisis.

Total containerised trade through all Australian ports, which increased by 6.5 per cent a year over the last 14 years, is projected to grow annually by 5.1 per cent per year over the next 20 years. This compares with projected annual growth of 5.0 per cent per year in BITRE (2002), 5.4 per cent per year in BITRE (2006) and 4.2 per cent per year in BITRE (2010). Similarly, total non-containerised trade through all Australian ports grew by 5.5 per cent a year over the last 14 years, and is forecast here to grow annually by 3.9 per cent per year over the

next 20 years. This compares with projected annual growth of 3.8 per cent per year in BITRE (2006) and 3.0 per cent per year in BITRE (2010).

Table 7.1 Comparison of current and previous BITRE forecast growth of containerised and non-containerised trade, by port

Port	Actual 1998–99 to 2012–13	BITRE (2002) 2001–02 to 2010–11	BITRE (2006) 2004–05 to 2024–25	BITRE (2010) 2007–08 to 2029–30	Present forecast 2012–13 to 2032–33
Containerised trade[a]					
Brisbane	8.1	-	7.4	3.6	6.2
Sydney	6.5	-	5.0	3.2	4.5
Melbourne	5.9	-	4.9	5.0	4.8
Adelaide	7.7	-	5.3	3.0	5.4
Fremantle	6.6	-	5.4	4.8	5.8
Other Ports	5.7	-	5.3	3.8	5.1
All Ports	6.5	5.0[b]	5.4	4.2	5.1
Non-containerised trade					
Brisbane	3.7	-	2.7	1.4	2.8
Sydney	-0.2[c]	-	1.3	1.4	0.7
Melbourne	1.5	-	3.5	1.1	0.6
Adelaide	6.6	-	3.5	-0.6	4.6
Fremantle	1.7	-	1.3	2.0	1.1
Other Ports	5.9	-	3.9	3.1	4.0
All Ports	5.5	-	3.8	3.0	3.9

a. Includes export and import of full and empty containers.

b. Growth forecast is based on econometric model specified in terms of income and exchange rate variables. The study also shows a growth of 2.3 per cent over the forecast period based on univariate time series model which is not comparable to the econometric models used in this study and BITRE (2006 and 2010).

c. Due to the closures of the Shell oil refinery at Clyde in September 2012.

Source: BITRE estimates.

Figure 7.1 Comparison of current and previous BITRE forecasts of containerised trade: All Ports

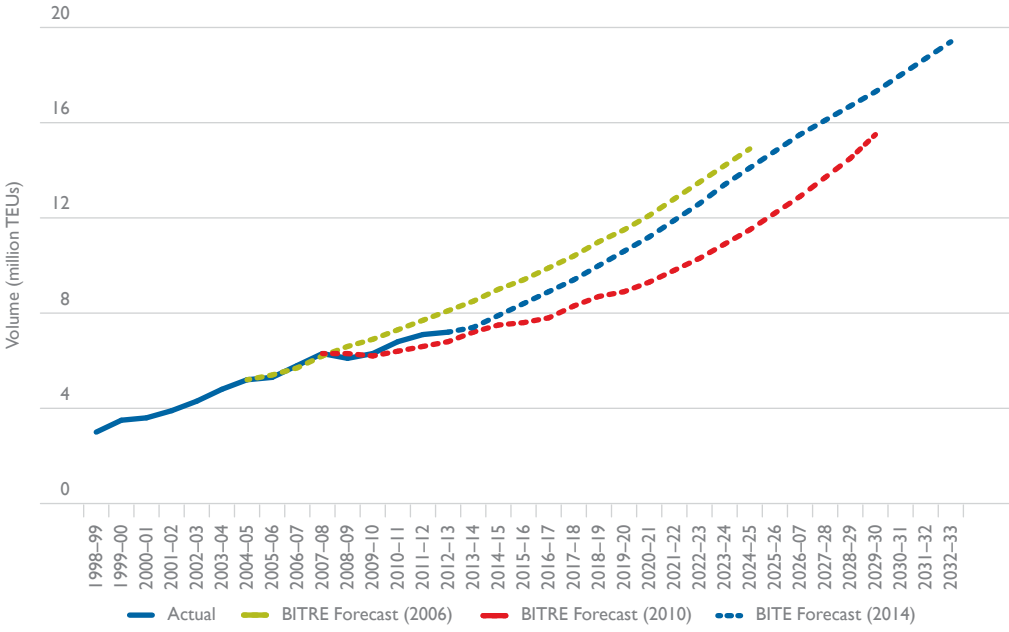
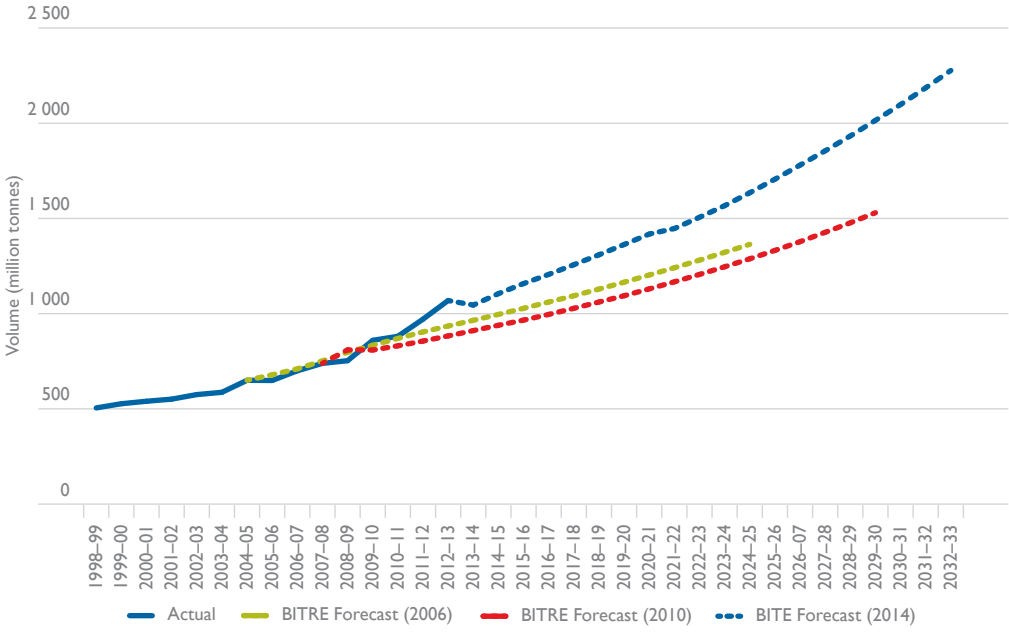


Figure 7.2 Comparison of current and previous BITRE forecasts of non-containerised trade: All Ports



Concluding remarks

This report updates long-term forecasts of containerised and non-containerised trade for the Australia's five largest capital city ports—Port of Brisbane, Sydney region ports, Port of Melbourne, Port Adelaide and Port of Fremantle—and, in aggregation, all Other Ports, to 2032–33. The forecasts are based on re-estimated export and import models and the most recent information on economic growth, population, exchange rates, and prices of exports and imports.

The report also presents the updated national-level forecasts of Australia's inbound and outbound sea passenger numbers. Port-level forecasts of sea passenger numbers could not be developed due to the lack of recent time series data on port-specific sea passenger movements.

The containerised and non-containerised trade forecasts presented in this report are solely driven by demand-side parameters related to population, income, exchange rates and price variables and do not include the influence of supply-side parameters related to port capacity or commodity availability. Hence, the forecasts are "unconstrained" by any potential future supply constraints.

Containerised and non-containerised trade through Australian ports is projected to increase by 5.1 and 3.9 per cent a year, respectively, over the next 20 years to 2032–33. This compares with annual growth of 6.5 and 5.5 per cent per year, respectively, experienced over the last 14 years. The slightly slower projected growth over the forecast period, relative to historical growth, is largely due to expected slower economic growth in Australia and its major trading partners over the forecast period.

The report also includes sensitivity analysis, which was carried out to assess the possible impact of changes in economic growth and exchange rates on containerised and non-containerised trade through Australian ports. Two alternative scenarios on economic growth—a high-growth scenario and low-growth scenario—and two alternative scenarios on exchange rates—a high exchange rate scenario and low exchange rate scenario—considered for the sensitivity analysis.

Results of the sensitivity analysis suggest that total containerised trade through all Australian ports would increase annually by 6.8 per cent under the high economic growth scenario and 3.5 per cent under the low economic growth scenario over the next twenty years, compared with growth of 5.1 per cent per annum under the base case scenario. Total non-containerised trade though all Australian ports over the next 20 years would increase annually by 3.92 and 3.80 per cent under the high and low economic growth scenarios, compared with growth of 3.85 per cent per annum under the base case scenario.

The exchange rate scenarios imply changes in exchange rate assumptions have a minimal impact on total containerised and non-containerised trade passing through Australian ports, mainly due to the inelastic nature of total containerised and non-containerised trade to exchange rates. Within this total trade envelope, differing exchange rates will have more significant impacts on exports and imports. Total containerised trade through all Australian ports is projected to increase annually by 5.3 per cent under the high exchange rate scenario and 4.9 per cent under the low exchange rate scenario over the next twenty years, compared with growth of 5.1 per cent per annum under the base case scenario. Similarly, total non-containerised trade through all Australian ports would increase annually by 3.84 per cent under the high exchange

rate scenario and 3.87 per cent under the low exchange rate scenario over the forecast, compared with growth of 3.85 per cent per annum under the base case scenario.

The impact of variations in GDP growth and exchange rates on containerised and non-containerised trade varies by port as the magnitude of income and exchange rate elasticities varies by port.

Abbreviations and acronyms

ABS	Australian Bureau of Statistics
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CDU	Cruise Down Under
DOI	Department of Infrastructure
GDP	Gross Domestic Product
NSW	New South Wales
OECD	The Organisation for Economic Co-operation and Development
SARS	Severe Acute Respiratory Syndrome
TEU	Twenty-foot equivalent unit
UK	United Kingdom
US	United States
USA	The United States of America

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Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 128

Program: N/A
Division/Agency: Policy and Research
Topic: Implementation of the National Cycling Strategy 2011-16
Proof Hansard Page: 112 (19 October 2015)

Senator Rice, Janet asked:

Senator RICE: I want to follow up on questions I asked at the last estimates about the National Cycling Strategy. Can we have an update on any engagement and activity in the implementation of the National Cycling Strategy since May?
Mr Mrdak: I think the major activity has been that the next report to ministers on the implementation of the National Cycling Strategy is due to go to the ministerial council, which is meeting in Adelaide on 6 November. That will provide the next comprehensive update of progress against the strategy. We would be happy, once that is provided to ministers, to provide you with a copy of that update report.
Senator RICE: Okay. Thank you.

Answer:

The Transport and Infrastructure Council noted the *National Cycling Strategy 2014 Implementation Report* at its 22 May 2015 meeting. The report outlines the progress towards achieving the key priorities and objectives of the *National Cycling Strategy 2011-2016* (NCS).

State, territory and local governments play the lead role in pedestrian, cycling and shared path infrastructure. The Commonwealth also contributes through major project funding for road developments which include cycling and walking infrastructure, other roads infrastructure and upgrade programmes, and Financial Assistance Grants to local governments. All levels of government also recognise the important role for the private sector in promoting cycling, including by providing end-of-journey facilities.

Under the current NCS, the Department of Infrastructure and Regional Development will fund Austroads to provide the secretariat for the Australian Bicycle Council (ABC) until the end of 2016.

There have been three meetings of the ABC in 2015: on 29-30 February, 17 June and 17 September. Discussions have included consideration of its potential future role as an active transport organisation, which would likely commence from 2017. The Department of Infrastructure and Regional Development has attended (in-person or via phone) all meetings of the ABC in 2015.

National Cycling Strategy 2014 Implementation Report is at Attachment A.

AUSTRALIAN
BICYCLE COUNCIL

ATTACHMENT A

NATIONAL CYCLING
STRATEGY 2011-16

2014
Implementation Report

The Australian Bicycle Council coordinates the implementation of the Australian National Cycling Strategy 2011 - 2016. The Council is supported by Austroads and the Commonwealth Department of Infrastructure and Regional Development.

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Austroads

www.bicyclecouncil.com.au

Contents

Photo courtesy of the Northern Territory Department of Transport

Governance

Transport and Infrastructure Council
Commonwealth, state, territory and New Zealand Ministers with responsibility for transport and infrastructure issues, as well as the Australian Local Government Association.

Transport and Infrastructure Senior Officials Committee (TISOC)
Heads of transport departments and road authorities from the Commonwealth Government, each state/territory as well as New Zealand. A representative from local government and the NTC are also members of this group.

Austroads
Association of Australian and New Zealand road transport and traffic authorities.

Australian Bicycle Council

Australian Bicycle Council

The Australian Bicycle Council (ABC) was established in 1999 to oversee the implementation of the first Australian National Cycling Strategy. The ABC consists of representatives from Commonwealth, state, territory and local government agencies as well as non-government cycling organisations and the bicycle industry.

The role of the ABC is to:

- Oversee and coordinate the implementation of the Australian National Cycling Strategy.
- Provide a forum for the sharing of information between stakeholders involved in the implementation of the Strategy.
- Maintain a repository of information and resources relevant to providing for and promoting increased cycling in Australia.

The secreteriat of the Australian Bicycle Council is provided by Austroads with funding from the Commonwealth Government.

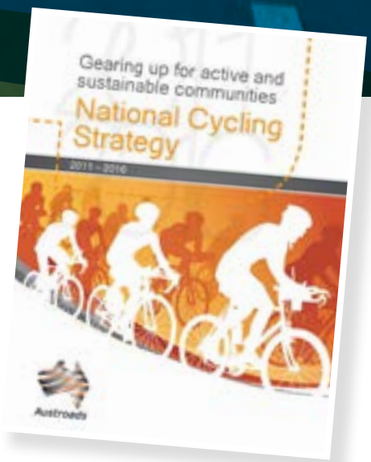
National Cycling Strategy 2011-16

The National Cycling Strategy 2011-16 was approved by Ministers in November 2010. The Strategy aims to double the number of people cycling in Australia by 2016.

This is Australia's third National Cycling Strategy (NCS). Since the first strategy, which was introduced in 1999, the Australian Bicycle Council has played a role in coordinating, implementing and reporting on the strategy.

The Strategy has six key priorities and objectives.

- **Cycling promotion:** promote cycling as both a viable and safe mode of transport and an enjoyable recreational activity.
- **Infrastructure and facilities:** create a comprehensive and continuous network of safe and attractive bicycle routes and end-of-trip facilities.
- **Integrated planning:** consider and address cycling needs in all relevant transport and land use planning activities.
- **Safety:** enable people to cycle safely.
- **Monitoring and evaluation:** improve monitoring and evaluation of cycling programs and develop a national decision-making process for investment in cycling.
- **Guidance and best practice:** support the development of nationally consistent guidance for stakeholders to use and share best practice across jurisdictions.



Highlights

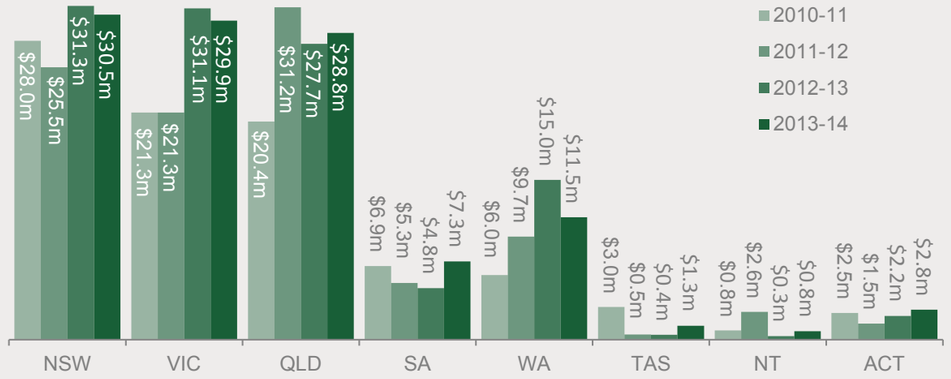
$112.8m

invested by states and territories in 2013-14.

This report provides an overview of progress made in 2014 towards the objectives of the National Cycling Strategy 2011-16 (NCS). This report describes progress in each of the six priority areas as outlined in the NCS and highlights "key themes" that are being seen across multiple policy areas and jurisdictions.

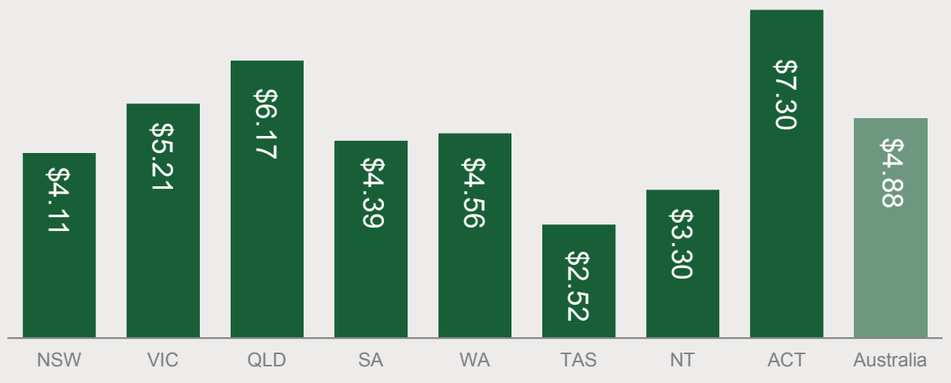
Considerable progress has been made in 2014 on projects that redefine existing planning frameworks such as Level of Service and Cost-Benefit Analysis to enable the consideration of bicycles alongside other modes of transport. The role that active travel plays in population health continues to be a theme across multiple government agencies. The safety of vulnerable road users was again targeted through parliamentary enquiries, citizen's juries and the National Road Safety Strategy. Road user behaviour has been a strong focus with several campaigns launched that aim to improve the interactions between people driving motor vehicles, riding bicycles and walking.

State & Territory Cycling Investment 2010-2014



State & Territory Cycling Investment 2013-14

per head of population



Source: Expenditure provided by jurisdicitons

7 Cycling Promotion

Photo courtesy of City of Gold Coast

Cycling promotion seeks to encourage people to start cycling or to encourage existing riders to cycle more often. Promotion can take many different approaches, from mass-market advertising that reaches a wide audience, to programs delivered to a target market such as a specific demographic, location or business. Promotion can be quite cost-effective at changing behaviour, especially when the built environment is bicycle-friendly.

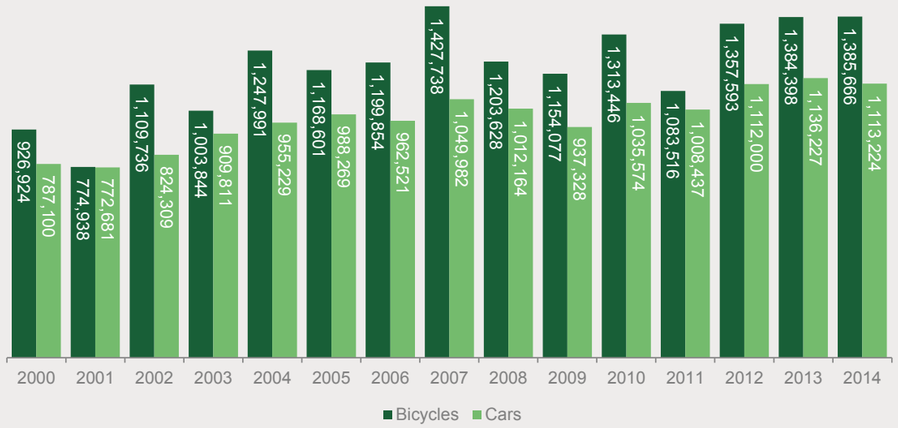
Cycling promotion that focuses on achieving specific behaviours such as commuting by bicycle can be an effective way of leveraging major investments made in infrastructure. What starts as an isolated behaviour such as commuting to work by bicycle once a week, can lead to permanent behavioural change that can last a lifetime. This change improves the long-term health and well-being of the individual as well as providing essential benefits for the economy and the improved functioning of urban environments.

More Bicycles or More Riding

Bicycle sales have remained strong for many years, with the total number of bicycles sold annually, consistently outnumbering the number of cars sold. Over the past 15 years, a total of 17.7 million bicycles were imported into Australia with bicycle sales outnumbering car sales by more than 3 million in total over 15 years. More than half of all Australian households have at least one bicycle.

Bicycles are an incredibly cheap form of transport and are easily accessible for most Australians. While the majority of Australians have access to a bicycle, the key is to motivate them to ride more often. Cycling as a recreational activity has many benefits, most notably, improvements in health. Cycling for transport has additional benefits for society by taking cars off already congested roads.

Australian bicycle and car sales 2000-2014



Source: Bicycle sales based on Australian Customs import figures and provided by the Cycling Promotion Fund. Car sales based on VFACTS from the Federal Chamber of Automotive Industries.

Photo courtesy of City of Sydney

Above and below: *Facilities such as showers, lockers and change rooms are being installed by developers looking to either meet a minimum standard set by council, or as a differentiating feature of the property. These facilities provide utility to a wide range of people such as runners, gym users and, of course, bicycle users.*

Private Ensuite Change Facilities - City of Sydney.

Promoting Cycling for Short Trips

The National Cycling Strategy 2011-16 asks policy-makers to deliver marketing and education programs that promote the benefits of cycling and encourage people to cycle for short personal trips. A variety of such projects have been delivered by states and territories in 2014.

The NSW Government supported *NSW Bike Week* in 2014 which ran in September and included a variety of events aimed at encouraging people from all walks of life to get on a bike and ride.

The Victorian Government promoted Bicycle Network's "Start Riding" pack in the motor vehicle registration renewal insert, which aims to encourage people to start riding a bicycle. The Victorian Government continued its funding support for the *Ride2School* program which is receiving $2.8 million over 4 years (2011-2015). The Victorian Government continued its support for *Melbourne Bike Share*, a public bicycle hire scheme which provides 600 bicycles across 51 public docking stations located in Melbourne CBD and inner suburbs.

The Queensland Government has continued to develop *Active Towns* in Cairns, Mackay and the Gold Coast, spending $3 million in 2014. These towns are being developed as pilot projects to demonstrate how making an investment in cycling promotion, education and facilities can achieve improved levels of physical activity and active transport.

The Western Australian Government has initiated the *Your Move* program in 2014 to run over 2 years. This program provides personalised information and support for households to encourage participants to change car trips to active transport modes (walking, cycling and public transport) as well as adopting other active lifestyles.

Minor cycling infrastructure upgrades are also being delivered as part of the *Your Move* program, including the installation of bike repair stations and bike racks across the city. Individualised wayfinding signs were installed, including bike parking signs and bike courtesy signs.

During 2014/15, the *Your Move* program will be offered to 66,000 households in the City of Wanneroo as a joint initiative between the Department of Transport and the Department of Sport and Recreation. The initiative will work with approximately 10,000 households intensively until the end of 2015.

Kentish Council and the Tasmanian Government partnered to deliver bicycle skills and safety training to around 500 children living in the Sheffield area.

To encourage local cycling, the City of Darwin and NT Government partnered to provide a series of basic bike skills sessions to the local community. The sessions focussed on building confidence in a traffic-free environment and covered basic bike handling techniques and road rules.

Promoting Recreational Cycling

The National Cycling Strategy 2011-16 asks policy-makers to deliver marketing and education programs that encourage people to take up cycling as a recreational activity. A variety of such projects have been delivered by states and territories in 2014.

The New South Wales Government provided a sponsorship and activation package for the *Spring Cycle* and also supported the *Spring Cycle* and *Sydney to the Gong* mass-participation events by providing traffic management and free public transport to participants. Each event attracted around 10,000 participants.

The Victorian Government supported a variety of rides including the *RACV Great Victorian Bike Ride, Bupa Around the Bay in a Day* and the *Melbourne to Warnabool Cycling Classic*. The government also provided operational support to various road cycling events.

The Northern Territory is working to position the Alice Springs region as a world-class mountain biking destination. The dramatic landscapes of Central Australia and the Red Centre offer the perfect backdrop for mountain bike riding. In 2014, a series of easy and intermediate trails opened at the historic Alice Springs Telegraph Station, ranging in length from 4 to 10 km. Bike hire, tours and a range of facilities are available at this new mountain biking venue. The NT Government is also supporting an ongoing mountain bike marketing campaign called 'Ride the Red Centre' to help boost awareness of Central Australia as a mountain biking tourism destination.

Encouraging Cycling to Work by Developing Bicycle-Friendly Workplaces

The National Cycling Strategy 2011-16 asks policy-makers to work with employers to develop cyclist-friendly workplace facilities and projects. A variety of such projects have been delivered by states and territories in 2014.

The Queensland Government encouraged bicycle-friendly workplaces through the ongoing application of the *Queensland Development Code*. End-of-trip facilities must be installed for all new major developments and additions to major developments located in designated local government areas. These requirements are included in the *"Queensland Development Code (QDC) Mandatory Part 4.1 - Sustainable Buildings"* and apply statewide.

The South Australian Government runs the *Smarter Travel @ Work* program which supports businesses to adopt safer, greener and more active options for travel both during business hours and for commuter trips. This program is provided at no cost to the employer and is tailored to suit the unique needs of each business.

The Tasmanian Government completed its pilot *TravelChoice* program which aimed to reduce reliance on private cars for commuting. The pilot program was delivered in one state government department and resulted in a 9.8% decrease in the use of cars for commuting and a 3.3% increase in cycling as the main commuting mode for employees.

The South Australian Government has developed an online bicycle route planner to help bicycle users to get around the city. The planner allows users to choose routes with various stress levels such as paths, low traffic routes or fastest routes.

Riders in Tasmania taking part in national Ride to Work day.

ALICE SPRINGS MTB TRAILS

The Northern Territory is promoting mountain biking in the Red Centre.

2 Infrastructure & Facilities

Photo courtesy of Queensland TMR

Western countries that have achieved significant levels of cycling have invested heavily in cycling networks and facilities over a sustained period of time. Even countries with high cycling participation such as the Netherlands and Denmark were not bicycle-friendly until a significant shift in policy was made to build bicycle infrastructure.

In 2013-14, Australian state and territory governments invested $111.2 million in cycling infrastructure. This equates to around $4.74 per head of population across Australia. This figure excludes work that is carried out as part of the general maintenance and construction of roads. This figure also excludes investment made by federal and local governments. This amount is in line with the 2012-13 figure ($111.7 million) and is a significant increase over the 2010-11 figure ($82.9 million) and the 2011-12 figure ($93.8 million) . The bicycle infrastructure investment figures mainly reflect spending on facilities that are separated from motor vehicles because road expenditure is generally not disaggregated in a way that allows expenditure on bicycle infrastructure to be calculated.

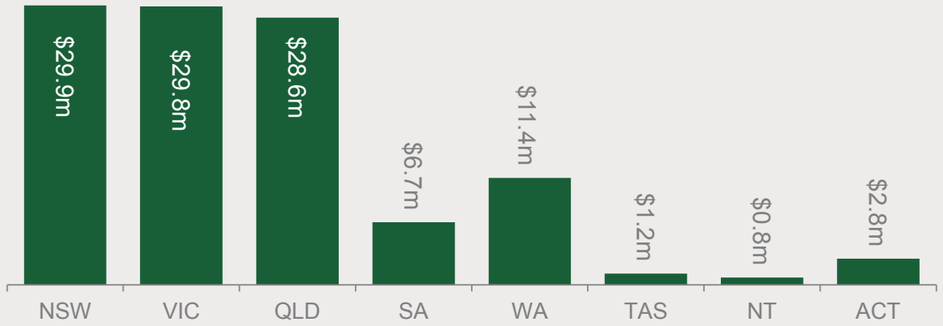
Western Australia: Lock and Ride

The Western Australian Department of Transport have installed bicycle cages/shelters that provide improved security and weather protection for bicycles parked at train stations.

Access to the bicycle cages/shelters is controlled using the SmartRider pass that is used to gain access to public transport services.

Bicycle users are required to register their SmartRider pass and to select up to two bicycle cages that they will use.

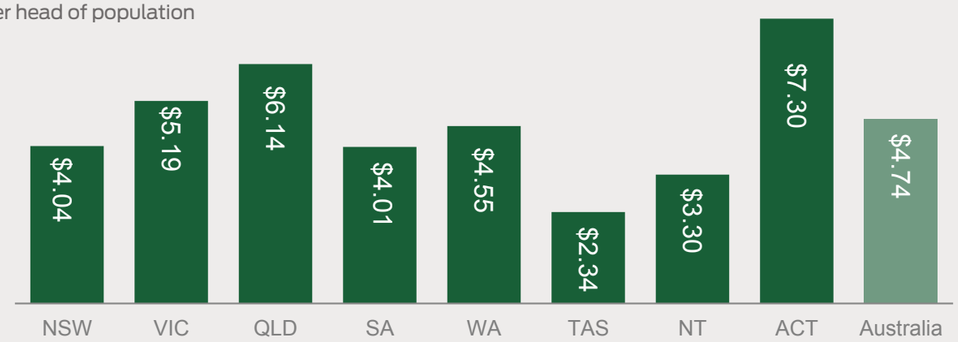
State & Territory Cycling Infrastructure Investment 2013-14



Source: Expenditure provided by jurisdicitons

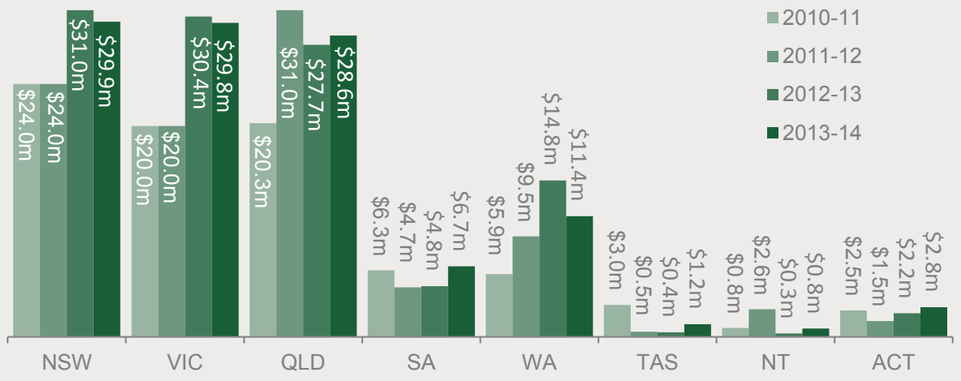
State & Territory Cycling Infrastructure Investment 2013-14

per head of population



Source: Expenditure provided by jurisdicitons

State & Territory Cycling Infrastructure Investment Trend 2010-2014



Source: Expenditure provided by jurisdicitons.

New South Wales

The New South Wales Government spent $29.9 million on bicycle facilities as part of their 2013-14 work plan. Around $19.6 million was spent on priority cycleways across Sydney. These figures do not include bicycle infrastructure projects that were built as part of larger transport projects.

New South Wales - Bicycle infrastructure investment in 2013-14

Projects in Partnership with Regional Local Governments	State Govt Contribution	Local Government Co-Contribution
Northern NSW 5.5 km off-road facilities in partnership with Balina, Clarence Valley, Lismore, Richmond Valley, Tenterfield and Uralla Councils.	$3,089,000	$1,810,000
Hunter Region 1.3 km off-road facilities and 260 m on-road facilities in partnership with Gosford, Lake Macquarie, Newcastle and Wyong Councils.	$2,393,000	$1,230,000
Southern NSW Region 5.7 km off-road facilities in partnership with Eurobodalla, Palerang, Queanbeyan, Kiama, Shoalhaven, Upper Lachlan, Wingecarribee, Wollondilly and Wollongong Councils.	$1,093,000	$1,109,000
South-West NSW Region 8.4 km off-road facilities and 3 km on-road facilities in partnership with Albury, Conargo, Coolamon, Cootamundra, Corowa, Deniliquin, Greater Hume, Griffith, Gundagai, Harden, Hay, Jerilderie, Junee, Leeton, Lockhart, Murray, Narrandera, Temora, Tumbarumba, Tumut, Uranda, Wagga Wagga, Yass Valley and Young Councils.	$1,207,000	$912,000
Western Region 8 km off-road facilities and 650 m on-road facilities in partnership with Bathurst, Brewarrina, Cabonne, Forbes, Gilgandra, Lachlan, Mid-Western, Moree Plains, Orange and Warrumbungle Councils.	$944,000	$757,000
Sydney Region 6 km off-road facilities and 12.55 km on-road facilities in partnership with Bankstown, Baulkham Hills, Blacktown, Blue Mountains, Camden, Campbelltown, Canterbury, Fairfield, Ku-ring-gai, Leichhardt, Marrickville, Mosman, North Sydney, Pittwater, Randwick, Ryde, Sutherland, Warringah, Waverley, Willoughby and Woollahra Councils.	$1,602,000	$2,338,000
Priority Cycleways **Total investment in Priority Cycleways $19.6 million**		
Prospect to Blacktown - Off-road path & traffic signals		
M7 Cycleway Links - Off-road path & traffic signals		
Parramatta Valley - Off-road path & boardwalk		
Great Western Highway - Off-road path		
Nepean River Green Bridge - Off-road path		
Iron Cove Bay Run - Off-road path		
Anzac Parade - Off-road path		
Sydney Airport Cycleway - Off-road path		

The NSW Government is partnering with the Commonwealth Government and Parramatta City Council to build a continuous off-road cycleway between Westmead and Meadowbank. The project includes construction of a new 750 metre cycleway over the Baludarri Wetlands. Once completed, this will form part of an 11.4 km link along the Parramatta River and support the urban renewal currently underway.

The cycleway through the wetlands has improved public access to one of the City's largest wetlands and joins the existing riverside paths from Rangihou Reserve at the Southern end of Morton Street to the UWS campus to the east of James Ruse Drive.

Peninsula Link Trail

The Peninsula Link shared use path is a significant addition to the Frankston and Mornington Peninsula walking and cycling networks. It is also the single biggest addition to Melbourne's shared use path network since the EastLink Trail.

Jim Stynes Bridge is a new bridge alongside and over the Yarra River in central Melbourne, not across it. It connects pedestrians and cyclists between the residential / business precinct of Docklands on the west side of the city grid, and the Yarra River north bank on the south side of the city grid.

Victoria

The Victorian Government invested $29.8 million in building bicycle facilities during their 2013-14 work plan. A significant amount of work has been done in conjunction with railway upgrades carried out as part of the Regional Rail Link project. The Victorian Government also invested $350,000 to run a ferry across the Yarra River (Westgate Punt) that improves accessibility for people riding bicycles.

Victoria - Bicycle infrastructure investment in 2013-14

Projects in Metropolitan Melbourne	State Govt Contribution	Local Government Co-Contribution
Footscray Rd West and Pearl River Rd, Footscray - Signalisation of left turn slip lane.	$350,000	$0
Footscray Rd West and Water Way, Footscray - Signalisation of left turn slip lane.	$350,000	$0
Darebin Rd, Northcote - 1.8 km on-road bicycle lanes.	$300,000	$0
Stevenson St, Kew - On-road bicycles lanes.	$160,000	$0
Wellington St and Glenferrie Rd, Kew - On-road bicycle lanes.	$240,000	$0
Gardiners Creek Trail, Glen Iris - Path lighting.	$600,000	$0
Chapel St, Stonnington - On-road bicycle lanes.	$1,050,000	$0
Mt Alexander Rd, Moonee Valley - On-road bicycle lanes and electronic warning signs.	$220,000	$0
Jim Stynes Bridge, Melbourne - Bridge on the Yarra River.	$2,580,000	$0
Ringwood and Box Hill Cycle Connections - 0.5 km shared path and 2 km on-road lanes.	$1,500,000	$0
Regional Rail Link, Sunshine - Shared use paths and bicycle parking cages.	$5,000,000	$0
Eastlink and Peninsula Link - Shared use path.	$300,000	$0
Baxter-Tooradin Rd, Baxter - Bicycle lanes.	$230,000	$0
Projects in Regional Victoria	State Govt Contribution	Local Government Co-Contribution
Corio-Waurn Ponds Rd, Geelong - Bicycle lanes.	$250 ,000	$0
Ewing Blyth Dr, Geelong - Bicycle lanes.	$150,000	$0
Transport Investment in Regions - Paths, rail trails, wayfinding, bicycle parking, etc.	$500,000	$530,000
Funding Programs	State Govt Contribution	Local Government Co-Contribution
Community Facility Funding Program - Projects in Geelong, Whittlesea and Cardina.	$508,000	*
Community Works Program - Projects in Hume, Manningham, Wellington, Ballarat, Queenscliff and Brimbank.	$210,000	*
Regional Growth Fund - Cycling trails in regional Victoria.	$2,100,000	*
End of trip facilties	State Govt Contribution	Local Government Co-Contribution
Preston and Fawkner - Bicycle parking facilities.	$100,000	$100,000
Footscray, West Footscray and Sunshine - Bicycle parking facilities.	**	$0
Mitcham and Springvale - Bicycle parking facilities.	**	$0

* Co-contributions not known.

** Funding cannot be determined as the facility was provided as part of a larger project.

Queensland

The Queensland Government invested $28.6 million in the construction and design of bicycle facilities during their 2013-14 work plan. This figure does not include money that was spent to comply with the Cycling Infrastructure Policy or the Queensland Development Code. These policies require that various road, housing and other projects provide facilities that accommodate bicycles. For example, the Queensland Development Code requires the provision of end of trip facilities that are suitable for the particular land use type.

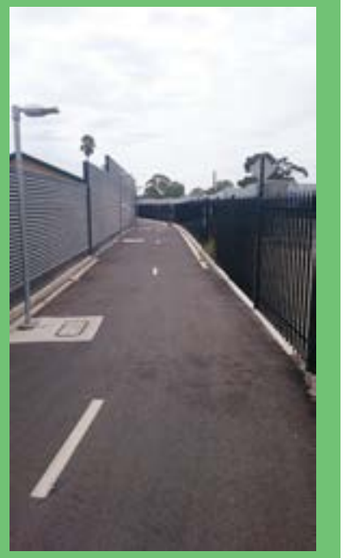
Queensland - Bicycle infrastructure investment in 2013-14

Separated Paths in Metropolitan Queensland	State Govt Contribution	Local Government Co-Contribution
Bicentennial Bikeway Stage 3 565m bi-directional separated bicycle facility	$4,016,361	$4,016,361
Bicycle Lanes/Shoulders in Metropolitan Queensland	State Govt Contribution	Local Government Co-Contribution
Helensvale - 1.3 km	$30,500	$30,500
Wembley Rd (Campden Street to Logan) - 1.7 km	$444,720	$460,000
Petrie Creek Rd, Rosemount & Diddillibah - 3.1 km	$375,000	$375,000
Noosa Heads - 650 m	$154,000	$154,000
Tanawha Tourist Drive Stage 2 - 9.2 km	$624,545	$624,545
Mary Street, Noosaville - 250 m	$133,000	$133,000
Kawana Station (Southbound) - 190 m	*	*
Cooroy Noosa Road Bus Stop (Westbound) - 90 m	*	*
David Low Way, Williams St to Emu Mountain Rd - 3.4 km	$1,856,264	$0
Shared-use Paths in Metropolitan Queensland	State Govt Contribution	Local Government Co-Contribution
Gateway North Bikeway Schulz Canal Crossing - 1.1 km	$2,000,000	$5,000,000
Cottesloe Drive, Mermaid Waters - 290 m	$335,444	$335,444
Brassall Bikeway Stage 3 - 2.1 km	$900,000	$900,000
Goodna Creek Bikeway Stage 2 - 800 m	$400,000	$400,000
Anzac Avenue to Mango Hill - 480 m	$112,200	$112,200
Lower King Street, Caboolture - 610 m	$129,000	$129,000
Beerwah Station - 650 m	$600,000	$600,000
Sunshine Beach Upgrade, Noosa Heads - 690 m	$325,000	$325,000
Bicycle Lanes/Shoulders in Regional Queensland	State Govt Contribution	Local Government Co-Contribution
Safer Roads Sooner, Cairns - 1.4 km	$149,751	$0
Shared-use Paths in Regional Queensland	State Govt Contribution	Local Government Co-Contribution
Cairns Southern Cycleway - 5 km	$1,607,105	$1,000,000
Nerang River Bridge - 450 m	$14,000,000	$5,000,000
Safer Roads Sooner, Hughenden - 10 m	$87,679	$0
Safer Roads Sooner, Townsville - 260 m	$124,000	$0
Safer Roads Sooner, Townsville - 200 m	$110,000	$0
Emerald South Dual Pedestrian and Bike Path - 2.8 km	$189,091	$100,000
End of trip facilties	State Govt Contribution	Local Government Co-Contribution
Memorial Pool Bike Cage	$70,911	$25,457
Browns Plains Station	*	*

* Funding cannot be determined as the facility was provided as part of a larger project.

The Cairns Southern Cycleway is a 5km cycleway which includes both on-road and off-road facilities. The cycleway extends along Spence Street in the city, from Fearnley Street to Mulgrave Road at Woree. The project was jointly funded by the State Government and Cairns Regional Council who was responsible for construction and delivery.

The Anzac Avenue, Mango Hill Shared Path project runs along the eastern side of Anzac Avenue between Capestone Boulevard and Kinsellas Road East at Mango Hill. The project includes the construction of 485 metres of 3-metre-wide off road shared path, including a 30m bridge. As Anzac Avenue is a heavily trafficked road, this project provides a safer, off-road facility for residents, particularly students accessing the school. The project was jointly funded by the State Government and Moreton Bay Regional Council who was responsible for construction and delivery.



The Greenways Program delivered two significant shared use path connections to the Marino Rocks Greenway in 2013-14. Construction of both paths was fast-tracked to take advantage of the 2013 rail line closures. They provide a direct connection within the rail corridor from Emerson Station to Clarence Park Station and from Lyons Parade to Cromer Parade. The latter was positively provided as part of the South Australian Governments $110m Goodwood Junction Upgrade. Both 3m wide paths are lit with energy-efficient LED luminaires with consistent lighting levels to provide a wider and more attractive walking and cycling environment.

South Australia

The South Australian Government invested $6.7 million in bicycle facilities as part of their 2013-14 work plan. Major investments were made in the Outer Harbor and Marino Rocks Greenways as well as the Mike Turtur Bikeway and the Amy Gillett Bikeway. The bicycle budget for the 2014-15 year is $5.35 million.

South Australia - Bicycle infrastructure investment in 2013-14

Metropolitan Adelaide	State Govt Contribution	Local Government Co-Contribution
Outer Harbour, Marino Rocks, Mike Turtur Bikeway	$3,570,000	$0
Anzac Hwy Intersection Upgrades - Bicycle lanes	$135,000	$0
Anzac Hwy - Green lanes at conflict points	$45,320	$0
Galway Ave and North East Road, Walkerville - Signalised bicycle crossing	$85,000	$0
Prospect, Eastwood, Hilton and Cowandilla - Refuge crossings on unsignalised arterial roads	$98,280	$0
Grant Ave at Fullarton Rd, Rose Park - Bike box	$30,000	$0
Pulteney St to East Tce, Adelaide - Green bicycle lanes	$66,667	$33,333
John Rice Ave to Haydown Rd, Elizabeth Vale - Shared use path	$45,333	$22,667
Steamranger Railway, Mount Barker - Shared use path	$66,667	$33,333
King William Rd at Greenhill Rd, Unley - Bike box	$2,000	$1,000
Bolivar Rd, Burton - Shared use path	$66,667	$33,000
Margaret St, Adelaide - Contra-flow lane	$30,000	$70,000
Russel, Owen and Compton St, Adelaide - Contra-flow lane	$30,000	$60,000
City Bikeway - Broadview and Pooraka - Bicycle wayfinding	$10,000	$10,000
Prescott Tce, Kensington Rd, Sturt Rd, Greenhill Rd - Bicycle route	$12,780	$12,780
Kelly Road and Dawson Res, Para Hills - Shared use path	$50,000	$50,000
Encounter Bikeway, Middleton - Shared use path	$50,000	$57,058
High St to Coghill Straat, Kapunda - Shared use path	$40,000	$45,166
Christies Creek Trail and Suffolk Dr, Morphett Vale	$50,000	$90,000
River Torren Path, Klemzig - Shared use path widening	$35,000	$35,000
Swanson St, Gilles Pl, Regent Ct, Parkview Dr, Vine Ct - Shared use path links	$8,500	$8,500
Amy Gillett Bikeway - Charlston to Mt Torrens	$1,640,000	$0

Regional Adelaide	State Govt Contribution	Local Government Co-Contribution
Bay Rd, Mount Gambier - Bicycle lanes	$25,000	$0
Hawker Rd to Stirling Nth Rd, Stirling North - Bicycle lanes	$125,000	$0
Mount Gambier - Bicycle lanes	$27,267	$13,633
Cedar Ave, Park Tce, Memorial Ave and Rolland St, Naracoorte - Bicycle lanes	$40,000	$20,000
Yahl Rd, Yahl - Shared use path	$34,050	$34,050
Silo Rd, Quorn - Bicycle crossing	$10,400	$1,040
Port Pirie Tourism Network - Shared use path	$24,000	$24,000

Western Australia

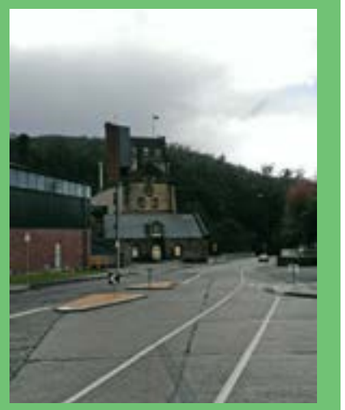
The Western Australian Government delivered $11.4 million of bicycle facilities as part of their 2013-14 work plan. Significant stretches of shared use path were delivered in metropolitan Perth, with a large number of smaller projects delivered through co-funding arrangements with local councils as outlined below. Secure bike cages were installed at Beatty Park in the City of Vincent, Redcliffe Primary School and at a variety of public schools in the City of Cockburn. Investment in bicycle parking totalled $155,000 with $67,400 provided by the Department of Transport and $87,300 provided by local councils.

Western Australia - Bicycle infrastructure investment in 2013-14

Metropolitan Perth	State Govt Contribution	Local Government Co-Contribution
Erindale to Balcatta Principal Shared Path - 1.1 km shared use path	$920,000	$0
Mill Point to Thelma Principal Shared Path - 3.5 km shared use path	$2,875,000	$0
Scandrett and London Principal Shared Path - 400 m shared use path	$600,000	$0
Mitchell Freeway Principal Shared Path - 120 m shared use path	$39,754	$0
Bassendean to Success Hill - 900 m shared use path	$1,940,000	$0
Gateway Principal Shared Path (Tonkin/Leach/Roe Hwys) - shared use path under construction	$5,900,000	$0
Armadale and Harrisdale - 1.8 km shared use paths	$212,417	$212,417
Ascot - 125 m shared use path	$13,267	$27,407
Bibra Lake - 2.6 km shared use paths	$319,041	$371,257
Cottesloe - 740 m shared use path	$64,000	$66,000
North Fremantle - 420 m shared use path	$45,500	$46,000
Thornlie - 440 m shared use path	$31,996	$31,995
Sorrento, Beldon & Kingsley - 1.5 km shared use paths	$107,800	$118,126
Mandurah - 130 m shared use path	$14,750	$14,750
Attadale - 1.1 km shared use path	$104,357	$104,356
Peppermint Grove - 350 m shared use path	$27,000	$27,000
Mundijong - 1.1 km shared use path	$80,992	$80,992
North Perth - 180 m shared use path	$45,600	$82,584
Clarkson - 275 m shared use path	$31,000	$33,166
Samson - 80 m bicycle lanes	$38,000	$39,839
Victoria Park - 1.2 km bicycle lanes	$109,305	$301,182
North Perth - 290 m bicycle lanes	$25,000	$89,242

Regional Western Australia	State Govt Contribution	Local Government Co-Contribution
Great Northern Highway Realignment, Port Headland - 3 km shared use path	$500,000	$0
Esperance Port Access Corridor Project - 1.2 km shared use path	$3,200,000	$0
Albany, Middleton Beach, Milpara & Emu Point - 1.5 km shared use path	$212,536	$212,536
Mount Magnet - 100m shared use path	$9,796	$10,000
Margaret River - 660 m shared use path	$41,277	$88,723
Bridgetown - 205 m shared use path	$18,000	$18,000
Australind - 880 m shared use path	$55,022	$65,853
Quindalup - 1.4 km shared use path	$750,000	$750,000
Muchea & Bindoon - 650 m shared use path	$55,896	$94,258
Collie - 690 m shared use path	$71,839	$99,411
Kambalda - 1.7 km shared use path	$50,000	$100,000
Denmark - 1.3 km shared use path	$130,000	$211,550
Donnybrook - 520 m shared use path	$35,143	$35,143
Newman - 280 m shared use path	$37,352	$42,648
Esperance - 2.3 km shared use path	$147,223	$747,777
Sunset Beach & Bluff Point - 550 m shared use path	$39,813	$49,562
Usher - 1.1 km shared use path	$95,797	$154,203
Kellerberrin - 1.3 km shared use path	$35,211	$42,884
Hyden - 2.7 km shared use path	$37,546	$37,545
Manjimup - 2 km shared use path	$116,250	$116,250
Menzies - 400 m shared use paths	$22,183	$22,181
Nannup - 580 m shared use path	$25,000	$25,000
Millars Well & Pegs Creek - 820 m shared use path	$90,300	$290,000
Toodyay - 580 m shared use path	$35,261	$52,592
Calingiri - 230 m shared use path	$19,450	$19,450
Middleton Beach - 3.5 km bicycle lanes	$274,160	$274,160

Before and after photographs of the Eastern approach to the Tasman Bridge. This 400m shared pathway was co-funded by Clarence City Council and the Department of State Growth. It improves cyclist and pedestrian access and creates a safe, off-road link to an overpass that leads to a local high school.



Hobart City Council has installed a pedestrian refuge on Strickland Ave at Cascade Brewery and included an uphill bike lane as part of the project. This short link provides a connection for bicycle riders using the Hobart Rivulet path from the Cascade Gardens to the Old Farm Road turnoff.

Tasmania

The Tasmanian Government provided $1.2 million for bicycle facilities in 2013-14. Investment in bicycle infrastructure was also made by various local governments ($1.5 million), the University of Tasmania ($80,000) and the federal government ($1.4 million).

The majority of the projects completed in Tasmania have been shared paths intended for both transport-related and recreational cycling. Significant investment has also been made in the construction of purely recreational facilities such as a racing/training track in the Northern Midlands and mountain biking facilities in the North East.

Funding has been provided to support the installation of wayfinding signage on cycling routes, and on end-of-trip facilities including a contribution toward end-of-trip facilities at the University of Tasmania.

Although not captured in expenditure figures, general road works have sought to improve conditions for bicycle users.

Tasmania Australia - Bicycle infrastructure investment 2013-14

Lanes and Paths in Metropolitan Hobart	State Govt Contribution	Local Government Co-Contribution
Eastern Access to Tasman Bridge - Shared-use path	$315,000	$315,000
Hobart-Rivulet Track Upgrade - Shared-use path	$100,000	$270,000
Kingston Trail Upgrade - Shared-use path	$30,000	$46,000
Jordan River Trail - Shared-use path	$50,000	$50,000
Cascade Rd, South Hobart - Refuge island	$48,000	$10,500
Lanes and Paths in Regional Tasmania	State Govt Contribution	Local Government Co-Contribution
West Tamar Trail - Shared-use path	$31,000	$32,000
Devonport Great Foreshore Ride - Shared-use path	$100,000	$150,000
Dover Village, Launceston - Shared-use path	$100,000	$250,000
River Road, Ambleside - Shared-use path	$19,200	$1,500
Tugrah Rd to Lawrene Dr, Stoney Rise - Shared-use path	$129,000	$3,000
Midland Highway, Brighton - Shared-use path	$50,000	$180,000
Penguin to Sulfur Creek - Shared-use path	$20,000	$0
Westbury Rd, Westbury - Bicycle lanes	$10,000	$10,000
End of Trip Facilities	State Govt Contribution	Local Government Co-Contribution
University of Tasmania - Including solar -powered charge stations for e-bikes and tools/workstation	$10,000	(Uni Tas) $80,000
Signposting and Lighting	State Govt Contribution	Local Government Co-Contribution
Intercity Cycleway, Hobart - Wayfinding signage	$10,000	$10,000
Sport, Recreation and Education Facilities	State Govt Contribution	Local Government Co-Contribution
Racing/training facility - Northern Midlands	$80,000	$80,000
Blue Tier Mountain Bike Trail	$100,000	(federal) $1,225,000 (local) $140,000

Northern Territory

The Northern Territory Government invested $786,000 in bicycle infrastructure as part of their 2013-14 work plan. In 2014, a series of mountain bike trails were constructed at the historic Alice Springs Telegraph Station, ranging in length from 4 to 10 km. The Northern Territory cycling budget is set to increase significantly in 2014-15 with an investment of over $2 million budgeted.

Northern Territory - Bicycle infrastructure investment in 2013-14

Lanes and Paths in Metropolitan and Regional NT	State Govt Contribution	Local Government Co-Contribution
Stuart Hwy, Alice Springs - Shared-use path	$94,000	$0
Larapinta Dr, Alice Springs - Shared-use path	$100,000	$0
Roystonea Ave, Darwin - Shared-use path	$209,000	$0
Stuart Hwy, Darwin - Shared-use path	$383,000	$0

Australian Capital Territory

The ACT Government invested $2.8 million directly into bicycle infrastructure projects as part of their 2013-14 work plan. In addition to this investment, numerous road projects (as listed below) delivered improved bicycle facilities.

Australian Capital Territory - Bicycle infrastructure in 2013-14

Bicycle Lanes and Paths	State Govt Contribution	Local Government Co-Contribution
Civic Cycle Loop - Separated path	$1,456,000	$0
Ginninderra Dr - Shared path	$120,000	$0
Yamba Drive - Shared path	$1,188,000	$0
Road Projects	State Govt Contribution	Local Government Co-Contribution
Weston Creek & Holt - Shared traffic	*	
Canberra Ave Fyshwick - Bicycle lanes	*	
Ashely Drive Stage 1 - Bicycle lanes	*	
Cotter Road - Separated path	*	
Centenary Trail - Shared-use path	*	

***** Funding cannot be determined as the facility was provided as part of a larger project.

Above: *The 1.5 km extension of the Sadadeen Road off-road shared use path in Alice Springs.*

A new Alice Springs Region cycling and walking map was published in 2014 which includes the Sadadeen Road off-road shared use path (shown above).

3 Integrated Planning

Achieving increased cycling participation requires a widespread and sustained approach to transport and land use planning that facilitates the use of the bicycle for everyday transport trips. Building cities that are accessible by bicycle emcompasses more than just providing bicycle lanes. It includes issues such as mixed-use land development, transit-oriented development and medium-density development.

Key themes that were identified by the National Cycling Strategy Implementation Report in 2013 are summarised below, while new "Key Themes" for 2014 are covered in more detail in the following pages.

Key Theme: Integrating Cycling with Transport and Land Use Planning

The National Cycling Strategy calls for the needs of bicycle users to be embedded in the mainstream business of transport organisations in each jurisdiction. In 2013, several plans were released which provided a foundation for the delivery of an integrated transport system that includes cycling. The delivery of work based on these plans continues through 2014.

Key Theme: 20-minute Neighbourhoods

The concept of a "20-minute neighbourhood" has been developed to address issues that arise as cities get larger and travel distances increase. In poorly-designed housing developments, large areas of residential housing can be isolated from many of the products and services they require to function.

Many of the current batch of planning documents focus on ensuring that residential property is located within a short distance (within 20 minutes by bicycle) of all essential products and services. A common approach is to focus on "catchments" within 5 km of major trip generators.

Key Theme: The Health Crisis and the Role of Active Transport

Sedentary behaviour contributes to the development of obesity and weight issues which are responsible for a range of serious non-communicable diseases such as cardiovascular diseases (heart disease and stroke), diabetes, musculoskeletal disorders and some cancers (endometrial, breast and colon)*. Participating in active transport is an excellent way to build activity into daily life and has the potential to improve the health of a huge proportion of the population.

Key Theme: Integration with Public Transport

Bicycle users are able to travel around 3-4 times further than a pedestrian in the same amount of time, therefore increasing the catchment area of destinations by a factor of 10 or more. This increased catchment can be especially effective when combined with public transport, which can become a viable option for many more people when combined with a bicycle trip at one or both ends. Encouraging bicycle use is an effective method of leveraging existing investment in public transport assets. Encouraging bicycle use also has enormous public health benefits.

To encourage bicycle use, access to interchanges needs to be facilitated through the provision of safe, efficient and comfortable routes. Once the bicycle user arrives, it is important that there are adequate facilties for the storage of their bicycle and other equipment.

Several jurisdictions in Australia are looking to capture the benefits of multi-modal journeys by providing secure bicycle parking at major transport interchanges. There are a number of ways to provide bicycle parking, however secure bike cages are becoming more and more popular due to their flexibility, ease of use, ease of administration and safety. Access to these cages is often provided through the same integrated ticketing pass that is used on the train, bus etc.

* World Health Organization: Obesity and overweight Fact sheet 311, March 2013.

Photo courtesy of Queensland TMR

Key Theme: *Developing Cycling/Active Towns*

While large cities are often set across large areas of mostly low-density housing, regional towns usually have a small urban centre or "main street" where most of the town's facilities and essential services are located. This "main street" needs to be easily-accessible by foot and by bicycle for residents in the heart of these regional towns.

Several jurisdictions have launched pilot programs in a small number of regional towns to test whether an investment in walking/bicycling can lead to a strong uptake in active travel. By focussing on a small number of towns, a significant investment can be made to improve facilities, promote active travel and to evaluate the success of the investment.

Queensland: Active Towns Pilot Program

Queensland aims to develop *Active Towns* to demonstrate that concentrated funding and a coordinated package of infrastructure, policy and behaviour change projects could have a significant impact on cycling levels.

From 2012/13 to 2014/15, the *Active Towns Pilot Program* is piloting the cycling demonstration towns concept in three Queensland locations; Cairns, Mackay and the Gold Coast.

Councils were required to commit to up to $1 million per year to implement *Active Towns*, conditional to matching funds or demonstration of significant previous/existing investment.

Councils were requested to limit the geographical area of investment to better provide a measurable benefit for the program.

New South Wales: Cycling Towns in Regional Areas

Transport for NSW have released a series of "Regional Transport Plans" that highlight that: "*Almost 90 percent of people in regional NSW live within easy walking or cycling distance of a local centre, with access to shops, schools, and workplaces ... We will work to ensure that any transport project or land use development includes appropriate provision for walking and cycling from the design stage*". These plans cover the Central Coast, Central West, Hunter, Illawarra, Mid North Coast, Murray-Murrumbidgee, New England North West, Northern Rivers, Southern Regional, Western Regional areas.

The plans outline the following actions.

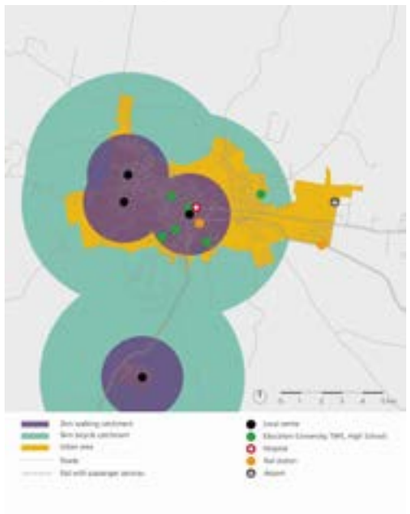
Action: Roll out the Cycling Towns Program

The Cycling Towns Program will focus bicycle infrastructure provision and encouragement in a small number of regional centres with the aim of rapidly increasing rates of cycling in these areas. Two regional centres will be selected for initial investment in the Cycling Towns Program by the NSW Government, to be delivered in partnership with local councils. Candidate towns must demonstrate that a range of destinations are within easy cycling distance from their residential centres. They will require political support, and a commitment to maintain new infrastructure and complementary promotion measures. Cycling Towns Programs may include bicycle network construction and bicycle parking facilities, complemented by local government funded encouragement programs, and support for tourist routes and information for visitors.

Central West region walking and cycling catchments

Source: Central West Regional Transport Plan.

Bathurst walking and cycling catchments



Source: Central West Regional Transport Plan.

Action: Connecting Centres Cycling Program

Transport for NSW will work with councils and other stakeholders to identify bicycle network gaps and pinch points in the five kilometre catchments that surround regional towns. The Connecting Centres Program will help councils to complete local cycle networks to regional centres in partnership with local councils. Transport for NSW will also work with councils and bicycle user groups to get more people riding on this network and provide better information to customers.

Action: Improve information about walking and cycling routes and facilities

Transport for NSW will get people walking and cycling more by promoting the benefits of active transport, improving customer information, and developing guidelines and resources for local government. This will include improved online resources, such as trip planning, as well as other programs to promote walking and cycling for transport. Transport for NSW will also continue to sponsor events and community programs, such as NSW Bike Week, which promote active transport.

Photo courtesy of Queensland's Transport and Main Roads

Key Theme: *Rail Trails and Bicycle Tourism*

The majority of bicycle infrastructure in Australia is built by transport agencies or local councils to cater for local transport and recreational cycling. However, there can be significant returns available to tourism agencies who support the development of regional bicycle facilities such as rail trails. Regional rail trails and other touring routes offer a low cost, low impact way to encourage tourism and to also provide local bicycle connections.

Many Australian states have invested in regional rail trails, with over 1500 kilometres built in Victoria and Western Australia alone. In the past, New South Wales has been restricted by legal issues around the reuse of rail assets. However, in 2014 the New South Wales government removed these barriers. Since then, several feasibility studies have been carried out and a regional tourism fund has been established which is likey to fund rail trails.

New South Wales: Casino to Murwillumbah Rail Trail

In April 2014, the NSW Government released a detailed study focusing on the transport needs of the community along the Casino to Murwillumbah rail line. This study considered the possible uses for the rail line which has been disused since 2004, with one of the possible uses being a conversion to a "rail trail".

Converting the line into a "rail trail" could allow people to walk, ride bicycles and even ride horses along the alignment of the rail line. The corridor would be useful both as a local transport facility and as a tourism route.

Subsequent to the initial transport study, a more detailed study was conducted on the economic feasibility of building the "rail trail". This study estimated the capital cost for the development of the rail trail is $75.5 million and that the project would be financially viable with an expected Net Present Value of $121.8 million and Benefit Cost Ratio of 2.54.

State and Territory Cycling Strategies

The National Cycling Strategy set the goal that all states and territories publish a cycling action plan as part of a holistic commitment to cycling across the country. Key areas to address in these plans include: setting targets for an increase in cycling participation, defining a concrete set of actions to be undertaken to achieve these goals and integration of goals across the state portfolios. This integrated planning should occur, not only across transport agencies, but across other important policy areas such as health, education and land use planning. The table below provides an overview of the state and territory bicycle action plans.

New South Wales

Sydney's Cycling Future

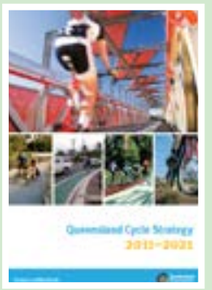
This report was published in December 2013 and builds on the vision set out in the NSW Long Term Transport Master Plan which was released in 2012. It includes the objective of integrating cycling across portfolios to meet NSW 2021 State Plan mode share targets which are consistent with national targets.

Victoria

Victorian Cycling Strategy

The Victorian Cycling Strategy: Cycling into the Future 2013-23 was released in December 2012 and provides a high-level view of how the Government will encourage cycling over the next 10 years. The Victorian Cycling Action Plan 2013 & 14 identifies actions the Victorian Government will take to support the Victorian Cycling Strategy.

Queensland



Queensland Cycle Strategy 2011-21

The Queensland Cycle Strategy was released in 2011. It includes targets consistent with the national strategy, a road map to achieving targets with actions, and a commitment to integrate cycling across portfolios.

South Australia

Safety in Numbers, A Cycling Strategy for South Australia 2006-2010

The South Australian Strategy is currently under review.

Western Australian

Western Australian Bicycle Network Plan 2014-2031

This plan aims to make WA a place where cycling is a safe, connected, convenient and a widely-accepted form of transport. Its principal target is to *double the number of cycling trips within 5 years* which is in line with the National Cycling Strategy.

Tasmania

Tasmanian Walking and Cycling for Active Transport Strategy

The Tasmanian Strategy was released in 2010. It does not include targets consistent with the national strategy. It does include actions and a commitment to integrate cycling across portfolios.

Northern Territory

NT Connected and Safe

The 2012 Connected and Safe summary provides an overview of the Territory's major cycle path networks. It includes a high level commitment to active transport and actions to increase cycling, however it does not include targets consistent with national targets.

Australian Capital Territory

Transport for Canberra 2012 - 2031

The Transport for Canberra 2012 - 2031 plan includes a high level commitment to active transport and increasing cycling but it does not include targets. It does include actions and a commitment to integrate cycling across portfolios.

4 Safety

Photo courtesy of the Northern Territory Department of Transport

Safety is a fundamental element of encouraging cycling participation. When people feel safe to ride, they are far more likely to do so. Similarly, if people do not feel safe to ride, they will find an alternate means of transport even if cycling is the otherwise logical choice.

Key themes identified by the National Cycling Strategy Impementation Report in 2013 are summarised below, while new "Key Themes" for 2014 are covered in more detail in the following pages.

Key Theme: *Increased Separation from Motor Vehicles*

Recent infrastructure expenditure has focussed primarily on building shared-use paths and fully-separated bicycle facilities. This approach recognises that bicycle users (particularly "potential" bicycle users) generally feel safer using infrastructure that is separated from motor vehicles with a physical barrier such as a kerb or tree plantings. Ideally, separate paths are provided for both bicycles and pedestrians, especially in areas with high pedestrian activity. In some cases, shared paths are suitable, however planners need to consider that people walking can be intimidated by bicycle traffic just as people riding bicycles can be intimidated by motor vehicle traffic.

Key Theme: *Street Design and Speed Aligned with Street Purpose*

In 2012, the South Australian Government released the ***Streets for People: Compendium for South Australian Practice***. This guide provided *"strategic policy imperitives for increasing levels of cycling and walking in our community"* and provided a wealth of guidance, case studies and other resources to facilitiate the creation of urban spaces that encourage active travel and liveable communities. One of the issues identified in this report was the vulnerability of pedestrians and bicycle users to injury in the event of a collision with a motor vehicle. Research has shown that the probability of a pedestrian or cyclist being killed in a traffic accident rapidly increases for accidents with vehicles travelling above 30 km/h.[1]

1. J Archer, N Fotheringham, M Symmons, and B Corben. The Impact of Lowered Speed Limits in Urban and Metropolitan Areas. Monash Univerity, Accident Research Centre, Victoria. 2008.

BITRE: Impact of road trauma and measures to improve outcomes

This report, published by the Bureau of Infrastructure, Transport and Regional Economics (BITRE), undertakes to review the full impacts of road trauma, including the benefits and costs of measures to encourage safer drivers, build safer roads, and drive safer cars.

The report highlights the challenges that must be overcome to meet the target of the National Road Safety Strategy 2011–2020 for a 30 per cent reduction in casualties. While the number of vehicle occupant deaths has trended down, there is still a relatively high risk for motorcyclists, pedal cyclists, older drivers and remote communities.

BITRE's analysis has focussed on four priorities identified by road safety experts:

- Raising the safety rating of roads through improved infrastructure or the lowering of speed limits.
- Safer intersections.
- Distraction from mobile phones.
- Autonomous emergency braking.

Key Theme: *Safety of Vulnerable Road Users*

The safety of vulnerable road users has been the subject of numerous inquiries in recent years. NSW held a Staysafe Committee into the safety of motorcycle and bicycle safety in 2010. Queensland held a parliamentary inquiry titled "A new direction for cycling in Queensland" which provided 68 recommendations in 2013. In 2014, the ACT held an inquiry into the safety of vulnerable road users and South Australia held a Citizen's Jury to determine ways for people who are riding bicycles and people who are driving motor vehicles to better share the road.

The reason that these inquiries are being held is because the safety of vulnerable road users has not improved at the same pace as the safety of motor vehicle occupants. While the total number of fatalities that occur on Australian roads across all road user groups is steadily decreasing, the number of bicycle user fatalities has been higher in both 2013 and 2014 than for any year since 2001.

ACT Vulnerable Road User Inquiry

The ACT Standing Committee on Planning, Environment and Territory, and Municipal Services published an Inquiry into Vulnerable Road Users in 2014.

The terms of reference for the inquiry were:

(a) an examination of national and international best practice approaches to protecting and encouraging vulnerable road users, including through regulation, infrastructure, design, education and funding arrangements;

(b) gathering evidence from the community and experts about issues faced by vulnerable road users and potential improvements;

(c) recommending changes to be made in the ACT to better protect and encourage vulnerable road users; and

(d) any other relevant matter.

The report published 28 recommendations from the Committee to the ACT Government which were largely supported in the ACT Government Response.

The recommendations relating to cycling include:

Recommendation 1: Intersections
Conduct a review of road rules at intersections and assess changes that could be made to existing road rules that would mitigate risks to vulnerable road users.

Recommendation 2: Cycling Education
Review the current cycling education programs available in ACT schools and consider providing compulsory cycling training in all ACT primary schools.

Recommendation 4 & 5: Shared Paths
Introduce awareness programs for cyclists and pedestrians using shared paths. Conduct a review and safety audit of shared paths.

Recommendation 7: Pedestrian Crossings
That the requirement for cyclists to dismount at pedestrian crossings be amended to enable cyclists to remain on their bikes, but that they must slow to a walking pace prior to entering and when on the crossing.

Recommendation 11: Code of Conduct
Establish a consultative group to develop a cyclists' code of conduct document based on the principles outlined in the Victorian document *Sharing roads and paths*.

Recommendation 15, 16, 17: Minimum Passing Distance
Consider amending the ACT Road Rules to mandate a minimum overtaking distance of:
- one metre in speed zones 60km/h and below.
- one and a half metres in speed zones above 60km/h.

Develop a comprehensive community awareness and education strategy to inform all road users of the minimum overtaking distance requirements.

Recommendation 18: Driver Licensing
Amend the theoretical component of the drivers licence test to place a greater focus on the examination of the road rules and associated issues as they relate to vulnerable road users.

Review the practical component of the drivers licence test and consider the addition of a competency related to vulnerable road users.

Review the attitudinal components of driver licence testing including current Australian driving tests, scientific literature and international experiences with a view to possible inclusion into ACT driving tests if appropriate.

Recommendation 21, 22: Strict Liability

Examine the introduction of a strict liability scheme in the ACT and present the outcomes to the Legislative Assembly by March 2015. The examination should assess the impact of the scheme and include an analysis of alternative approaches, such as cascading rebuttable presumption.

Recommendation 23, 24: Speed Limits

Consider implementing a trial of lower speed limits in school zones and, residential areas with high level of pedestrian and cycling activity in close proximity to shared paths. Conduct a review of the speed limit hierarchy across all roads in the ACT.

Recommendation 25: Separation

Conduct an evaluation of the trial announced in April 2014 to provide defined separation between cyclists and other traffic.

National Road Safety Action Plan 2015-2017

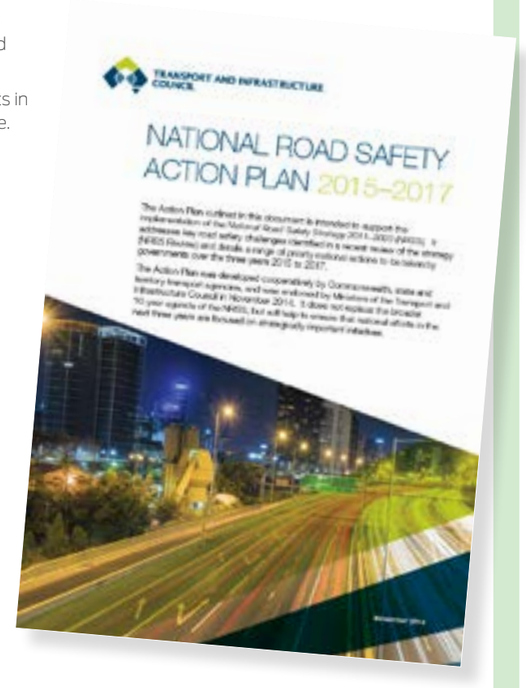
The *National Road Safety Action Plan 2015-2017* supports the implementation of the *National Road Safety Strategy 2011-2020*. The action plan includes 19 individual actions across four themes.

The actions that have a direct impact on cycling include:

Action 1	Prioritise and treat high-risk rural and urban roads, focusing on the main crash types and vulnerable road users.
Action 12	Expand the application of lower speed limits in areas with high pedestrian and cyclist usage.
Action 17	Implement and promote a range of Safe System demonstration projects in urban settings, with a focus on the safety of vulnerable road users.

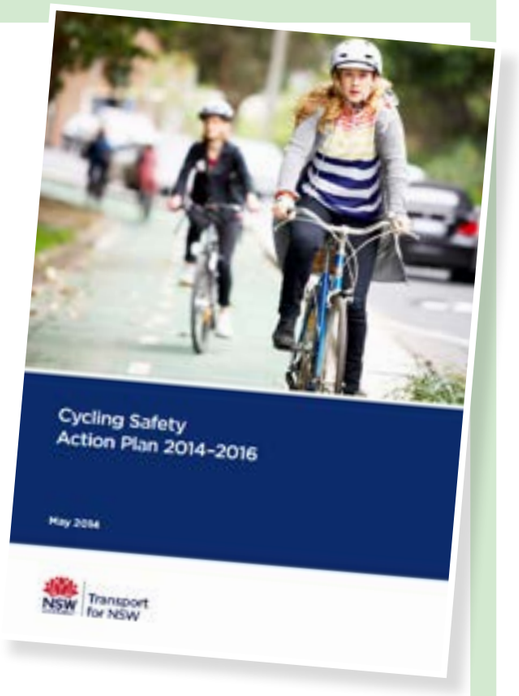
The actions that have some impact on cycling include:

Action 3	Review road infrastructure safety programmes to establish best practice processes for identifying, prioritising and developing projects based on fatal and serious casualty reduction criteria.
Action 13	Implement programmes to build community understanding and support for effective speed management measures.
Action 15	Strengthen national police enforcement operations to improve road safety compliance.
Action 19	Examine and progress options to improve measurement and reporting of non-fatal and disabling injury crashes, particularly through the development of matched crash and hospital database systems.



NSW Cycling Safety Action Plan 2014-2016

The NSW Government is focussing efforts to increase cycling rates as a mode of transport under the direction of *NSW 2021*, the 10 year strategic plan for NSW. Research in NSW has identified that safety is a major barrier to people cycling in NSW. The *Cycling Safety Action Plan 2014-2016* aims to improve the safety of cycling in NSW through a set of 37 action points.



Actions 1-5: Riding Safely
Work with bicycle user organisations to help bicycle users to increase their safety on the road through information, training and membership materials. Provide information through a dedicated website. Develop safe cycling resources for the corporate sector.

Actions 6-9: Sharing the Roads
Develop and deliver NSW Safe Communities campaigns in conjunction with the Amy Gillett Foundation. Implement a "share the road" campaign. Undertake attitudinal research with drivers and bicycle riders.

Actions 10-14: Understanding Road Rules and Compliance
Improve understanding and awareness of the Road Rules through stakeholders and driver knowledge testing. Use enforcement to target high risk behaviours. Investigate improved deterrence mechanisms. Continue the NSW school education program addressing bicycle safety in school students.

Action 15: Review Road Rules Applicable to Bicycle Riders

Actions 16-20: Increase the visibility of bicycle riders on the road network at mid-block and intersection locations
Investigate the placement of bicycle logos on streets and the implementation of bicycle boxes on bicycle streets. Create cycling-friendly neighbourhoods with lower speed limits and low cost traffic-calming measures. Analyse data to identify crash clusters and apply a safe systems approach to reduce risks to bicycle riders.

Actions 21-24: Shared Path Design
Research shared paths and review policy. Investigate improved treatments for transition from shared paths to cycleways. Improve bicycle rider awareness of the need to slow down and give way to pedestrians on shared paths.

Actions 25-30: Increase safety for bicycle riders on high speed roads
Improve signage to alert drivers to the presence of bicycle riders. Investigate treatments at high risk locations. Promote the use of off-road facilities. Review maintenance programs. Explore and implement emerging safety technologies.

Actions 31-33: Increase the uptake of bicycle safety features
Promote the sale and use of safety equipment. Undertake research to determine safer lighting options.

Actions 34-37: Stakeholder Engagement
Hold regional cycling forums. Work with local government to deliver bicycle safety projects. Collaborate to analyse bicycle accident data. Establish a working group to oversee the implementation of the cycling safety action plan.

Queensland: Parliamentary inquiry into cycling issues

On 7 June 2013, the Legislative Assembly requested that the Transport, Housing and Local Government Committee inquire and report on issues to improve the interaction of cyclists with other road users. The terms of reference covered the following issues:

- short and long-term trends in bicycle injuries and fatalities involving motor vehicles
- evaluation, considering factors such as effectiveness, enforceability and impacts on other road users, of existing and any other alternative road rules, such as the 1m rule, which governs interaction between cyclists and other road users
- current penalties and sanctions, including where there are differential fine rates for cyclists compared to other road users
- the potential benefits and impacts of bicycle registration.

The inquiry received 106 submissions from a wide range of stakeholders. On 29 November 2013 the Committee tabled its report which made 68 recommendations aimed at improving cycling safety that broadly fit within the following categories:

- cycling statistics
- Queensland road rules review
- penalties and sanctions
- registration
- infrastructure improvements
- education and awareness.

The Queensland Government's response

On 7 April 2014 an initial package of supported recommendations was implemented across Queensland. The package included a 2 year trial of a minimum passing distance for cyclists as well as other road rule changes associated with this rule such as enabling vehicles to cross centre lines when safe.

On 28 May 2014 the Queensland Government tabled its response to the Committee's report. The government supported 50 recommendations, either in principle, in part or in full.

Transport and Main Roads has developed an implementation plan to be prioritised for delivery under a revised Queensland Cycle Strategy 2011-2021, noting the Committee's view that the strategy is a relevant and comprehensive vehicle for delivering Queensland's cycling vision.

The Implementation Plan will be delivered under six themes:

1. **Immediate implementation** captures the recommendations initially supported by the government in November 2013, including the introduction of minimum passing distances.

2. **Education and awareness** encompasses communication, awareness and education deliverables, including share the road messages and wider social change.

3. **Enforcement, legislation and regulation** encompasses changes to road rules and the delivery of a substantial inter-agency legislative review aimed at improving interactions between cyclists and other road users.

4. **Infrastructure, facilities and technical standards** encompasses the provision of best-practice technical standards and guidelines to support better cycling infrastructure and facilities.

5. **Partnerships and supporting a safe and connected network** will leverage existing projects and funding avenues to achieve outcomes and encourage greater investment by local government by promoting Queensland Government funding partnerships.

6. **Research and analysis** includes continued research of opportunities to improve the interaction between cyclists and other road users through an engineering, enforcement and education approach and safe system approach.

Key Theme: *Sharing the Road*

The behaviour of people driving motor vehicles has a significant effect on the safety of people walking and cycling. Drivers who pay too little attention to the driving task or exhibit aggressive or intimidating behaviour towards other road users create an unsafe environment for all road users, particularly those who choose to walk or cycle. Aggressive driver behaviour can also have an effect on cycling participation, with some riders (particularly new riders) giving up after a negative experience with another road user.

Rider behaviour can also have an important effect on bicycle safety. Not only is it important for bicycle riders to obey the rules of the road, it is also important for riders to develop good "road craft", which refers to the skills that experienced riders develop to keep themselves safe. These skills include making eye contact with drivers turning in front of the rider and using good road positioning to ensure that they are highly-visible.

Cycle Safe Communities

The Amy Gillett Foundation has developed a series of resources that can be used by organisations that wish to support Cycle Safe Communities. These online resources provide evidence-based awareness, educational and behaviour-change campaign materials for organisations and community groups to utilise in their local region as a Cycle Safe Communities partner.

The Amy Gillett Foundation was honoured to receive Australasia's premier road safety prize, the prestigious 3M-ACRS Diamond Road Safety Award in November 2014 for its Cycle Safe Communities program.

The theme for the 2014 ACRS Awards was "Keeping People Safer through Innovative Best Practice" and Cycle Safe Communities was judged the best overall project/program with a focus on innovation, collaboration, community engagement and road safety outcomes. The Governor-General of Australia, His Excellency Sir Peter Cosgrove, presented the award to Amy Gillett Foundation CEO Tracey Gaudry.

Courtesy of the Amy Gillett Foundation

Western Australia: Share Our Roads

With more than 400,000 Western Australians riding their bicycles each week, it is recognised by the government that the bicycle is an important part of the transport landscape.

In 2014, the Government of Western Australia launched a $300,000 campaign to promote, educate and inform the community about motorist and cyclist road safety in Western Australia. The campaign highlights the human face of bicycle users and seeks to encourage sharing of the roads.

Courtesy of the Western Australian Department of Transport

New South Wales: It's a Two-Way Street

The Amy Gillett Foundation, in conjunction with the NSW Government, launched the road safety awareness campaign *It's a two-way street* in February 2014.

The campaign features 16 Drive and Ride Rules designed to educate motorists and bike riders on how to share the road safely and show mutual respect.

The road safety initiative has been delivered across New South Wales via radio advertising, pocket guides, social media and lightbox advertising in prominent Sydney CBD locations and billboards in highly populated regional areas.

In an extension of the campaign, the Foundation and the NSW Government will unveil a series of the *It's a two-way street* animations in 2015, bringing to life the 16 rules.

The Tasmanian Government also put bike rider safety firmly on the agenda when it launched the *It's a two-way street* campaign across the state in October 2014 via radio ads, social media and a pocket guide.

The *It's a two-way street* pocket guide is set to reach hundreds of thousands more Australians through a local council campaign being jointly rolled out by the Amy Gillett Foundation and Z-Card, where councils can produce the pocket guide featuring their own branding in a cost-effective manner.

Courtesy of the Amy Gillett Foundation

Photo courtesy of Amy Gillett Foundation

Key Theme: *Minimum Passing Distance*

A common type of crash that results in the fatality of a bicycle rider is when a motor vehicle hits a rider from behind while travelling in the same direction. The Amy Gillett Foundation has identified that many of these tragedies could be avoided through the introduction of a "minimum passing distance" rule into the Australian Road Rules. This rule would require that the driver of a motor vehicle leave a minimum distance between their vehicle and a bicycle rider when passing.

The Amy Gillett Foundation has spearheaded a national campaign called "a metre matters" which calls for state and territory governments to introduce minimum passing distance legislation. This campaign has achieved excellent progress in 2014.

In January, leading Australian cyclist Richie Porte launched the national "a metre matters" petition at the 2014 National Road Championships, co-signed by 2011 Tour de France winner Cadel Evans and ten-time World Champion Anna Meares.

The petition called upon the Australian Government to implement changes to the Australian Road Rules, mandating a minimum overtaking distance of one metre when drivers overtake bike riders on the road. The petition gathered nearly 30,000 signatures and was presented to the House of Representatives by Andrew Nikolic on the 29th of May 2014.

In April, the Queensland Government became the first jurisdiction to introduce a two-year trial of minimum overtaking distance legislation.

The Foundation commissioned independent market research at the six-month mark of the trial and the results highlighted the positive impact the legislation is having; over 60% of bike riders are experiencing greater distance from passing motorists, three-quarters of drivers are aware of the legislation and two-thirds of all road users support the new rules.

The ACT Government has announced it would introduce a trial of minimum overtaking distance legislation in 2015. The commitment was made in response to recommendations handed down by the Vulnerable Road User Inquiry described earlier in this report.

In November, the Amy Gillett Foundation appeared as an expert witness at the South Australian Citizens' Jury into the topic - *Motorists and Cyclists will always be using our roads – What things could we trial to ensure they share the roads safely?*

The Jury handed down an extensive set of recommendations to the South Australian Government, including the implementation of minimum overtaking distance legislation. Premier Jay Weatherill responded to the recommendations, confirming that the South Australian Government will become the third jurisdiction to introduce safe passing laws.

The extent of progress on the push for a national minimum passing distance law was confirmed in December 2014 by Assistant Minister for Infrastructure and Regional Development, the Hon Jamie Briggs, MP. Mr Briggs announced that Transport Ministers in all states and territories have agreed to consider implementing a minimum one metre overtaking distance for cars passing bicycle riders, informed by the outcomes of Queensland's current trial.

Queensland: Stay Wider of the Rider

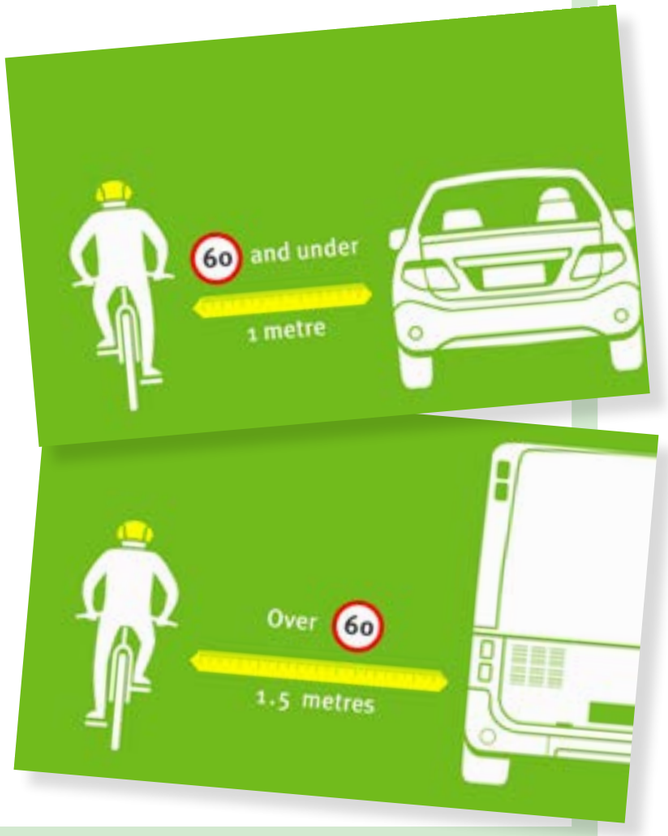
In response to a recommendation in the Queensland parliamentary inquiry titled "A new direction for cycling in Queensland", the Queensland government has introduced a two-year trial of minimum passing distance laws.

The trial law states that a motorist must allow the following clearance between their motor vehicle and a bicycle rider as they pass:

- a lateral distance of not less than 1 metre if the applicable speed limit does not exceed 60 km/h and
- a lateral distance of not less than 1.5 metres if the applicable speed limit exceeds 60 km/h.

Following the introduction of the minimum passing distance legislation in Queensland, the Queensland Government has created a "Stay Wider of the Rider" campaign to communicate the rule change.

Queensland is planning for additional rule changes to be implemented in 2015 with a focus on making riding safer and easier.



Courtesy of the Queenland TMR

Tasmainia: Metre Matters

In Tasmania, changes to the Road Rules have been introduced to allow motor vehicles to overtake on a solid centre line (where safe) so as to enable cars to pass cyclists at the recommended distance of 1 metre in speed zones of 60 km/h or less, and 1.5 metres in speed zones greater than 60 km/h. This change has been supported by a substantial education campaign and the implementation of advisory signage on high-use cycling routes.

A complimentary marketing campaign has been launched based on the 'Sharing the Road' principles, promoting stronger respect and care between all road users, including cyclists, motorcyclists, pedestrians and motorists.

Cycling Fatalities 2014

While the number of total fatalities on our roads has been steadily decreasing for the past several decades, the number of bicycle fatalities has fluctuated from year to year rather than decreasing.

In 2014, bicycle fatalities were heavily skewed towards older riders, with 20 of the 45 fatalities occurring in those aged over 60. Only one of the 20 riders killed over 60 years of age was female.

In general, bicycle fatalities in 2014 were 3.5 times more likely to have been caused by an incident involving a second vehicle (35 fatalities) than to have occurred in a single vehicle incident (10 fatalities). All female fatalities (7 fatalities) involved a second vehicle. Of the 20 riders aged 50 and under who were killed in 2014, 95% (19 fatalities) involved a second vehicle.

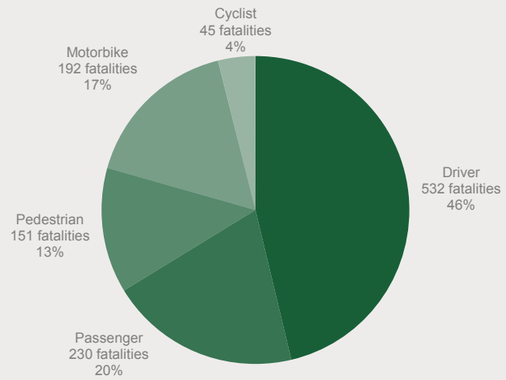
The high likelihood of a second vehicle being involved in bicycle fatalities indicates that the safety of bicycle riders is heavily dependent on the vehicles around them. Measures that separate bicycles from motor vehicles or improve the ability for drivers and riders to share the road safely are paramount in reducing bicycle fatalities in future years.

The vast majority of single-vehicle fatalities (9 fatalities of 10) involved male riders over 50 years of age.

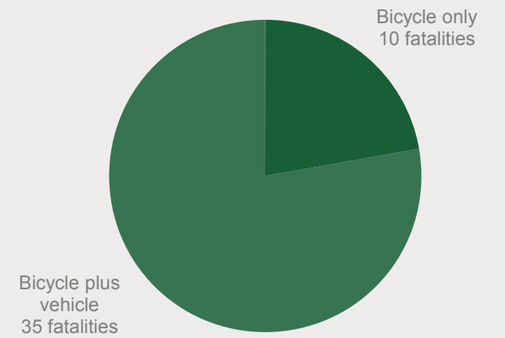
Bicycle fatalities in 2014 predominantly occurred on roads with higher speed limits, with only eight of the 45 fatalities occurring on roads of 50 km/h or under.

Weekend bicycle fatalities in 2014 were skewed towards the morning, with 12 of 15 fatalities occurring before 11am. Weekday fatalities were fairly evenly distributed throughout the day but with only 2 fatalities occuring after 7 pm.

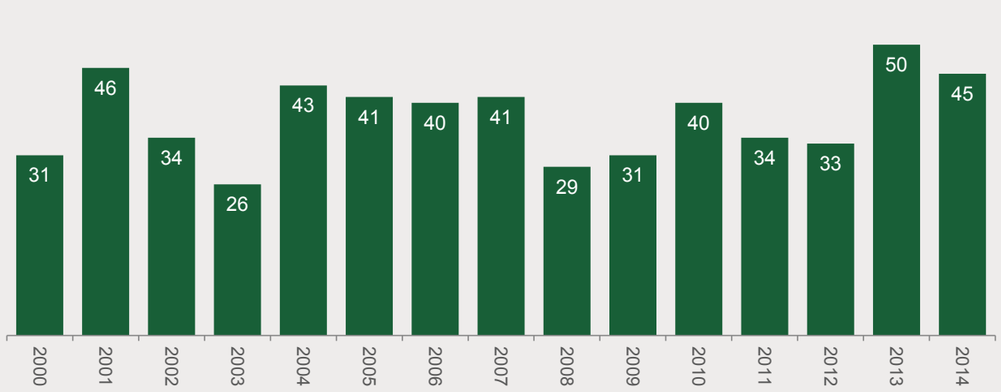
Australian road fatalities 2014



Australian cycling fatalities 2014

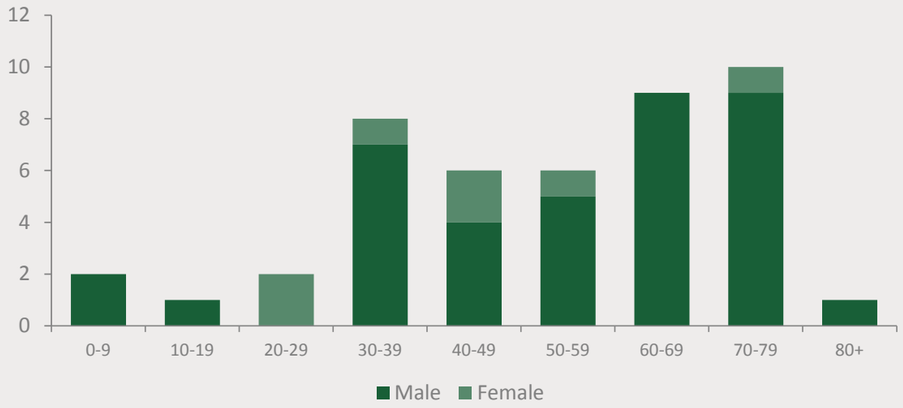


Australian cycling fatalities 2000-2014

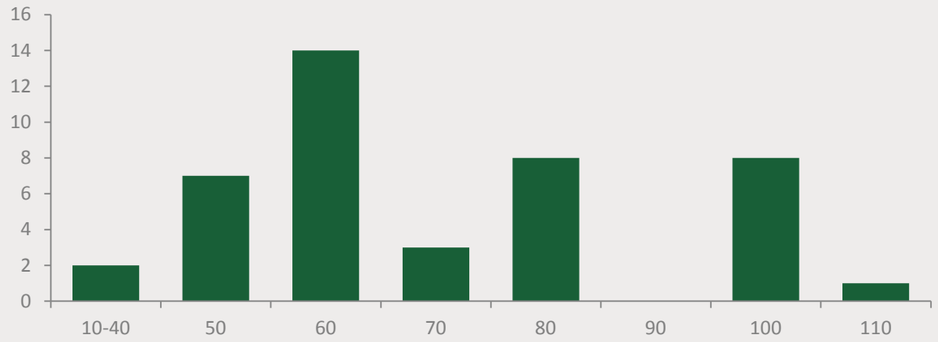


Source: Australian Road Deaths Database, www.bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx (accessed 21 January 2015).

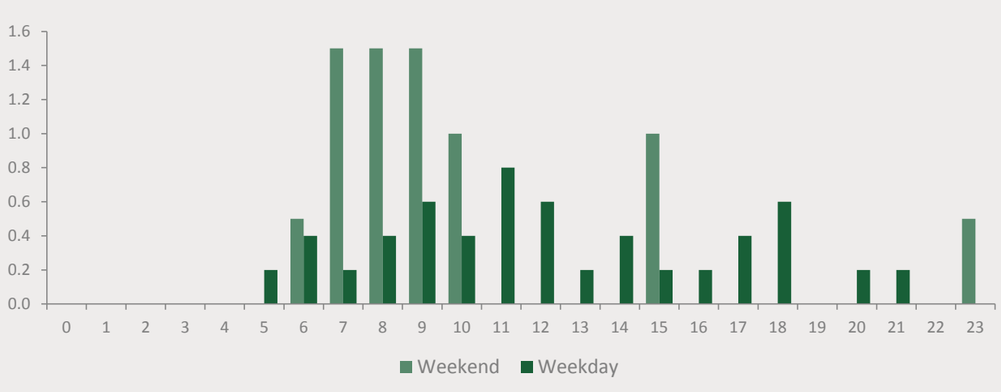
Australian cycling fatalities against age 2014



Australian cycling fatalities against speed limit 2014



Australian cycling fatalities hourly distribution 2014



Source: Australian Road Deaths Database, www.bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx (accessed 21 January 2015).

5 Monitoring & Evaluation

In delivery of the National Cycling Strategy, the Australian Bicycle Council works with various agencies to develop data sets and investment appraisal tools to enable planners to make good decisions regarding investment in bicycle projects.

The Australian Bicycle Council conducted the National Cycling Participation Survey in 2011 and 2013, with the next survey due to be conducted in 2015. This survey forms the primary tool to measure the results that have been achieved by the National Cycling Strategy against the target of doubling cycling participation.

In addition to the collection of data, the National Cycling Strategy calls for "the development of agreed decision-making process, including a robust basis for assessing the costs and benefits of investment in cycling". A number of projects have been progressed or published in 2014 that build a framework for these assessments. These projects indicate that a theme of ***integrating cycling into planning metrics*** has been present in 2014.

Australian Infrastructure Statistics - Yearbook 2014

This report was delivered by the Bureau of Infrastructure, Transport and Regional Economics in 2014. The report aims to provide *"a single, comprehensive annual source of infrastructure statistics for use by policymakers, industry leaders, transport analysts and the wider Australian community."*

The report provides transport information such as transport infrastructure investment, road investment, vehicle kilometres travelled (VKT), vehicle ownership, and vehicle sales. Road investment is broken down into federal, state and local government expenditure which provides a useful benchmark with which to compare spending on bicycle-related projects.

The latest annual total for road-related expenditure by all public and private sector sources was almost $25 billion in 2012-13. With a total of 16.4 million license-holders in Australia, road expenditure is approximately $1500 per license holder.

Photo courtesy of State Growth Tasmania

Key Theme: *Integrating Cycling into Planning Metrics*

Michael Bloomberg, during his time as New York Mayor, was credited with saying:

> *"In God we trust. Everyone else should bring data".*

With so many worthy infrastructure projects competing for limited available funds, the planning process must utilise tools that analyse objective evidence to determine the merit of one project over another. These tools often look at economic returns on investment (cost-benefit analysis), demand modelling (projections of likely usage) and traffic modelling (detailed modelling of traffic flows under a particular set of conditions).

In 2014, a number of projects have been progressed that , for the first time, integrate bicycle and pedestrian planning metrics into the basic toolsets used to assess projects.

A research report on Accessibility-based Network Operation Planning has incorporated cycling and walking as fundamental components of a full journey from source to destination.

A research report on Level of Service Metrics has expanded the scope considered by Level of Service (LOS) analysis. Traditionally, this analysis only considered motor vehicle LOS, however this project has expanded the scope to consider the LOS experienced by various road users including pedestrians and bicycle users. It is now possible to quantify the impact of changes to the road environment on different road user groups, thereby allowing traffic engineers to consider how each mode is prioritised on each street.

The latest revision of the National Guidelines for Transport System Management will provide an improved set of tools to perform cost-benefit analysis across all modes.

Accessibility-Based Network Operation Planning

In 2014, work progressed on the development of an accessibility-based network operation planning framework which aims to combine principles of a standard Network Operation Planning (NOP) with principles that consider the accessibility of the network to origins and destinations.

A standard NOP aims to guide the operation and development of road/transport networks, corridors, individual roads and links. A NOP contains the short-term initiatives and the day-to-day management and operation of the road/transport network.

Accessibility is broadly defined as the variety of opportunities provided to people through efficient arrangement of land use and the provision of transportation. In an accessibility-based NOP framework, accessibility is the overarching objective of network operation planning. Accessibility-based NOP is an extension of the network operation planning process with the incorporation of social dimensions that have not been explicitly considered in the traditional NOP framework.

For NOP to enhance the accessibility of households to specific road users, the development of the NOP needs to be aligned and harmonised to connect road users from journey origins to valuable destinations.

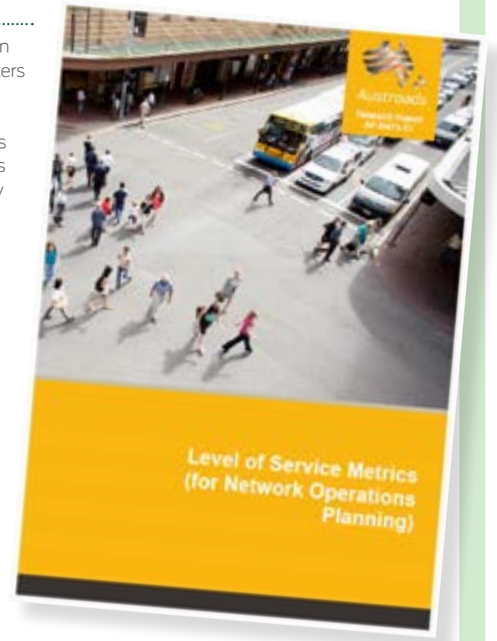
Level of Service Metrics

The level of congestion experienced on a traffic network is often used to assess the effectiveness of that network, with parameters such as time delay, saturation or environmental costs being used as a proxy for congestion. In 2014, Austroads reviewed congestion management processes through a project that uses a Level of Service (LOS) approach that applies to all road users including bicycle users. The LOS metrics include a wide variety of measures such as road safety, amenity, and accessibility.

It is intended that this approach will enable a better understanding of what the community considers to be an appropriate level of customer service in managing the road network. In understanding this, road authorities will be better informed to implement improvements to the management and operation of road networks that better-balance the competing demands for road space.

Key considerations for this project are as follows:

- comparability of the LOS metric across transport modes.
- sensitivity of the LOS metric to changes in network operation schemes.
- useability of the LOS metric for guiding the network operation planning process, including target-setting.

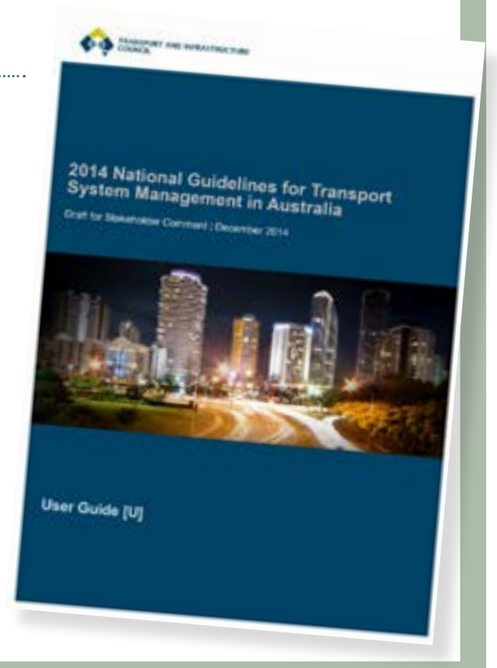


National Guidelines for Transport Systems Management (NGTSM)

The NGTSM outline best practice for transport planning and assessment in Australia. The Guidelines, last published in 2006, are being revised in a two-stage process. In late 2014 the first stage of content was released for public comment. In 2015, the second stage will be released for comment including comprehensive guidelines and parameter values for the appraisal of active travel projects.

It is expected that the guidelines will provide advice regarding:

- an overview of the characteristics of active travel.
- options identification.
- modelling and forecasting.
- estimations of benefits.
- benefit parameter values including health, congestion reduction, crash benefits, vehicle operating cost savings, savings in parking costs, savings in public transport operating costs, savings in road infrastructure costs, environmental benefits and travel time benefits.
- performance monitoring.



Is Sport Enough: Active Healthy Kids Australia

The Physical Activity Report Card initiative was first developed by Active Healthy Kids Canada in 2005, with an updated Report Card released annually for the past decade. The Physical Activity Report Card provides a synthesis of available evidence regarding the physical activity and sedentary behaviours of children and young people, and the settings/influences and strategies/ investments which have a potential impact on these behaviours. .

"Is Sport Enough" is Australia's first Physical Activity Report Card and has been modeled on the Canadian Report Card. The Australian Research Working Group (RWG) hopes to, like the Canadian initiative, release a Report Card annually so that Australia is informed and updated on the physical activity and sedentary behaviours of its children and young people.

The report notes that while it is encouraging that a large number of children are obtaining some of their weekly physical activity from organised sport, it asks 'Is sport enough?'. The report concludes that overall physical activity levels as well as physical fitness and obesity levels indicate that the answer is clearly "no".

The report also notes that it is imperative that we encourage, support and facilitate the incorporation of more physical activity throughout the everyday activities of children such as by using active transport to and from school.

The report card rated overall physical activity levels at D- and also rated active transportation levels at D.

The key findings for Active Transportation were:

- 20% of secondary school students (aged 12-17 years) travel to and/or from school using active transport at least once per week.
- According to parents, 35% and 39% of primary school students, aged 6-7 and 11-12 years respectively, travel to and/or from school using active transport at least once per week.
- Australians aged 5-17 years, on average, spend 18 minutes per day using active transport.

The suggestions on how to improve the Active Transportation grade were to address the following:

- Parental concerns about traffic and personal safety are important barriers to active transport. A range of strategies are needed to overcome these concerns and to increase children's competence to use active transport. These strategies may include changes to the physical environment that make it safer and easier for children to negotiate traffic and strategies to improve child and parental perceptions of child competence to walk or cycle to/from school.

- A combined effort is required from parents, schools and local government to increase the proportion of Australian children and young people using active transport to travel to and from school. All schools should have active transport policies to promote and encourage the use of active travel to/from school, which are established as a result of input from all key stakeholders. School site decisions should take into consideration the surrounding environment to ensure that features which support active transport to school, such as low traffic exposure and connected streets are prioritised.
- Additional strategies are required to improve active transport to school among those that live outside of a walkable or cyclable distance to school. Park and ride/walk strategies or strategies that encourage active transport for at least part of the school journey may be required.

Additional recommendations

- Both children and parents should incorporate active transport into their everyday routines.
- National surveys should contain measures of active transport that include destinations other than the school.
- Research examining the use of public transport is needed as people tend to use active transport (walk/cycle) at each end of a trip.

Information has been provided from The 2014 Active Healthy Kids Australia Report Card on Physical Activity for Children and Young People with permission from the lead investigators of the project

South Australia: Citizen's Jury

A Citizen's Jury was established in South Australia to answer the question, "*Motorists and Cyclists will always be using our roads. What things could we trial to ensure they share the roads safely"?*

The Citizen's Jury released a report in November 2014 outlining a set of recommendations as follows.

Library of Ideas - The Jury's ideas should be made available to anybody interested in exploring safer sharing of roads.

One metre does matter! - Legislation should be changed to define the overtaking space between a vehicle and a cyclist as a minimum of one (1) metre.

Formal cycling education in schools - An integrated safe cycling and road rule education program should be taught in primary school and high school.

Knowing and understanding the road rules - The drivers' licence permit process should:

- Combine the two handbooks (The Drivers Handbook and Cycling and the Law) into one publication.
- Ask a minimum of two questions on cycling in the learners test (one each in part A & B)

The Jury also recommended two trials be developed:

- A trial focussed on informing
- A trial focussed on assessment.

Cycling on footpaths - Cycling should be allowed on footpaths when there is no safer alternative.

Improve cycling infrastructure - Improvements to infrastructure should be undertaken, including:

a) Cycle lanes - The Jury recommended that cycle lanes are interconnected and continuous. This was a priority for the Jury. The Jury recommended that maintenance of cycle routes/lanes is undertaken regularly to ensure a safe riding environment (fixing of potholes, removal of debris). The Jury recommended that a realistic minimum cycle lane width be established based on Australian standard. The Jury recommended that future roads in South Australia should be planned to include adequate interconnected cycle paths and lanes.

b) Greenways - The Jury recommended that existing greenways and bike tracks are connected and extended throughout Adelaide metropolitan areas and rural/ Adelaide hills centres. The Jury also recommended the establishment of new greenways and bike tracks in areas which are lacking a safe existing alternative.

c) Bike storage - The Jury recommended that secure bike cages be constructed at all major train stations and bus terminals to encourage more cycling and the use of public transport. The Jury also recommended trialling the installation of bike racks on the front of buses.

Safer intersections - 'Green boxes' should be installed at all major intersections across the width of the carriageway.

New and improved cycle lane markings - A field trial that tests a number of options for improving cycle lane markings should be conducted.

Speed and Traffic Flow - Reduce speed and alter traffic flows in residential and denser areas in the Adelaide CBD, metropolitan hubs and regional town centres. These trials should be conducted for a defined trial period.

Collaborative Media and Messaging - A creative "safe roads" campaign should be run that is supported by stakeholders such as DPTI, RAA, Motor Accident Commission, SARTA, Bike SA, Local and State Government.

Annual 'safe cycling environment' award - Two State Government awards should be given annually to one urban and one regional council that successfully implements new cycling and road-sharing initiatives that promote best practice.

High Visibility Initiatives - Laws related to visibility should continue and, where appropriate, be enhanced.

On 22 January, the South Australian Premier presented Government's response to the Jury's report. Most of the Jury's recommendations will be implemented immediately and some recommendations will be investigated or trialed.

6 Guidance & Best Practice

The Australian Bicycle Council supports the development of nationally-consistent guidance that enables stakeholders to use and share best practice across jurisdictions. The focus is on providing consistency where standardisation is beneficial or where economies of scale can be achieved without impacting on the flexibility of states, territories and local councils.

Austroads published a number of reports in 2014 that contributed to the knowledgebase available to practitioners. A revision of the Cycling Aspects of Austroads Guides document was published in 2014. Research was published on bicycle safety at roundabouts which focussed on examining the suitability of bicycle lanes within the roundabout circulatory. Two research reports were published that provided a range of case studies for interventions that encourage cycling. One of the reports focussed on infrastructure, while the other focussed on low-cost interventions, including soft interventions such as behaviour change programs.

Blueprint for an active Australia

In 2014, the National Heart Foundation of Australia published the second edition of the Blueprint for an active Australia, outlining the case for change towards a more physically active Australia. The evidence and interventions presented in the first edition have been expanded and updated. The second edition features new action areas, reflecting a growing evidence base that reinforces the need for urgent, coordinated and concerted action.

Each of the featured action areas has been developed by leading academics, who have applied contemporary evidence and their specialist knowledge and expertise. While each of the action areas targets a different area of research expertise, Blueprint for an active Australia has been informed by a shared commitment to increasing Australia's investment in preventative health, including physical activity, and to the delivery of this investment in a manner that benefits all Australians.

The action areas are: built environments, workplaces, health care, active travel, prolonged sitting, sport/recreation, disadvantaged populations, Aboriginal/Torres Strait Islander peoples, children/adolescents, older people, financial measures, mass-media, research/evaluation.

Cycling Aspects of Austroads Guides

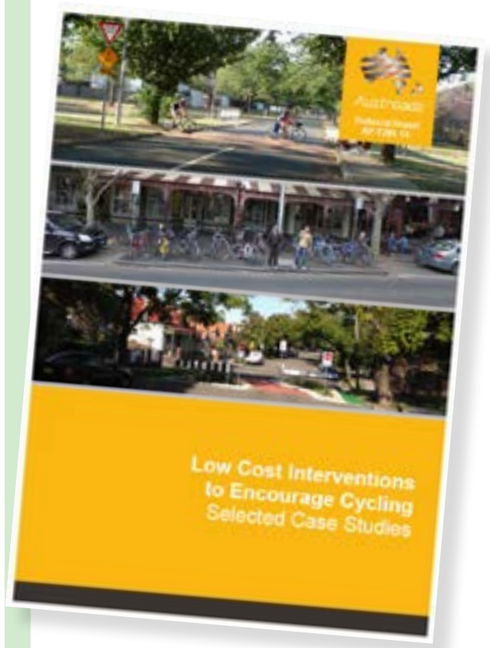
In 2014, Austroads published the second edition of Cycling Aspects of Austroads Guides. This guide contains information that relates to the planning, design and traffic management of cycling facilities and is sourced from Austroads Guides, primarily the Guide to Road Design, the Guide to Traffic Management and the Guide to Road Safety.

It is intended as a guide for engineers, planners and designers involved in the planning, design, construction and management of cycling facilities. Throughout the document, practitioners are referred to relevant Austroads Guides for additional information.

Cycling Aspects of Austroads Guides provides information about:

- planning and traffic management considerations.
- design guidance relating to on-road and off-road bicycle facilities.
- construction and maintenance considerations.
- provision for cyclists at structures, traffic control devices and end of trip facilities.

Low Cost Interventions to Encourage Cycling: Selected Case Studies



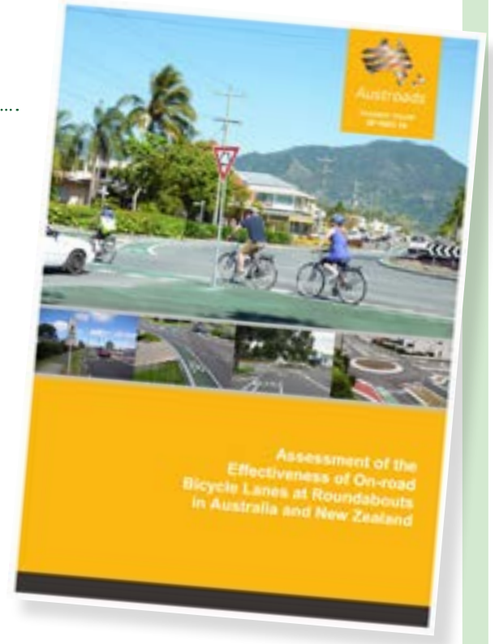
In 2014, Austroads published this report, containing 15 case studies showcasing low cost interventions that have successfully encouraged cycling in Australia and New Zealand.

The National Cycling Strategy aims to double the number of Australians who ride a bicycle. Engineers and behaviour change specialists are implementing a range of innovative low-cost infrastructure treatments and encouragement strategies which aim to encourage more people to use active transport modes.

The case studies were compiled with the intention of forming part of a new case studies section of the Australian Bicycle Council website.

The case studies project directly relates to priority six (guidance and best practice) of the National Cycling Strategy 2011-16. The report aims to illustrate what is possible and to provide inspiration to planners and practitioners.

Assessment of the Effectiveness of On-road Bicycle Lanes at Roundabouts in Australia and NZ



In 2014, Austroads published this report examining the suitability of bicycle lanes at roundabouts. An extensive literature review was conducted which revealed strong evidence that bicycle lanes on the approach and within roundabouts are associated with negative safety outcomes.

A key conclusion from the research is that new or modified roundabouts should either encourage equitable speeds, or provide for cyclists so that they don't have to enter the circulating carriageway.

Strong evidence was found that lane markings that encourage cyclists to "claim the lane" (for example sharrows) can be effective and are recommended where speeds are equitable. Cycle lanes on the approach should terminate some distance behind the holding line where speeds are low.

Where equitable speeds are achieved, approach lanes should not exceed 3.0 m in width so that drivers do not attempt to enter the roundabout alongside cyclists. Where equitable speeds are unachievable, consideration should be given to physical separation on the approach and departure.

Cycling Infrastructure: Selected Case Studies

In 2014, Austroads published this report, containing 29 case studies showcasing innovative Australian and New Zealand urban and regional bicycle infrastructure.

The design of the built environment to support active transport is an emerging discipline. Urban planners, designers as well as traffic and transport engineers are implementing a range of innovative infrastructure treatments with the aim of encouraging more people to use active transport modes. In the absence of local precedents, many treatments adapt designs from overseas examples and trial new intersection, signage and pavement surface treatments in addition to experimenting with shared environments.

'Non-standard' Infrastructure treatments were sought which were not detailed in the Austroads Guides. The case studies were compiled with the intention of forming part of a set of design resources on the Australian Bicycle Council website.

The case studies project directly relates to priority six (guidance and best practice) of the National Cycling Strategy 2011-16. The case studies illustrate what is possible in terms of bicycle infrastructure and provide inspiration to planners and practitioners.

Photo courtesy of Adelaide City Council

Key Theme: *Building Practitioner Communities*

For many years, the Australian bicycle planning practitioner community has been building expertise in best-practice planning for bicycles through a number of conferences, seminars and working groups. In contrast to many bicycle conferences which focus on the retail bicycle market, these conferences focus on building skills within the planning, health, tourism and other related areas with a view to encouraging bicycle use.

In 2014, Australia played host to the world's largest international bicycle planning conference, Velo-City Global. A range of other practitioner conferences were also held, including a number of Bike Futures conferences.

In 2015, Queensland will host the Asia-Pacific Cycle Congress, bringing together bicycle planning practitioners from across Australia and the rest of the Asia-Pacific region.

Velo-City Global Adelaide

The Velo-city Global (VCG) Cycling Conference is a product of the European Cyclists Federation (ECF) and is the world's premier international planning cycling conference. In 2014, Adelaide was the first city from the southern hemisphere to host the VCG conference.

The Adelaide City Council and the South Australian State Government Department of Transport Planning and Infrastructure jointly organised the event. The conference was held at the Adelaide Convention Centre and the Adelaide Town Hall from Tuesday 27 – Friday 30 May 2014. A total of 570 delegates from 34 countries attended VCG Adelaide 2014 with around 40% of delegates attracted from overseas.

The conference included leading speakers in the field of cycling planning, placemaking, urban design and cycling for transportation. In order to engage a variety of people, a range of different methods were used to deliver conference sessions ranging from traditional methods such as key note addresses and concurrent sessions to more innovative methods such as "learnshops" and "petcha kutcha workshops".

In addition to the conference program itself, a number of site tours and master classes took delegates across greater Adelaide. A forum was provided for Mayors and Deputy Mayors, while the following two related symposiums were also held:

- Cities for Cyclists hosted by the Adelaide City Council
- Scientists for Cyclists hosted by the University of SA.

The inaugural Velo-fringe community cycling festival was held alongside VCG Adelaide from 16 – 31 May 2014 to engage the broader community in cycling and the conference more broadly. A total of 34 events were part of Velo-fringe.

VELO-CITY GLOBAL 2014 CELEBRATION OF CYCLING ADELAIDE, MAY 27 - 30

Bike Futures

In 2014, Bike Futures professional development conferences were run by Bicycle Network in New South Wales, Victoria, Western Australia, Tasmania and the Northern Territory.

The conferences provided an opportunity for over 350 delegates to network and receive the latest practical bicycle planning knowledge. Amongst the topics covered were the health benefits of active transport, Ride to School and Ride to Work programs and the benefits of cycling to regional areas.

Walk 21: Session on Shared-Use Paths

Walk21 is an international conference that exists to champion the development of healthy, sustainable and efficient communities where people choose to walk. Sydney hosted the Walk21 conference in 2014 and explored the intersection of walking and cycling in a session titled: *Walking and Cycling: Friends or Foes*.

The Australian Bicycle Council organised the session and invited the following speakers to explore the challenges and opportunities for shared spaces:

- Professor Narelle Howarth, Centre for Accident Research and Road Safety, Queensland (pictured).
- Robyn Davies, Senior Transport Planner, Brisbane City Council.
- Ben Rossiter, Executive Director, Victoria Walks.

National Road Safety Forum

The National Road Safety Forum was held in Canberra in September 2014. The opening address to the Forum was provided by the Hon Jamie Briggs MP, Assistant Minister for Infrastructure and Regional Development.

The forum featured a session on vulnerable road users which included a discussion panel and presentations by a number of walking and cycling safety experts including Tony Arnold from the Australian Bicycle Council.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 129

Program: N/A
Division/Agency: Policy and Research
Topic: National Cycling Participation
Proof Hansard Page: 113 (19 October 2015)

Senator Rice, Janet asked:

Senator RICE: I note the National Cycling Participation Survey results that were released in July 2015 actually noted a decrease in cycling participation between 2011 and 2015, when the goal of the National Cycling Strategy is to double participation. I am interested in knowing the federal government's response to that, because it is pretty alarming that we are seeing that trend.
Mr Mrdak: I am not as familiar with that analysis. I will take on notice that analysis, and perhaps, once ministers have had an opportunity to discuss the issues at the ministerial council, we can come back to you with what options the states and territories are pursuing.
Senator RICE: Given that that is the trend, wouldn't you expect that there should be a change of tack as to what is being done or some increased resources? That seems to be cause for alarm.
Mr Mrdak: Certainly, as I mentioned earlier, a number of jurisdictions are putting in place a mix of regulatory and infrastructure measures. I will take on notice exactly what actions are being pursued.

Answer:

The *National Cycling Participation Survey 2015* noted that there has been a decline in cycling participation from 40.2% in 2011 to 36.3% in 2015. However, the Survey also indicated that up to 4 million people ride a bike in Australia each week, and the *National Cycling Strategy 2014 Implementation Report* noted that there were almost 1.4 million bicycle sales in Australia in 2014 compared to car sales figures of just over 1.1 million in the same year.

State, territory and local governments play the lead role in pedestrian, cycling and shared path infrastructure. The *National Cycling Strategy 2014 Implementation Report* noted that the states and territories invested $111.2 million in cycling infrastructure during 2013-14.

Activity by states and territories in 2014 focused on integrating cycling with transport and land-use planning to build 20-minute neighbourhoods that facilitate walking and cycling. This approach looks to increase physical activity, reduce congestion and improve the safety of local communities. There has also been a greater focus across the states and territories on the safety of vulnerable road users, with communication campaigns directed to influencing road user behaviour such as ‘Share the road’ and ‘A metre matters’.

The Commonwealth also contributes through major project funding for road developments which include cycling and walking infrastructure, other roads infrastructure and upgrade programmes, and Financial Assistance Grants to local governments.

All levels of government also recognise the important role for the private sector in promoting cycling, including by providing end-of-journey facilities.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 130

Program: N/A
Division/Agency: Policy and Research
Topic: Active Transport Funding
Proof Hansard Page: 113 (19 October 2015)

Senator Rice, Janet asked:

Senator RICE: There is no metric to say how much that is increasing or, in terms of the next strategy, give a baseline of how much money is being spent on active transport this year compared with five years time. You will not have the metrics to measure that?
Mr Mrdak: We do not, but I will check if any jurisdictions do.
Senator RICE: Thank you

Answer:

The *National Cycling Strategy Implementation Report*, released annually by the Australian Bicycle Council, is the national reporting channel for the states and territories to record their investment in cycling infrastructure. The *National Cycling Strategy 2014 Implementation Report* notes that the states and territories invested $111.2 million in cycling infrastructure during 2013-14.

State, territory and local governments play the lead role in pedestrian, cycling and shared path infrastructure.

The Commonwealth also contributes through major project funding for road developments which include cycling and walking infrastructure, other roads infrastructure and upgrade programmes, and Financial Assistance Grants to local governments.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 131

Program: N/A
Division/Agency: Policy and Research
Topic: Printing costs for 2014 – 2015 State of Australian cities report
Proof Hansard Page: 120 - 121 (19 October 2015)

Senator Bullock, Joe asked:

Senator BULLOCK: I have made a bit of a meal of going back to the last lot of estimates today, but I am going to do it again and take you to the discussion that we had last time. Mr Collett participated in part and I was asking about the *State of Australian cities* report. Before you came in, Mr Mrdak, and helpfully answered a number of questions, I had asked Mr Collett whether the 2014 report had been not published but printed and he said:
I would need to take that on notice and come back to you.
Then, Mr Mrdak, I asked you how much it cost and you said:
While I am getting the final price, that was the contract amount, but it was not the final spend. I will get that for you on notice.
Later on, I asked who from the minister's office had contacted the department to get the publication held off, and you said you would take that on notice. I asked whether it might have been the minister and you said you would take that on notice. So all of those were taken on notice, and here is your answer to all of those questions:
The cost of any subsequent printing of any of the Progress in Australia's Regions suite of publications will depend on the final amount of copies to be printed.
That was the answer that was supplied to all of those questions on notice. That is, from my perspective, extraordinarily poor.
So I will ask the questions again. Perhaps you might take them on notice and this time answer them. What was the final cost of the printing in December 2014 of the 2014 *State of Australian cities* report? How many copies were printed? What has happened to those copies? What was the cost of printing *State of Australian cities 2014-2015*, released on 6 July this year by Minister Truss? How many copies were printed? Again from the last estimates, who from the minister's office contacted the department to tell you to hold off on the distribution of the *State of Australian cities* report that had been printed in 2014? Really, Mr Mrdak, when you undertake to answer questions on notice, it would be appreciated if you did.
Mr Mrdak: Certainly. I will take those on notice and give you specific answers to each of those questions.

Answer:

A limited print run of 200 copies of the *State of Australian Cities* report occurred in December 2014, at a total cost of $4,407.70 inclusive of GST. The copies are not current and remain available for internal use.

The Department considered the progress of the companion publication *State of Regional Australia* in January 2015 and decided to concurrently release the two reports at a later date. It was determined that concurrent release would provide a nationwide view of cities and regions. The Deputy Prime Minister's Office was advised of the decision.

Due to subsequent delays in finalising the inaugural *State of Regional Australia* report, the opportunity was taken to update the *State of Australian Cities* report. The *State of Australian Cities 2014 - 2015* report was released along with the *State of Regional Australia* report in July 2015. There were 50 copies of the *State of Australian Cities* report printed due to low hard-copy demand from the client group, which favours online access. The total printing cost was $1,810.78 inclusive of GST.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 132

Program: N/A
Division/Agency: Policy and Research
Topic: High Speed Rail
Proof Hansard Page: 122 (19 October 2015)

Senator Gallacher, Alex asked:

Senator GALLACHER: What HSR topics were discussed and what actions were taken?
Mr Mrdak: The discussion largely focused on continuing preparedness by state and territory jurisdictions for long-term planning for access for high-speed rail. I will take on notice the actual details of the discussion and come back to you.
Senator GALLACHER: And actions taken from it?
Mr Mrdak: I will get you an indication of those.
Senator GALLACHER: Is there an agreed work plan with responsibilities and due dates?
Mr Mrdak: I believe there is. I will take that on notice.

Answer:

Discussion focussed on specific High Speed Rail (HSR) issues relating to corridor confirmation, preservation and protection in each of the jurisdictions, including the planning mechanisms to advance corridor protection; and international developments in HSR. The action resulting from the discussion was that jurisdictions would prepare an approach to confirm, preserve and protect the HSR corridor that meets and aligns with their appropriate planning mechanisms.

No formal work plan exists as the High Speed Rail Senior Officials Group operates as an ongoing mechanism. Regular engagement with each jurisdiction on action items and timeframes occurs outside of formal meetings.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 133

Program: N/A
Division/Agency: Policy and Research
Topic: High Speed Rail
Proof Hansard Page: 122 (19 October 2015)

Senator Gallacher, Alex asked:

Senator GALLACHER: In May you told us that the meeting would identify the specific areas along the route that need early action to reserve them, for example tunnel outlets near built-up areas. Have those sites been identified, and where are they?
Mr Mrdak: I think the work is just starting on those arrangements. On notice I will come back to you with details of where the work is at.

Answer:

Key areas of the preferred alignment which are being discussed by jurisdictions include sections in urban and city environments in Brisbane, Sydney, Canberra and Melbourne, particularly near proposed HSR stations.

At the August 2015 meeting of the High Speed Rail Senior Officials Group, it was noted that the focus on the practical work of corridor preservation is ongoing. Significant or priority land use areas will continue to be identified and assessed, and considered in the context of the jurisdictional planning mechanisms and processes. The Australian Government will continue to regularly engage with relevant stakeholders on land and related corridor protection issues.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 134

Program: N/A
Division/Agency: Policy and Research
Topic: National Injury Data availability
Proof Hansard Page: 128 (19 October 2015)

Senator Gallacher, Alex asked:

Senator GALLACHER: Mr Mrdak, can I put a question on notice to the group that we just let go—what financial year will we see national injury data?
Mr Mrdak: I will take that on notice and get you an answer.

Answer:

A national source of injury data is published by the AIHW comprising the estimated number of cases that are hospitalised due to traffic injury. The latest national data is now 2013 and 2013-14.

Hospital separations data does not contain information on the crash location or characteristics.

An Austroads pilot project will provide proof of concept for a national approach to the design, development and implementation of a process to supply routine national data on non-fatal hospitalised road injuries in Australia.

This pilot project has a scheduled completion date of October 2017.

Rural & Regional Affairs and Transport Legislation Committee

ANSWERS TO QUESTIONS ON NOTICE

Supplementary Budget Estimates 2015 - 2016

Infrastructure and Regional Development

Question no.: 135

Program: N/A
Division/Agency: Policy and Research
Topic: High Speed Rail
Proof Hansard Page: Written

Senator Gallacher, Alex asked:

1. Did the senior officials meeting scheduled for July to discuss HSR occur? [flagged at May Estimates]
2. What HSR topics were discussed?
3. What actions were taken?
4. Is there an agreed workplan, with responsibilities and due by dates? Is it that formal, or just a loose discussion?
5. Which States/Territories were present for the HSR discussion – NSW? Victoria? Queensland? ACT?
6. What new developments are there in development of high speed rail since the last Estimates? Since the July 2014 Senior Officials meeting?
7. In May you told us that the meeting would identify the specific areas along the route that need early action to reserve them – for example tunnel outlets near built-up areas.
8. Have these sites been identified?
9. Where are they?
10. What action is being taken to protect these sites?

Answer:

1. The meeting of the High Speed Rail Senior Officials Group (HSRSOG) was held on Friday, 21 August 2015 in Canberra.
2. Discussion focussed on specific High Speed Rail (HSR) issues relating to corridor confirmation, preservation and protection in each of the jurisdictions, including the planning mechanisms to advance corridor protection; and international developments in HSR.
3. The HSRSOG agreed that jurisdictions would prepare an approach to confirm, preserve and protect the HSR corridor that meets and aligns with their appropriate planning mechanisms.
4. As the HSRSOG operates as an ongoing mechanism for HSR, this work continues to be progressed. Ongoing discussions around timeframes are continuing with officials outside of formal meetings.
5. The HSRSOG includes membership of the Australian, Queensland, New South Wales, Victorian and Australian Capital Territory governments. All jurisdictions were present at the 21 August 2015 meeting.
6. The Department of Infrastructure and Regional Development has an ongoing role in monitoring developments in HSR technology, proposed projects and construction approaches. It provides advice across the APS and to Ministers, as required.
7. See response to question 8.
8. Corridor areas requiring identification and preservation were discussed. Jurisdictions are continuing to identify and assess significant land use issues in each of their future planning processes. The HSRSOG agreed that a focus on the practical work of corridor preservation would continue and that potential priority areas would be considered further.
9. Key areas of the preferred alignment which are being discussed by jurisdictions include sections in urban and city environments in Brisbane, Sydney, Canberra and Melbourne, particularly near proposed HSR stations.
10. See response to question 3.