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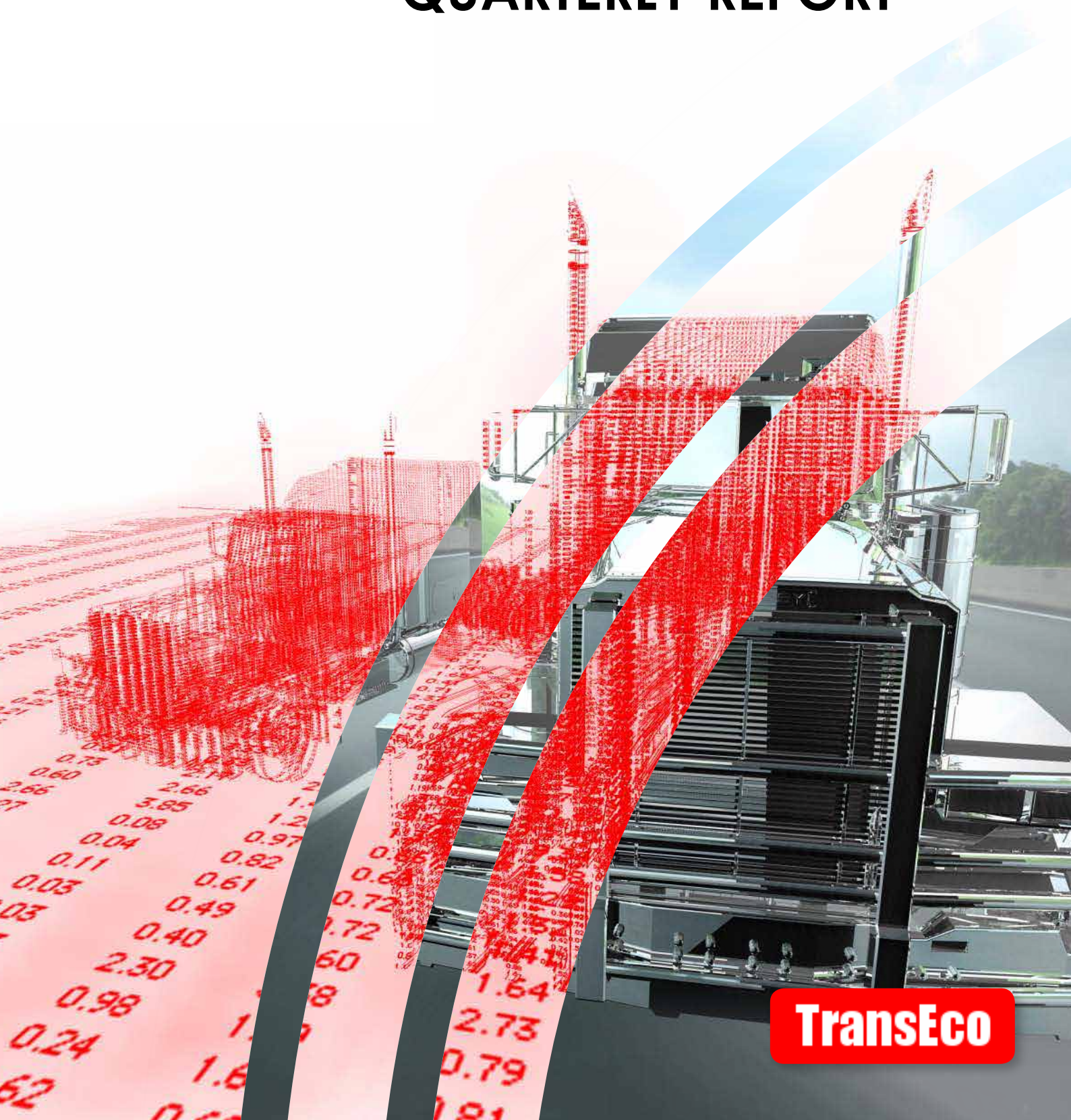
ROAD FREIGHT COST OUTLOOK QUARTERLY REPORT



ACKNOWLEDGEMENTS

About TransEco
TransEco Pty Ltd was formed in January 1991, in Victoria, Australia; in response to a demonstrated need for industry research in the transport and logistics sectors of the economies in the Asia Pacific Region.

Its objective is to provide comprehensive consultancy services to the business logistics community - encompassing freight and passenger markets - with an emphasis on industry economic analyses, policy and strategy development, and business information.

TransEco's business philosophy is firmly centred on the development of long-term relationships with its clients. As a consequence, its dedication to client service and client satisfaction is without parallel. TransEco has a strong interest in managing transport functions and logistics and supply chain processes in an expanding carbon economy.

TransEco works closely with associates who are professionals, acknowledged experts in their own fields, to assist it in the provision of a complete consultancy. This 'Horses for Courses' approach has been highly successful in delivering cost effective solutions for our clients. The principal and founding director of TransEco, Ranjeet Singh, brings over 30 years of experience working both in the Public and Private Sectors in Australia, Malaysia, China, India, U.S. and Fiji.

The TransEco Road Freight Cost Outlook Report is issued quarterly.
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EXECUTIVE SUMMARY

This report provides road freight cost outlook for the following cost inputs: labour, fuel, tyres, vehicle maintenance, and vehicle capital, insurance and registration. The report concludes with an analysis of the impact of the carbon economy on road freight transport operators and their clients. For each of the inputs, five year projections based on causal econometric models, are provided by linehaul and shorthaul market segments. Appendix 1 provides summary cost outlook by market segment, while Appendix 5 outlines 5 year forecast of B-Double operating costs.

LABOUR

Over the five year forecast period to 2022-23 linehaul labour wage costs in Australia are expected to grow at an annualised rate of 3.2 per cent. Wage rises due to strong demand for labour during the resources boom have eased and are re-adjusting in response to the changing demand of employment in other sectors. The situation in the shorthaul segment is less volatile owing to healthy supply of drivers in capital cities and regional urban areas of Australia. This supply of labour is underpinned by growing immigration intake and the relatively less skills required to drive urban delivery vehicles. Shorthaul driver wages are expected to rise at an annualised rate of 3.0 per cent over the forecast period. The Superannuation Guarantee increased to 9.5% for 2014-15. Based on new laws, it will remain at 9.5% for 7 years, increasing to 10% from July 2021, and eventually to 12% from July 2025. Vehicles with conditional automation, where an automated driving system drives the vehicle for a sustained period of time but the human driver is ultimately required to maintain proper control of the vehicle, are not yet ready to be approved for use on Australian roads. In addition, these are not expected to be in place in the next five years.

FUEL

It is clear that when the Australian dollar weakens against the US dollar, the differential in oil prices in the two currencies widens. Crude prices are forecast to peak in 2022-23 to AUD98.82per barrel after increasing from 2017-18 onwards. The decline in oil prices in 2014-15 and subsequent years was brought about by oversupply of crude from the Middle East as Saudi Arabia sought to regain market share at the expense of North American shale resource development. Price volatility will be persistent over the next five years, as many exogenous factors can drastically impact overall market conditions.

The net cost of diesel fuel to Australian road freight operators is expected to peak in 2022-23 to 124.53 cents per litre mark, a significant increase from 92.80 cent per litre in 2016-17. This increase is mainly due to higher forecast crude oil prices after 2017-18. The Australian Government is struggling to develop a framework whereby investment in alternative fuel infrastructure and related engine technologies can be forthcoming to the commercial vehicle fleet in Australia.

The Australian Government re-introduced excise duty rates for most fuels every six months based on movements in the Consumer Price Index.

TYRES

All new tyres are currently imported and owing to high cost of barriers to entry, TransEco expects no new tyre manufacturer to be established over the forecast period to 2022-23. Major factors impacting on the price of new tyres are raw material, labour inputs, trade logistics capacity and the strength of the Australian dollar relative to currencies of Australian trading partners as compiled into the Trade Weighted Index. Over the forecast period, tyre prices for linehaul applications are expected to rise by an annualised rate of 2.76 per cent, while tyre prices for shorthaul applications to rise by an average of 2.50 per cent per annum over the same period. Movements in the prices of recapped tyres are expected to mirror those of new tyres.

The slower growth rate in the shorthaul segment is due to continued growth in import penetration of Chinese made tyres, which are generally less expensive but with a shorter life span.

Solutions to disposable of end-of-life tyres are becoming more realistic with the formation of Tyre Stewardship Australia, which provides accreditation to willing participants in the supply chain.

VEHICLE MAINTENANCE

The federal government is considering the merits of introducing a new ADR 80/04, based on Euro V1 standards; with implementation sometime in after 2020.

Major cost components of maintenance are price of labour and price of parts, with 40 per cent of parts being imported and whose price is subject to the strength of the Australian dollar relative to its major trading partners. Vehicle Maintenance costs in the linehaul road freight segment are expected to rise at an annualised rate of 3.74 per cent over the forecast period to 2022-23.

Vehicle Maintenance costs in the shorthaul road freight segment are expected to rise at an annualised rate of 3.18 per cent over the forecast period. Compliance to emission regulations for B-Double operators between Melbourne and Sydney is approximately 0.5 cents per kilometre as of 1 January 2011.

CAPITAL

Movements in interest rates play a significant role in determining capital costs for a road transport operator as most purchases of mobile equipment such as trucks and trailers are debt funded; and along with depreciation constitute total vehicle capital costs. The relatively subdued interest rate regime over the outlook period will contribute to weaker increases in vehicle capital costs. Eighty per cent of commercial vehicles sold in Australia are imported, and as a consequence the price of new vehicles is subject to movements in exchange rates. The Australian dollar is expected to stay weak over the forecast period, thus contributing to vehicle price increases. The trailer and motor vehicle body market is comparatively less reliant on imports and prices of its products are mainly influenced by cost of raw material such as steel and aluminium. Over the outlook period to 2022-23 vehicles related capital costs are expected to rise by an average annualised rate of 2.66 per cent for linehaul and 1.84% for shorthaul.

VEHICLE INSURANCE

Key determinants that influence the cost of commercial motor vehicle insurance include: total number of commercial vehicles on register and utilisation; interest rate movements; natural disasters; and legislative compliance requirements for general insurance. Commercial vehicle insurance premiums are expected to keep rising throughout the forecast period as the road freight sector shares the burden of losses incurred by the Insurance companies owing to growing natural disasters. Shorthaul vehicle insurance costs are expected to increase by an annualised rate of 2.6 per cent over the next five years; while linehaul vehicle costs are expected to expand by 3.3 per cent per annum over the same period. Over the next three years, the compulsory third party (CTP) premiums are expected to rise as all states and territories offer privatised CTP underwriting.

Due to the inherent unpredictable nature of natural disasters, it is impossible to forecast individual incidents over a five year outlook. However, based on the rising trend of insured assets, it is believed that the cost of damage associated with natural disasters in 2017 to be $2600 million, and approximately $10000 million over the next five years. In 2017, damage by Cyclone Debbie contributed to the majority of the claims in that year.

VEHICLE REGISTRATION

In preparing the annual adjustment the NTC makes sure that two key principles are met as set by COAG in April 2007. Firstly, there is ongoing cost recovery, and secondly, no cross-subsidies between vehicle classes arise over time. While the NTC methodology seems robust enough to model registration charges based on road expenditure and vehicle usage patterns, TransEco believes that road expenditure itself may not be derived from efficient road construction and maintenance regimes. Any inefficiency in the road construction and maintenance expenditure would lead to the road freight industry being overcharged in registration fees.. Registration charges to line haul operators are expected to increase by an annualised rate of 2.27 per cent over the five year period to 2022-23. Shorthaul operators are expected to experience an average rise in registration costs of 2.37 per cent per annum over the next five years. This stronger growth rate is due to increase in charges on rigid truck and dog vehicles.

CARBON ECONOMY

Climate change issues have to be addressed now. The growing consensus is that no individual, business, community, government of nation can avoid the consequences of climate change with experts forecasting average global temperature increases of up to 6.4 per cent by 2100 if no action is forthcoming. The take-up rate of climate change issues in the transport and logistics sector globally has been encouraging in terms of environmental impact reporting and goal-setting but much slower than other sectors of the economy. Transport is responsible for almost 60 per cent of oil consumption in the OECD countries and for an estimated 13% of all global emissions.

The result of the July 2016 federal elections has confirmed policy framework. The major parties had starkly different policies to reduce greenhouse gas emissions. In general terms, the Australian Labour Party's primary policy was pricing emissions through a market-based system; whilst the Coalition's is a direct action plan, the cornerstone of which is paying polluters to change their ways.

The Coalition victory in the July 2016 election has reaffirmed uncertainty to the carbon economy in Australia. While the rest of the world invests in alternatives so as to reduce Carbon Dioxide emissions, the Coalition has yet to put forward any credible abatement strategies in the road freight sector of the Australian economy. The sector remains a large contributor of CO2 emissions.

Any hope in immediate shift in policy with the change in leadership of the ruling Liberal and National Parties coalition Government, has been ill founded as the current leadership continues with the Direct Action policy. However, there are signs of encouragement as the Turnbull government has recently signed up to a New Zealand-led declaration at the December 2015 Paris climate summit backing the use of carbon markets in tackling climate change.

The Turnbull government is to consider domestic use of international carbon permits as part of a review of the direct action climate policy, concluded in December 2017. At present, international permits are significantly cheaper than the cost of abatement domestically under the Emissions Reduction Fund, although overseas credits are likely to become more expensive as global demand rises.

TOLL CHARGES

The acceptance of tolling by users has allowed operators to increase tolls on mature assets ahead of Consumer Price Index (CPI).

Increasing congestion on non-toll roads and the expanding urban sprawl are anticipated to support growth in the number of journeys on toll roads over the next five years. Congested roads provide the largest incentive for road users to pay for toll roads.

However, over the last five years, journey times have steadily being reduced as toll roads themselves become congested particularly in Sydney and Melbourne and to a lesser extent in Brisbane. The net benefit of using certain toll ways have been eroded due to increasing toll way congestion and rising toll charges. Furthermore, planned additional toll infrastructure is being based on increasing current toll charges on freight vehicles. As a consequence, toll prices for trucks and heavy vehicles have risen at a faster rate than tolls for passenger vehicles. On average, toll charges for heavy commercial vehicles are expected to increase at a rate of 4.0% per annum over the forecast period to 2022-23.

CHAPTER 1
INTRODUCTION

The TransEco Road Freight Cost Outlook Service (TRFCOS) was developed owing to a demonstrated requirement by users and providers of road freight services in Australia to understand their future cost structures. This requirement is exacerbated by the increasing volatility of cost inputs and the requirement to comply with increasing regulatory measures. Typically this outlook service is increasingly being used for planning and budgetary purposes together with building competitive strategic positions.

TransEco wishes to go forward in developing this service in a collaborative manner with its users and regular interaction will ensure a relevant and common sense outcome.

TransEco is in the position to provide this outlook service as it has been monitoring changes in road freight cost structures for over twenty years through its TransEco Road Freight Cost Indices service that is typically used for cost recovery purposes from a historical perspective.

1.1 SOURCES & METHODOLOGY

Majority of the five year forecast have been developed utilising causal econometric models that require inputs external to TransEco. However, the methodology utilised in constructing these models has been developed within TransEco itself. All forecast output reports on linehaul and shorthaul market segments separately.

Chapter 2 provides forecast of labour related costs by state and territory and national averages. Data is sourced from the Australian Bureau of Statistics (ABS), Fair Work Australia, TransEco databanks and known Enterprise Bargaining Agreements.

Chapter 3 concentrates on fuel cost outlook and sets the scene with crude oil price projections over five years followed by diesel fuel forecasts. Projections of net cost to operators (retail price less GST and fuel tax credits) are computed from retail prices, which is essentially wholesale prices plus delivery costs and service station operator margins. Data and information is sourced from Bloomberg, Australian Institute of Petroleum, National Transport Commission, IBIS World and Department of Industry Innovation and Science.

Movements in tyre costs over the next five years are provided in Chapter 4 and information is sourced from TransEco databanks and direct communications with tyre retailers and wholesalers.

Chapter 5 focuses on vehicle maintenance cost projections and both labour and parts related analysis is provided separately. Base data for labour and parts input is derived from the ABS and trend information is sourced from TransEco databanks.

Chapter 6 provides forecast of vehicle capital costs, which is primarily determined by movements in borrowing interest rates and prices of new and used vehicles. Movements of new vehicle prices were sourced from Glass's Guide (Commercial Vehicles) and interest rates movements were sourced from the Reserve Bank of Australia. Depreciation rates were sourced from the Australian Tax Office.

Chapter 7 analyses future vehicle insurance costs and provides five year forecasts. Data and information is sourced from TransEco databanks and direct communications with insurance agents and brokers.

Chapter 8 relates to projections of vehicle registration costs and heavy vehicle charges determination as stipulated by the National Transport Commission. Information is sourced from TransEco databanks and direct communications with NTC.

The report concludes with Chapter 9 providing analysis on carbon economy outlook. The chapter also considers qualitatively, the consequences of inaction by the road freight industry on climate change on their business sustainability.

1.2 LINK BETWEEN HISTORICAL & FORECAST INDICES

TransEco, over the last twenty plus years has been reporting cost changes in the road freight industry in Australia on a historical basis by each quarter. The forecast series are reported on financial year basis. In most parts, the quarterly data has been aggregated to annual data with 2010-11 as the base year. This methodology brings a series link between the historical and projected series, with historical trends seamlessly identifying with projected trends to 2022-23.

CHAPTER 2:
DRIVER & ADMINISTRATION RELATED COST OUTLOOK

2.1 WAGES & DETERMINANTS

Movements in the wages of drivers and related administrative supervisors in the road freight industry in Australia are determined by a number of factors that include the relative wage movements in other industries, labour force participation rate, unemployment rate, ageing of the workforce, existing EBAs, future legislative determination (such as Fair Work Australia) and level of demand generated by freight volumes available for road transport and competing modes. All the above mentioned factors have been taken into consideration when preparing forecast models.

In addition, growth rates of driver wages differ according to geographical locations owing to the different industry sectors serviced by the road freight industry utilising different vehicle configurations. As a consequence, TransEco reports on movements in wages of drivers and administrative supervisors by each State and Territory. Furthermore, forecasts based on linehaul and shorthaul activities are also provided as each segment is influenced by different factors underpinning wage growth rates.

The national unemployment rate will decrease by 0.41 percentage points to reach 5.28% in 2022-23. Early in the outlook period, a cyclical downswing in private capital expenditure will put upward pressure on the unemployment rate. This is in line with projections provided in the May 2018 Budget Papers. Demographic trends indicate the rate of retirement is expected to rise over the outlook period. Currently those aged 65 and over form 16.0% of the population, a figure expected to rise to 17.8% by 2020. As a result of more retirees leaving the workforce, the participation rate will decline. These factors will work to place downward pressure on the unemployment rate over the outlook period. From 2017-18 onwards, the national unemployment rate is expected to enter into the upward phase of its cycle.

New South Wales and Victoria have emerged as the drivers of economic growth in recent years, as part of a broader, gradual strengthening in non-mining activity supported by the depreciation of the Australian dollar since 2013 and low interest rates. Domestic conditions in Western Australia and Queensland have weakened considerably alongside the decline in mining investment, though overall rates of economic growth have remained positive, in part due to growth in commodity exports.

Forecast are provided for each of the years from 2017-18 to 2022-23.

The road freight industry has engaged the Federal Government in solving the driver shortage problem facing this industry in the future, especially in the linehaul segment. Already, the average age of an Australian truck driver is nearing 50 and about 10 per cent of drivers are expected to exit the industry in the next ten years. Around 150,600 road truck drivers were employed in 2004 and it is estimated that over 185,000 will be needed by the end of the forecast period. The increased requirement is expected to stem from growth in freight volumes notwithstanding any increases in productivity such as the widespread use of B-triples along the eastern seaboard of Australia.

Australia's State and Territory transport ministers have agreed to a national set of road network access and operating conditions for modular B-triples that will enable these vehicles to have access to the current type 1 road train network on the same basis as double (Type 1) road trains. Modular B-triples comprise a prime mover and three semi-trailers, and can be assembled from standard B-double trailer equipment. However, the operation of B-triples require experienced and skilled drivers and driver sourcing and training will remain as essential factors to successful B-triple operations.

2.1.1 LINEHAUL DRIVER COSTS

In general, drivers in the linehaul segment attract higher remuneration than their shorthaul counterparts owing to the higher skills required driving heavier vehicles with a considerable range of configurations. The movements in wages are also expected to be higher than shorthaul drivers especially in resource rich States such as Western Australia and Queensland, where the ability to retain drivers had been under constant threat of competing industries such as the mining sector, where labour attracted much higher wages.

The Australian Government has abolished the 457 visas. However, as truck driving is not currently on the occupation list for 457 visas, its abolition has no effect on truck driver recruitment. It is currently possible to bring truck drivers into Australia under labour agreements where appropriate, and these proved invaluable for employers in regional areas during the mining investment boom. However, the intake of foreign national drivers would need the co-operation of the whole supply chain in training and retaining these foreign national drivers. Globally, India stands-out as the country with one of the youngest English speaking workforce.

The labour market for long distance road freight transport has eased following the end of the recent mining investment boom. Overall, the Australian economy as measured by Gross Domestic Product is expected to expand at an annualised rate of 2.6 per cent over the outlook period to 2022-23.

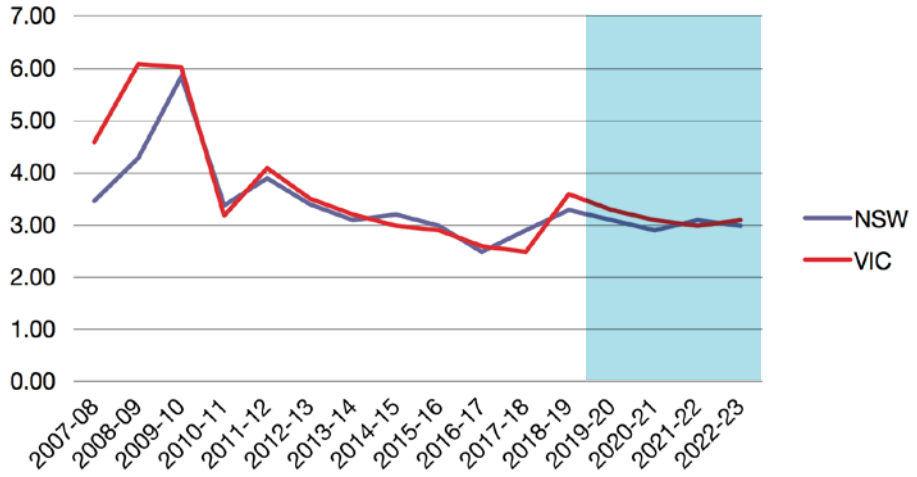
2.1.1.1 New South Wales and Victoria

Table 2.1 provides forecasts indices of driver costs in New South Wales and Victoria.

Table 2.1 Forecasts of Linehaul Driver Costs in New South Wales and Victoria (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5yr av
NSW	117.74	120.68	124.18	128.28	132.25	136.09	140.31	144.52	
% Change	3.00	2.50	2.90	3.30	3.10	2.90	3.10	3.00	3.10
VIC	117.85	120.91	123.94	128.40	132.63	136.75	140.85	145.21	
% Change	2.90	2.60	2.50	3.60	3.30	3.10	3.00	3.10	3.20

Chart 2.1 Percentage Change Linehaul Driver Costs (NSW & VIC)

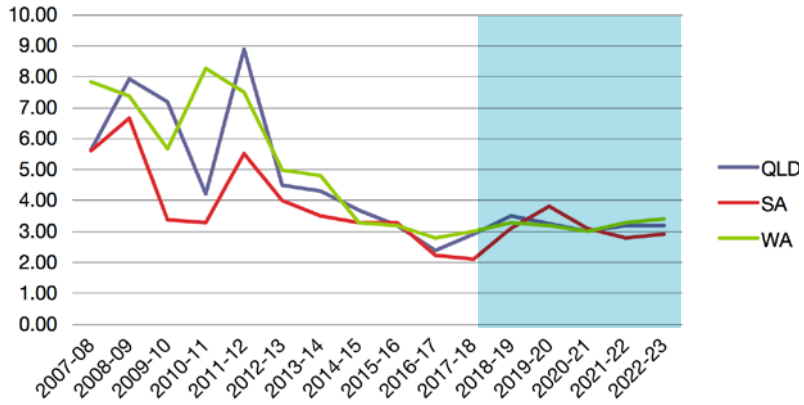


2.1.1.2 Queensland, South Australia and Western Australia

Table 2.2 Forecasts of Linehaul Driver Costs in Queensland, South Australia & Western Australia (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5yr av
QLD	127.02	130.07	133.85	138.53	143.03	147.32	152.04	156.90	
% Change	3.20	2.40	2.90	3.50	3.25	3.00	3.20	3.20	3.20
SA	121.18	123.89	126.50	130.42	135.37	139.57	143.48	147.64	
% Change	3.30	2.24	2.10	3.10	3.80	3.10	2.80	2.90	3.10
WA	126.11	129.64	133.53	137.93	142.35	146.62	151.46	156.61	
% Change	3.20	2.80	3.00	3.60	3.20	3.00	3.30	3.40	3.20

Chart 2.2 Percentage Change Linehaul Driver Costs (QLD, SA & WA)



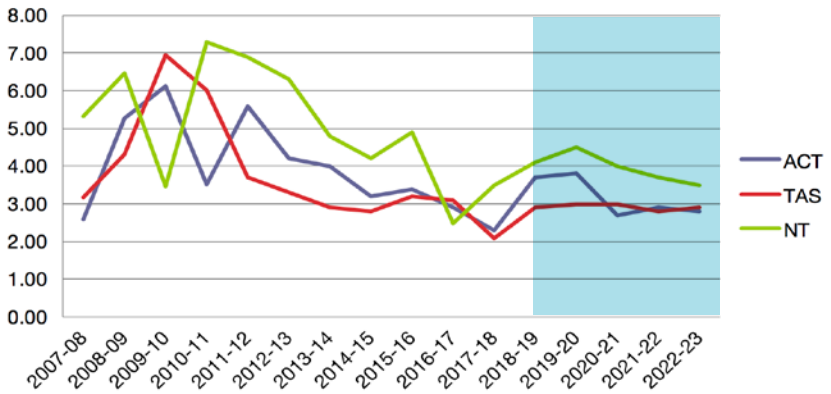
2.1.1.3 Australian Capital Territory, Tasmania and Northern Territory

Table 2.3 provides forecasts indices of driver costs in Australian Capital Territory, Tasmania and Northern Territory.

Table 2.3 Forecasts of Linehaul Driver Costs in Australian Capital Territory, Tasmania & Northern Territory (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019.20	2020-21	2021-22	2022-23	5yr av
ACT	122.11	125.66	128.55	133.30	138.37	142.10	146.22	150.32	
% Change	3.40	2.90	2.30	3.70	3.80	2.70	2.90	2.80	3.20
TAS	116.94	120.57	123.10	126.67	130.47	134.38	138.14	142.15	
% Change	3.20	3.10	2.10	2.90	3.00	3.00	2.80	2.90	2.90
NT	130.17	133.43	138.10	143.76	150.23	156.24	162.02	167.69	
% Change	4.50	2.50	3.50	4.10	4.50	4.00	3.70	3.50	4.00

Chart 2.3 Percentage Change Linehaul Driver Costs (ACT, TAS & NT)



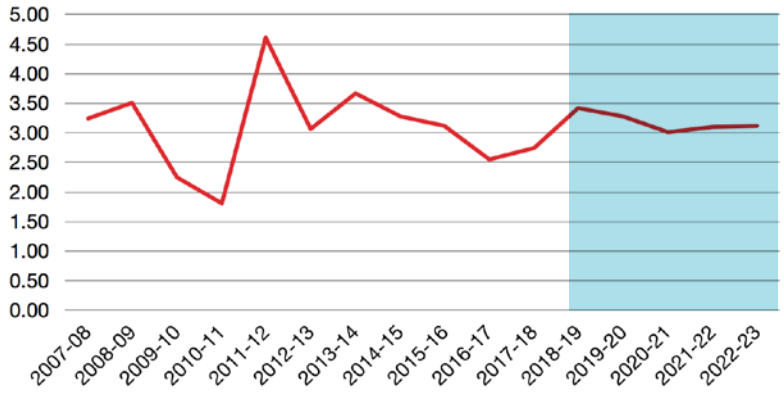
2.1.1.4 Australian Linehaul Aggregates

Table 2.4 provides forecasts indices of driver costs in Australia.

Table 2.4 Forecasts of Linehaul Driver Costs in Australia (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5yr av
AUST	119.01	122.71	126.08	130.39	134.66	138.72	143.02	147.47	
% Change	3.11	3.11	2.74	3.42	3.28	3.01	3.10	3.11	3.20

Chart 2.4 Percentage Change Linehaul Driver Costs (AUSTRALIA)



2.1.2 SHORTHAUL DRIVER COSTS

Movements in shorthaul driver costs are not expected to be volatile when compared to linehaul costs owing to a healthy supply of drivers in capital cities and regional urban areas of Australia. This supply of labour is underpinned by growing immigration intake and the relatively less skills required to drive urban delivery vehicles.

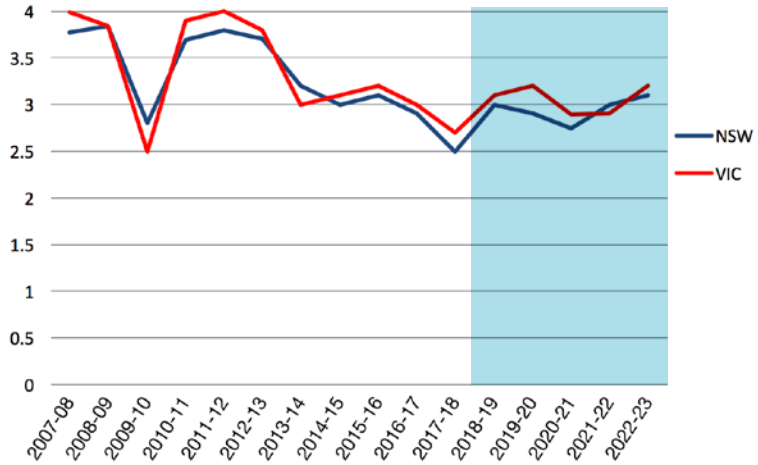
2.1.2.1 New South Wales and Victoria

Table 2.5 provides forecasts indices of driver costs in New South Wales and Victoria.

Table 2.5 Forecasts of Shorthaul Driver Costs in New South Wales and Victoria (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5 yr av
NSW	117.96	121.39	124.42	128.15	131.87	135.50	139.56	143.89	
% Change	3.10	2.90	2.50	3.00	2.90	2.75	3.00	3.10	2.90
VIC	118.31	121.86	125.15	129.02	133.15	137.00	140.29	145.49	
% Change	3.20	3.00	2.70	3.10	3.20	2.89	2.40	3.20	3.10

Chart 2.5 Percentage Change Shorthaul Driver Costs (NSW & VIC)



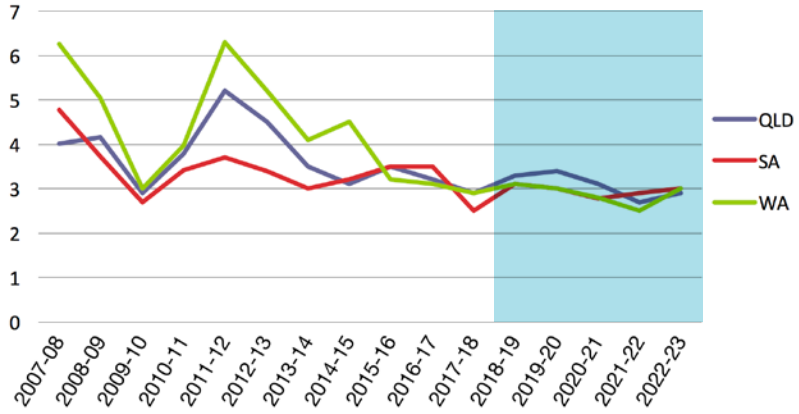
2.1.2.2 Queensland, South Australia and Western Australia

Table 2.6 provides forecasts indices of driver costs in Queensland, South Australia and Western Australia.

Table 2.6 Forecasts of Driver Costs in Queensland, South Australia & Western Australia (2010-11)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5yr av
QLD	121.41	125.30	128.93	133.19	137.72	141.99	145.82	150.25	
% Change	3.50	3.20	2.90	3.30	3.40	3.10	2.70	2.90	3.10
SA	117.97	122.09	125.15	129.03	132.90	136.59	140.55	144.77	
% Change	3.50	3.50	2.50	3.10	3.00	2.78	2.90	3.00	3.00
WA	125.54	129.44	133.19	137.72	141.44	145.50	149.03	153.50	
% Change	3.20	3.10	2.90	3.40	3.00	2.80	2.50	3.00	2.90

Chart 2.6 Percentage Change Shorthaul Driver Costs (QLD, SA & WA)



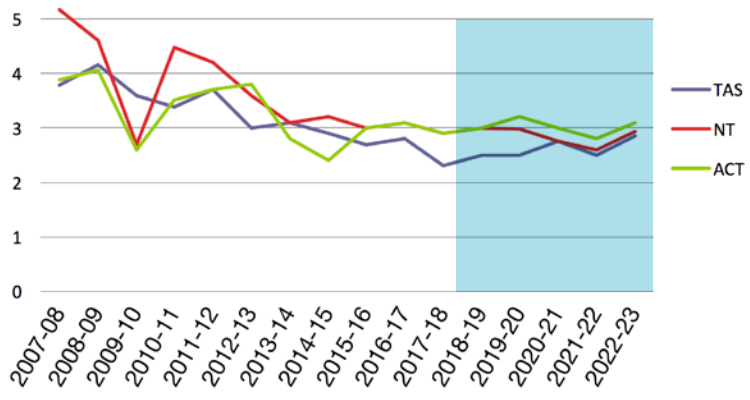
2.1.2.3 Australian Capital Territory, Tasmania and Northern Territory

Table 2.7 provides forecasts indices of driver costs in Australian Capital Territory, Tasmania and Northern Territory.

Table 2.7 Forecasts of Driver Costs in Australian Capital Territory, Tasmania & Northern Territory (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5yr av
ACT	116.71	120.33	123.82	127.53	131.61	135.56	139.36	143.68	
% Change	3.00	3.10	2.90	3.00	3.20	3.00	2.80	3.10	3.00
TAS	116.38	119.63	122.39	125.44	128.58	132.12	135.42	139.28	
% Change	2.70	2.80	2.30	2.50	2.50	2.75	2.50	2.85	2.60
NT	118.30	121.97	125.51	129.27	133.13	136.79	140.34	144.46	
% Change	3.00	3.10	2.90	3.00	2.98	2.75	2.60	2.93	2.90

Chart 2.7 Percentage Change Shorthaul Driver Costs (ACT, TAS & NT)



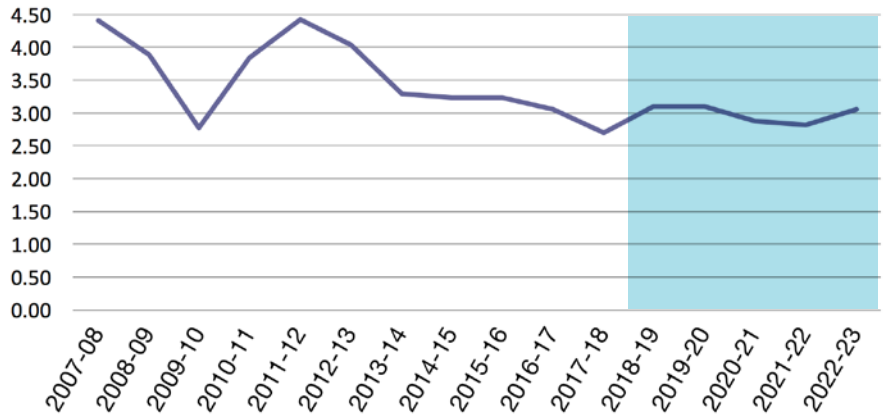
2.1.2.4 Australian Shorthaul Aggregates

Table 2.8 provides forecasts indices of driver costs in Australia.

Table 2.8 Forecasts of Shorthaul Driver Costs in Australia (2010-11=100)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5yr av
AUST	119.58	123.24	128.56	130.48	134.51	138.37	142.28	146.63	
% Change	3.23	3.06	2.69	3.00	3.00	2.87	2.82	3.06	3.00

Chart 2.8 Percentage Change Shorthaul Driver Costs (AUSTRALIA)



2.2 DRIVER ON-COSTS

2.2.1 WORKERS COMPENSATION INSURANCE

Premium rates differ by states and territories and are legislated through Acts that vary with each state and territory. In general premium rates have been declining as Occupational Health and Safety legislations tighten throughout the nation. However, the absolute premium payable by employers has been increasing as wages increase.

TransEco expects movements in premiums to remain relatively stable as the workforce in the road freight industry become more informative of safe work procedures under legislative requirements.

2.2.2 SUPERANNUATION LEVY

A key determinant of the size of the superannuation levy is the movement in household saving ratio which is computed as household net savings as a proportion of gross disposable income. Household saving ratio in Australia decreased to 5.20% in the fourth quarter of 2016 from 6.30% in the third quarter of 2016. The current lower than expected consumer confidence driven by the May 2016 budget and lower commodity prices are expected to dampen household consumption expenditure. In its May 2017 budget statement, the Federal Government expects household consumption to continue to grow faster than household income, which is expected to result in a lower household saving ration, which is forecast to fall to 3.24 per cent in 2018-19.

Superannuation guarantee Increased to 9.5% for 2014-15. Based on new laws, it will remain at 9.5% for 7 years, increasing to 10% from July 2021, and eventually to 12% from July 2025.

2.3 FATIGUE MANAGEMENT

Drivers and operators have been the traditional focus of road transport law enforcement. Chain of Responsibility (COR) laws recognise that compliance is a shared responsibility. All parties in the supply chain whose actions or inactions contribute to a breach can be held liable.

The Transport Workers Union believes that the law should be extended to cover the biggest contributors to fatal accidents involving trucks, which are fatigue, rates of pay and driving hours. These are largely controlled by end-clients.

The Australian Logistics Council (ALC), the logistics industry's peak body, has outlined regulatory inconsistencies in the trucking industry between the states and territories as a major problem for the industry. The ALC has highlighted that compliance with multiple regimes increases industry costs and lowers productivity.

The National Transport Commission has identified fatigue as one of the most significant risk factors in terms of heavy vehicle safety, with contributing factors identified as: driving long distances; overnight shifts, industry payment practices; and historical work practices.

Telematics is the technology used to facilitate the retrieval of electronic data from a vehicle. The ALC supports the mandatory monitoring of speed and fatigue using telematics technology.

Modelling by TransEco reveals that an additional $1 million in costs related to fatigue management is required to furnish a $70 million contract. In other words, operating costs increased by an estimated 1.4 per cent in complying with fatigue management in 2011 in contract distribution activity.

Vehicles with conditional automation, where an automated driving system drives the vehicle for a sustained period of time but the human driver is ultimately required to maintain proper control of the vehicle, are not yet ready to be approved for use on Australian roads. In addition, these are not expected to be in place in the next five years. On 21 January 2013, the National Heavy Vehicle Regulator (NHVR) opened for business, initially offering NHVAS (National Heavy Vehicle Accreditation Scheme) and PBS Performance-Based Standards) services on a national basis. The Road Safety Remuneration Bill 2011 was introduced in the Federal Parliament in November 2011 and presented to the Senate in March 2012. The Road Safety Remuneration Tribunal (RSRT) came into effect on 1 July 2012.

After issuing its latest and last Remuneration Order pertaining to the owner driver sector, the RSRT was disbanded when on 19 April 2016 the Road Safety Remuneration Repeal Act 2016 (Cth) received royal assent. As a consequence the RSRT ceased to operate as of 21 April 2016.

The object of the Road Safety Remuneration Act 2012 was to promote safety and fairness in the road transport industry by doing the following:

(a) ensuring that road transport drivers did not have remuneration related incentives to work in an unsafe manner;

(b) removing remuneration related incentives, pressures and practices that contributed to unsafe work practices;

(c) ensured that road transport drivers were paid for their work, including loading or unloading their vehicles or waiting for someone else to load or unload their vehicles;

(d) developing and applying reasonable and enforceable standards throughout the road transport industry supply chain to ensure the safety of road transport drivers;

(e) ensuring that hirers of road transport drivers and participants in the supply chain take responsibility for implementing and maintaining those standards;

(f) facilitating access to dispute resolution procedures relating to remuneration and related conditions for road transport drivers

2.4 SUMMARY AND CONCLUSION

- Linehaul driver wage costs are expected to grow at an annualised rate of 3.2 per cent.
- Shorthaul driver wage costs are expected to climb at an annualised rate of 3.0 per cent.
- Compliance to fatigue management regulations is expected to add an additional 1.4 percentage points to total road freight operating costs.
-
- On 21 January 2013, the National Heavy Vehicle Regulator (NHVR) opened for business, initially offering NHVAS (National Heavy Vehicle Accreditation Scheme) and PBS Performance-Based Standards) services on a national basis. The Road Safety Remuneration Bill 2011 was introduced in the Federal Parliament in November 2011 and presented to the Senate in March 2012. The Road Safety Remuneration Tribunal (RSRT) came into effect on 1 July 2012.
- After issuing its latest and last Remuneration Order pertaining to the contractor driver sector, the RSRT was disbanded when on 19 April 2016 the Road Safety Remuneration Repeal Act 2016 (Cth) received royal assent. As a consequence the RSRT ceased to operate as of 21 April 2016.

CHAPTER 3:
FUEL COST OUTLOOK

3.1 CRUDE OIL PRICES AND DETERMINANTS

Crude oil prices paid by Australian refineries are linked to the movement of regional oil prices and in this case the Malaysian Tapis. Data is sourced from Bloomberg and projections are TransEco estimates.

Oil prices are highly volatile, with a range of external factors influencing price fluctuations, and these include foreign exchange movements, foreign policy decisions, production levels and demand from emerging markets. The most influential development over the past five years has been the increasing emphasis on hydraulic fracturing and horizontal drilling techniques. While upstream oil and gas producers have used these methods in the past, technological developments have made both the hydraulic fracturing and horizontal drilling more efficient and more cost effective than ever before. In the US, the shift towards these techniques has drastically increased production levels, which has in turn pressured domestic prices for both oil and natural gas.

Environmental concerns have increased over the last five years, and as a result, calls for additional investment in alternative fuel sources have impacted oil and gas producers' ability to expand operations, especially in offshore arenas. Though demand for crude oil is projected to remain strong, as it is an input for a wide range of products, high levels of supply, pressure to develop alternative fuel sources and

Restrictions on crude oil exports in the US have weighed on crude oil price performance over the past five years. For instance, as the US increasingly has supplied itself with petroleum, exporting nations, such as Nigeria and Venezuela, have had to seek other markets for their petroleum output. In addition, the US government removed crude oil export restrictions, entering global markets, which will further increase supply and pressure prices.

Although overall economic conditions have improved from recessionary lows in 2009, demand from emerging markets, most notably China, has eased in recent periods. Though rapid industrialisation of countries such as China and India has boosted demand for petroleum products, high levels of production have pressured prices for crude oil around the globe.

The world price of oil is expected to trend higher from 2017-18 onwards; however, it will continue to face downward pressure. US production levels will continue to be strong as the removal of export restrictions could further encourage upstream companies to produce at strong levels in the US. Furthermore, OPEC's production levels will likely to continue at strong levels, further ensuring high levels of oil supply on global markets.

Volatility will be persistent over the next five years. Several oil producing countries face political instability that will continue over the next five years, most notably Syria and Iraq. Additionally, central banks around the world will continue to focus on oil price movements, as low oil prices can benefit a wide range of industries and encourage economic growth. Nonetheless, the potential for sudden price fluctuations will remain constant. In the next five years, Russian production will play an important role in European markets for natural gas and crude oil. Countries that are rich in shale resources, such as China and Russia, will challenge the US competitive advantage in hydraulic fracturing and horizontal drilling production over the longer term.

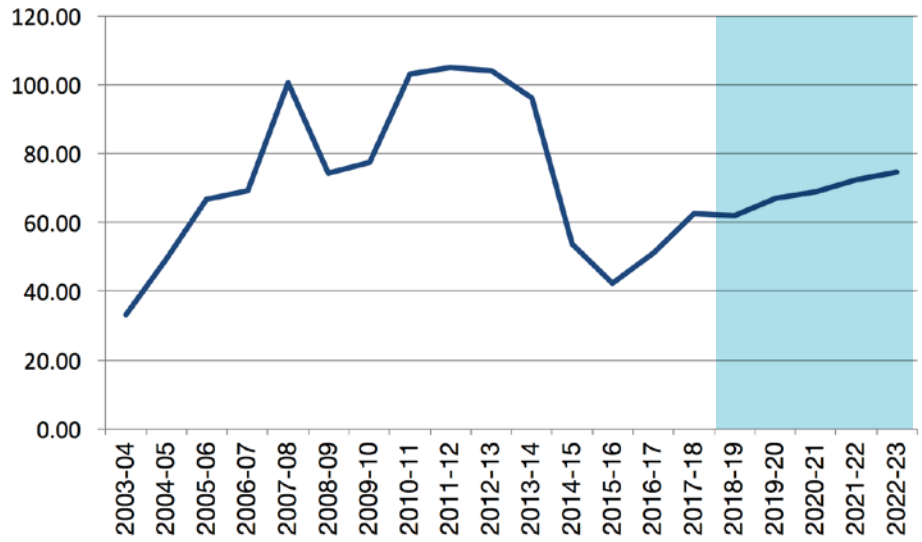
The world price of crude oil is expected to grow during the forecast period to 2023 at an annualised rate of 3.60%.

Table 3.1: Malaysian Tapis Blend Spot Price FOB (USD per Barrel)

Year	USD per Barrel	% Change
2001-02	24.70	-18.29
2002-03	28.82	16.68
2003-04	33.27	15.44
2004-05	49.17	47.79
2005-06	66.70	35.65
2006-07	69.30	3.90
2007-08	100.56	45.11
2008-09	74.37	-26.04
2009-10	77.43	4.11
2010-11	103.13	33.19
2011-12	105.01	1.82
2012-13	104.07	-0.90
2013-14	96.25	-7.51
2014-15	53.63	-44.28
2015-16	42.28	-21.16
2016-17	51.36	21.48
2017-18	62.66	22.00
2018-19	61.82	-1.34
2019-20	67.05	8.46
2020-21	69.05	2.98
2021-22	72.50	5.00
2022-23	74.77	3.13

Source: Energy Information Administration & TransEco Estimates

Chart 3.1 Forecasts of Crude Oil Costs (USD per Barrel)



3.2 DIESEL FUEL PRICES

Diesel fuel prices in Australia are determined by various factors that include crude oil prices, USD/AUD exchange rates at any particular time, refinery capacity, and demand from non-road freight sectors such as agriculture and mining and competition between domestic retailers.

Diesel is traded internationally and around 40 per cent of diesel consumed in Australia is imported. This means that the price paid at the pump is influenced by international benchmark price. The most commonly used benchmark is the Singapore Gasoil 10 ppm benchmark price. Similar to many other commodities sold internationally, Singapore Gasoil 10 ppm is paid for in United States dollars, which means that the price of diesel in Australia is also influenced by movements in the Australian dollar/USD exchange rate. Detailed analysis of USD/AUD exchange rates are provided in Appendix 2.

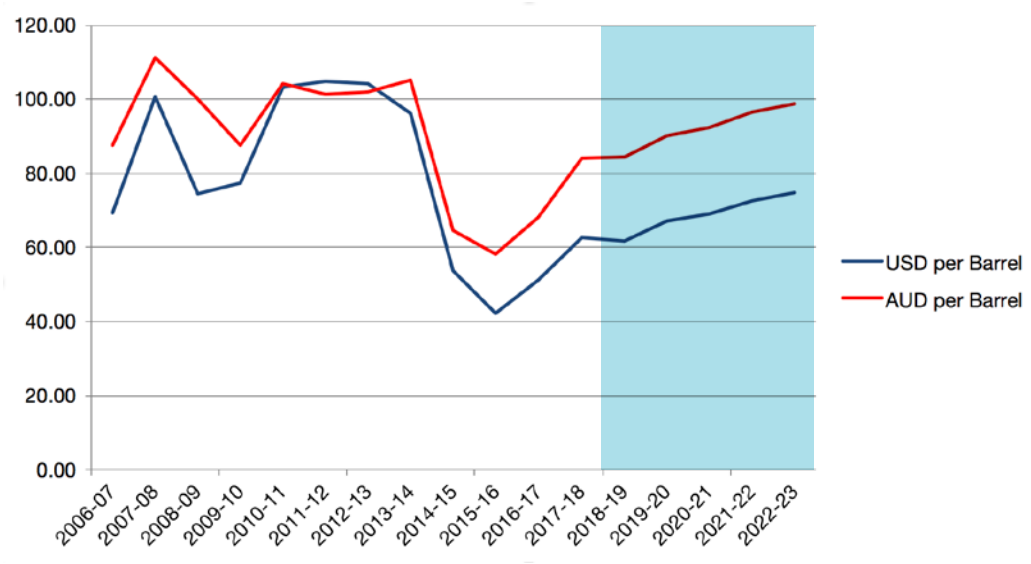
Table 3.2 and Chart 3.2 provide trends in the impact of the USD/AUD exchange rate on oil prices. It is clear that when the Australian dollar strengthens, the differential of oil prices in the two currencies narrows. Crude prices are forecast to increase from 2017-18 onwards and peak at AUD 98.82 per barrel in the last year of the forecast period.

Table 3.2: Malaysia Tapis Blend Spot Price FOB (USD & AUD per Barrel)

Year	USD per Barrel	% Change	USD/AUD	AUD per Barrel	% Change
2001-02	24.70	-18.29	0.5245	47.09	-17.19
2002-03	28.82	16.68	0.5887	48.96	3.96
2003-04	33.27	15.44	0.714	46.60	-4.82
2004-05	49.17	47.79	0.7545	65.17	39.86
2005-06	66.70	35.65	0.7463	89.37	37.14
2006-07	69.30	3.90	0.7907	87.64	-1.94
2007-08	100.56	45.11	0.9047	111.15	26.82
2008-09	74.37	-26.04	0.7442	99.93	-10.09
2009-10	77.43	4.11	0.8839	87.60	-12.34
2010-11	103.13	33.19	0.9891	104.27	19.03
2011-12	105.01	1.82	1.0362	101.34	-2.81
2012-13	104.07	-0.90	1.0214	101.89	0.54
2013-14	96.25	-7.51	0.9148	105.21	3.26
2014-15	53.63	-44.28	0.8300	64.61	-38.59
2015-16	42.28	-21.16	0.7250	58.32	-9.75
2016-17	51.36	21.48	0.7542	68.10	16.77
2017-18	62.66	22.00	0.7437	84.25	23.72
2018-19	61.82	-1.34	0.7319	84.47	0.25
2019-20	67.05	10.39	0.7445	90.06	6.62
2020-21	69.05	2.98	0.7464	92.51	2.72
2021-22	72.50	5.00	0.7498	96.69	4.52
2022-23	74.77	3.13	0.7566	98.82	2.20

Source: Energy Information Admin., Reserve Bank of Aust. & TransEco Estimates

Chart 3.2 Forecasts of Crude Oil in (AUD and USD per barrel)



3.2.1 DIESEL FUEL COSTS TO OPERATORS

In modelling diesel fuel costs to operators, the base data was derived from the Australian Petroleum Institute's Terminal Gate Price database, which provides wholesale prices excluding transport and retailers margins. It is estimated that between 6% and 7% of TGPS is to be added to arrive at the retail price or pump price. It is acknowledged that bulk deliveries and loyalty programs discounts are common in the market place, but no attempt has been made to include these in the analysis as they have little significance for forecasting purposes.

Table 3.3 and Figure 3.3 provide historical and forecast of diesel fuel costs to operators net of GST and Energy Grants Scheme. The determination of fuel tax credits is explained in detail in Appendix 3.

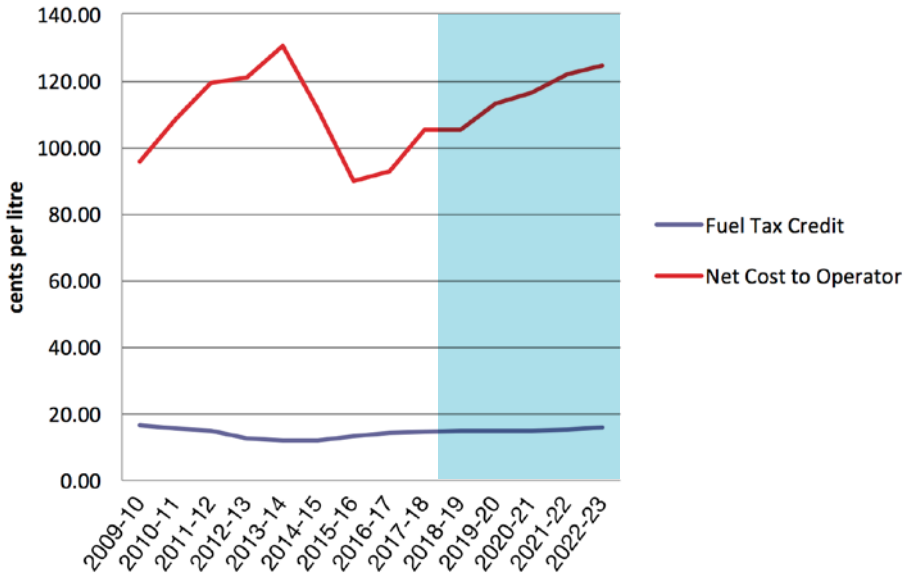
The table opposite shows that net cost to operators is expected to peak in 2022-23 to around the 125 cents per litre mark, an increase from 92.80 cents per litre in 2016-17. This increase is mainly due to higher forecast crude oil prices. The Australian Government has started to Index excise duty rates for most fuels every six months. The increases will be linked to movements in the Consumer Price Index (CPI). CPI forecasts are provided in Appendix 6.

Table 3.3: Forecasts of Net Diesel Fuel Costs (cents per litre)

	TGPS	% Change	Retail	Excl GST	Fuel Tax Credit	Net Cost to Operator	% Change
2005-06	125.67	19.46	133.21	121.10	18.51	102.59	23.80
2006-07	121.46	-3.35	128.75	117.04	18.51	98.53	-3.95
2007-08	141.20	16.25	149.67	136.07	18.51	117.56	19.31
2008-09	131.18	-7.10	139.05	126.41	17.14	109.27	-7.04
2009-10	116.45	-11.23	123.44	112.22	16.46	95.75	-12.37
2010-11	127.61	9.58	136.54	124.13	15.55	108.58	13.39
2011-12	138.14	8.25	147.81	134.37	15.01	119.36	9.93
2012-13	137.25	-0.64	146.86	133.51	12.64	120.87	1.26
2013-14	146.55	6.78	156.81	142.55	12.00	130.55	8.01
2014-15	126.99	-13.35	135.88	123.53	12.00	111.53	-14.57
2015-16	105.91	-16.60	113.32	103.02	13.15	89.87	-19.42
2016-17	109.98	3.84	117.68	106.98	14.18	92.80	3.26
2017-18	123.12	11.95	131.74	119.76	14.56	105.20	13.36
2018-19	123.43	0.25	132.07	120.06	14.77	105.29	0.008
2019-20	131.60	6.62	140.81	128.01	14.97	113.04	7.36
2020-21	135.18	2.72	144.64	131.49	15.06	116.43	3.00
2021-22	141.30	4.53	151.19	137.45	15.35	122.10	4.87
2022-23	144.41	2.20	154.52	140.47	15.94	124.53	1.99

Source: Australian Institute of Petroleum, NTC and TransEco Estimates

Chart 3.3 Forecast of Net Cost to Operator and Fuel Tax Credit



3.3 ALTERNATIVE FUELS & GOVERNMENT ASSISTANCE

In the US, Europe and Japan, alternative fuel engine technology is fast developing with a number of hybrid heavy commercial vehicles on offer. In addition, subsidies are on offer for Low Emission Vehicles (LEV). However, in general, the development of alternative fuels in Australia is at an embryonic stage. The Australian Government through its agency the Department of Industry, Innovation and Science is responsible to develop a framework whereby investment in alternative fuel infrastructure and related engine technologies can be forthcoming to the commercial vehicle fleet in Australia. There has been no inertia in developing an alternative transport fuel strategy by the current Coalition Government.

Other relevant work completed to date that may feed into the development of alternative fuel strategy is the modelling work completed by CSIRO, Possible Futures: Scenario Modelling of Australian Alternative Transport Fuels to 2050.

The final Energy White Paper was released late in 2012, however alternative fuels for transport market strategy is still being developed.

Engine makers around the world are making significant in-roads to alternative fuel engines. For instance, US based engine maker Cummins plans to manufacture spark-ignition natural gas engines with a heavy-duty 12-litre engine now and a 15 litre model in two or three years. The engines will work with compressed or liquefied natural gas or bio methane.

3.4 CARBON TAX IMPACT

Legislation concerning Carbon Pricing has been repealed by the Coalition Government in the second half of 2014.
Further discussion and analysis of the carbon economy outlook is provided in Chapter 9 of this report.

3.5 SUMMARY AND CONCLUSION

- In general, the price of oil will increase after the current price war ends in 2017-18. Estimates of global supply vary, but the average estimate of duration of the supply is a few decades with current usage patterns. However, due to diminishing marginal returns in global production, oil is continuously becoming more expensive to extract.
- It is clear that when the Australian dollar strengthens, the differential of oil prices in the two currencies narrows. Crude prices are forecast to peak in 2021-22 to AUD96.69 per barrel climbing significantly from 2016-17.
- The net cost to Australian road freight operators is expected to reach around the 125 cents per litre mark in 2022-23, an increase from 98.92 cent per litre in 2016-17. This increase is mainly due to higher forecast crude oil prices brought about by uncertainty of supply.
- The Australian Government indexes excise duty rates for most fuels every six months.
- The Australian Government has stalled in developing a framework whereby investment in alternative fuel infrastructure and related engine technologies can be forthcoming to the commercial vehicle fleet in Australia.

CHAPTER 4
VEHICLE TYRE COST OUTLOOK

4.1 NEW TYRE PRICES

With the last manufacturer in Australia of new tyres closing manufacturing facilities as of April 2010, Bridgestone has joined the other suppliers of road freight tyres as an importer and wholesaler. Total sales of new road freight tyres in Australia are estimated to have been around the $524 million mark in 2016-17.

As all new tyres are imported, the price of tyres and therefore costs to the road freight industry are primarily determined by offshore production costs, landing costs and exchange rates. Offshore production costs are mainly determined by raw material and labour input prices. Landing costs are mainly associated with shipping and distribution costs. The influence on price by the relative strength of the Australian dollar is significant as rubber prices have accelerated recently leading to higher production costs, but the past strong Australian dollar had diluted the impact of increases in production costs on road freight operators in Australia. The high rubber price was due to adverse climatic conditions in Thailand (one-third of world production), which made production and collection of latex difficult. However, rubber prices have been increasing in the last 2 years, when it increased from 72.78 US cents per pound In October 2016 to 122.99 US cents per pound in February 2017.

Over the next five years, global rubber consumption is projected to be moderate. As economic growth slows in China, demand for tyres and other products will slow, leading to stagnant demand for rubber. Poor economic growth in Europe will further constrain demand for rubber. Additionally, crude oil prices are not forecast to increase rapidly owing to oversupply, which will limit synthetic rubber price growth during the period. As a result, there will be minimal upward pressure on natural rubber prices.

The most relevant exchange rate indicator for tyre imports from varying sources around the world is the Trade Weighted Index (TWI). The TWI represents the value of the Australian dollar (AUD) compared to a basket of 16 currencies of Australia's major trading partners. The index is weighted according to the share of trade conducted with each country. As of 1 December 2017 the five largest weights are for the Chinese Renminbi (27.5%), the Japanese Yen (10.7%), the Euro (9.8%), the US dollar (10.3%) and the South Korean Won (5.4%). The main drivers of the exchange rates are Australian terms of trade and interest rates. Relatively medium growth is forecast for the Australian Economy over the next five years with GDP expected to grow at an average rate of 2.7% leading to weaker inflationary pressure on the economy, which would consequently lead to lower interest rates and therefore making the AUD less attractive to currency investors. Over the five years to 2022-23, it is expected that the Australian dollar will increase at an annualised rate of 0.2% in trade weighted terms, to reach around 65.0. Detailed analysis of TWI forecast is provided in appendix 4.

Tyre prices for shorthaul and linehaul segments of the road freight industry differ owing to differing designs to withstand specific freight tasks. Larger tyres are required for heavy long haul vehicles, which have higher raw material content. As a consequence, prices of these types of tyres are more sensitive to movement in prices of raw material such as rubber and crude oil, compared to smaller tyres used on Rigid Trucks and Vans that constitute the majority of the short haul fleet.

The influx of cheap imports from China will have little impact on the price of tyres for long distance applications as these tyres have no resale value and are not appropriate for rethreading. Furthermore, the lack of distribution centres around Australia tends to discourage long distance fleets in using these tyres. However, in the short haul segment, these tyres are expected to become more prominent over the forecast period.

There are approximately 51 million equivalent passenger units (EPUs) that reach end-of-life in Australia annually. Their proper disposal has become a community and environmental issue. In 2015, the Tyre Stewardship Australia was formed to provide accreditation to participants in the disposal of these end-of-life tyres.

Tyres are engineered to be extremely robust and therefore require costly processes to reduce to their constituent components. Disposal costs are sometimes incorporated into the price of a new tyre and this is at the discretion of individual retailers. Participation in the Tyre Product Stewardship Scheme allows companies in the tyre supply chain to meet their environmental responsibility relating to end-of-life tyres and to transparently pass-on the cost of participation to the end consumer through a minimal charge.

Table 4.1 provides forecasts of new tyre prices for the linehaul segment, while Table 4.2 provides forecasts of new tyre prices for the shorthaul segment. All values are expressed as indices with 2010-11=100 as a base.

Table 4.1 Forecasts of New Tyre Prices Linehaul (2010-11=100)

Year	Index	% Change
2005-06	85.95	3.41
2006-07	88.52	2.99
2007-08	91.75	3.64
2008-09	94.94	3.48
2009-10	97.09	2.26
2010-11	100.00	3.00
2011-12	107.10	7.10
2012-13	109.35	2.10
2013-14	113.50	3.80
2014-15	115.56	1.81
2015-16	118.45	2.50
2016-17	121.29	2.40
2017-18	126.02	3.90
2018-19	128.04	1.60
2019-20	132.39	3.40
2020-21	136.03	2.75
2021-22	140.25	3.10
2022-23	144.39	2.95

Source: TransEco Estimates

The table above indicates that tyre prices in linehaul applications are expected to increase at an annualised rate of 2.76 per cent over the forecast period 2018-19 to 2022-23.
Chart 4.1 Percentage Change New Tyre Prices Linehaul

Chart 4.1 Percentage Change New Tyre Prices Linehaul

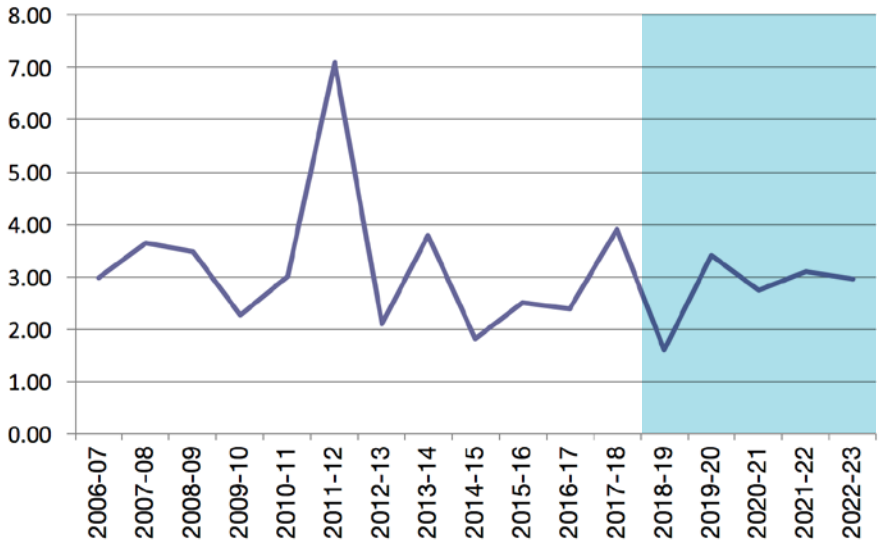


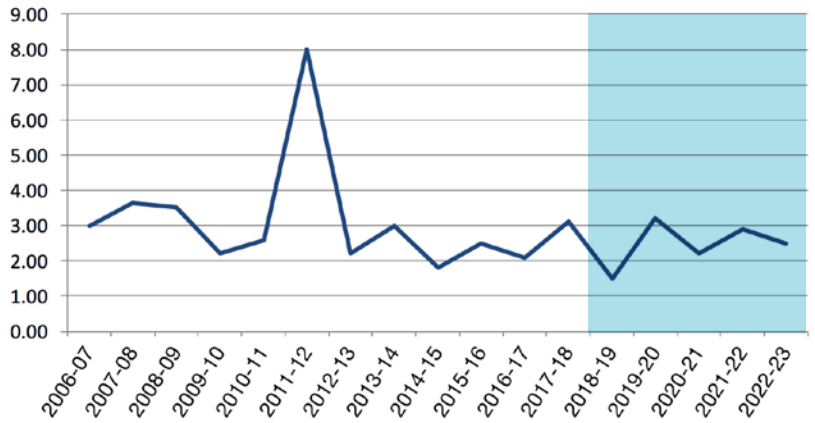
Table 4.2 Forecasts of New Tyre Prices Shorthaul (2010-11=100)

Year	Index	% Change
2005-06	86.32	3.42
2006-07	88.89	2.98
2007-08	92.12	3.64
2008-09	95.36	3.51
2009-10	97.47	2.21
2010-11	100.00	2.60
2011-12	108.00	8.00
2012-13	110.38	2.20
2013-14	113.69	3.00
2014-15	115.75	1.81
2015-16	118.64	2.50
2016-17	121.13	2.10
2017-18	124.89	3.10
2018-19	126.76	1.50
2019-20	130.81	3.20
2020-21	133.69	2.20
2021-22	137.57	2.90
2022-23	141.01	2.50

Source: TransEco Estimates

Table 4.2 indicates that tyre prices in shorthaul applications are expected to increase at an annualised rate of 2.46 per cent over the forecast period 2018-19 to 2022-23.

Chart 4.2 Percentage Change New Tyre Prices Shorthaul



4.2 USED AND RECAPPED TYRE PRICES

There are a small number of used tyres imported for commercial vehicle utilisation and the trend in importation of used tyres for commercial road vehicles has been on the decline and this trend is expected to continue in the next five years. The main reason for this is the perceived safety risks involved in using a used tyre.

In contrast, the recapped tyre industry, which is estimated to be worth $75 million in 2016-17, is expected to grow significantly. The driver of this growth is expected to be the total cost outlook for road freight activity in Australia. Operators, especially of small to medium size will be looking to curtail costs other than labour and fuel; and prices of recapped tyres are a fraction of new tyre prices.

Although the prices of recapped tyres are much lower than new tyres, the forecast of price movements in the rethread market is expected to mirror those of new tyres owing to it being a derived demand. In other word, a recap is only possible once on a new tyre.

4.3 SUMMARY AND CONCLUSION

- All new tyres are currently imported and owing to high cost of barriers to entry, TransEco expects no new tyre manufacturer to be established over the forecast period to 2022-23.
- Major factors impacting on the price of new tyres are raw material, labour inputs, trade logistics capacity and the strength of the Australian dollar relative to currencies of Australian trading partners as compiled into the Trade Weighted Index.
- Over the forecast period, tyre prices for linehaul applications are expected to rise by an annualised rate of 2.76%, while tyre prices for shorthaul applications to rise by an average of 2.46% per annum over the same period.
- Movements in the prices of recapped tyres are expected to mirror those of new tyres. Participation in the Tyre Product Stewardship Scheme allows companies in the tyre supply chain to meet their environmental responsibility relating to end-of-life tyres and to transparently pass-on the cost of participation to the end consumer through a minimal charge.
- The influx of cheap imports from China will have little impact on the price of tyres for long distance applications as these tyres have no resale value and are not appropriate for re-threading. Furthermore, the lack of distribution centres around Australia tends to discourage long distance fleets in using these tyres.

CHAPTER 5:
VEHICLE MAINTENANCE COST OUTLOOK

5.1 MAINTENANCE LABOUR RELATED

It is believed that 60 per cent of maintenance related costs is attributable to wages for both linehaul and shorthaul operations. Wages in the service and repair section grew at a slower rate than average weekly earnings for most of the past decade. While wage growth remains subdued, it is expected to strengthen as growth in the economy picks up to an above-potential pace and spare capacity in the labour market is absorbed. In its May 2018 Federal Budget Statement, the Federal Government expects the Wage Price Index to increase to 2.75 per cent in 2018-19 and then to a further 3.75 percent in 2019-20.

Vehicle maintenance can be a labour-intensive task; however, the use of part-time employees has significantly reduced the overall wage cost. Apprentice mechanics also tend to lower the average industry wage. Many firms will though require quality staff and these experienced technicians will often be employed on a full-time basis which adds to costs.

Remote diagnostics and vehicle telematics are a growing area of innovation within the commercial vehicle maintenance industry. Telematics is the combination of telecommunications and informatics. When it comes to motor vehicles, telematics refers to the technology used to facilitate the retrieval of electronic data from a vehicle. The technology allows mechanics and auto electricians to know exactly what the defect is in a vehicle, thereby turning around the vehicle from repair with greater haste and results are more accurate. Auto mechanics are expected to increasingly embrace this technology, although added costs in equipment and training would be required.

Demand from road freight transport segment consists mainly of vehicles older than 5 years as most new trucks are increasingly purchased with a contract to provide maintenance services by manufacturers. This is a constant segment for automotive repair companies and is expected to observe a rise in market share in the near future.

Economic conditions in Australia and worldwide will be the main drivers of the overall wage, which is ultimately determined by supply and demand for labour.

5.2 VEHICLE PARTS RELATED

It is believed that 40 per cent of maintenance related costs is attributable to the price of soft and hard parts for both linehaul and shorthaul operations. Around 40 per cent of all parts sold are imported and therefore their prices are also determined by currency exchange rate factors. In modelling vehicle parts prices, the Trade Weighted Index (TWI) was utilised as a proxy for the exchange rate. The TWI represents the value of the Australian dollar (AUD) compared to a basket of 16 currencies of Australia's major trading partners. The price for parts is determined by demand factors such as road freight activity (tonne-kilometres travelled) and the number of commercial vehicles on register. In general, prices of parts for the linehaul segment (heavier and longer vehicles) are higher than prices of parts for the shorthaul segment.

Prices of domestically manufactured parts are influenced by domestic labour market and purchases of raw materials. Costs of both these inputs are expected to rise over the forecast period, therefore adding to the cost of vehicle maintenance.

There seems to be growing price parity between domestically manufactured parts and imported parts. However, the relative strength of the Australian dollar does influence the price of imports. Over the five years to 2022-23, the TWI is expected to rise from 63.70 in 2018-19 to 65.10 in 2022-23 increasing at an annualised rate of 0.25% per annum.

Table 5.1 provides information on vehicle maintenance cost indices operating in the linehaul segment and indicates that maintenance costs are expected to rise at an annualised rate of 3.74 per cent over the five year forecast period.

Table 5.1 Road Freight Maintenance Linehaul Cost Index 2010-11=100

Year	Indices	% Change
2005-06	85.95	3.41
2006-07	88.52	2.99
2007-08	91.75	3.64
2008-09	94.94	3.48
2009-10	97.09	2.26
2010-11	100.00	3.00
2011-12	107.10	7.10
2012-13	109.35	2.10
2013-14	113.50	3.80
2014-15	112.41	2.10
2015-16	116.46	3.60
2016-17	121.12	4.00
2017-18	124.63	2.90
2018-19	129.49	3.90
2019-20	134.02	3.50
2020-21	139.12	3.80
2021-22	144.68	4.00
2022-23	149.75	3.50

Source: TransEco Estimates

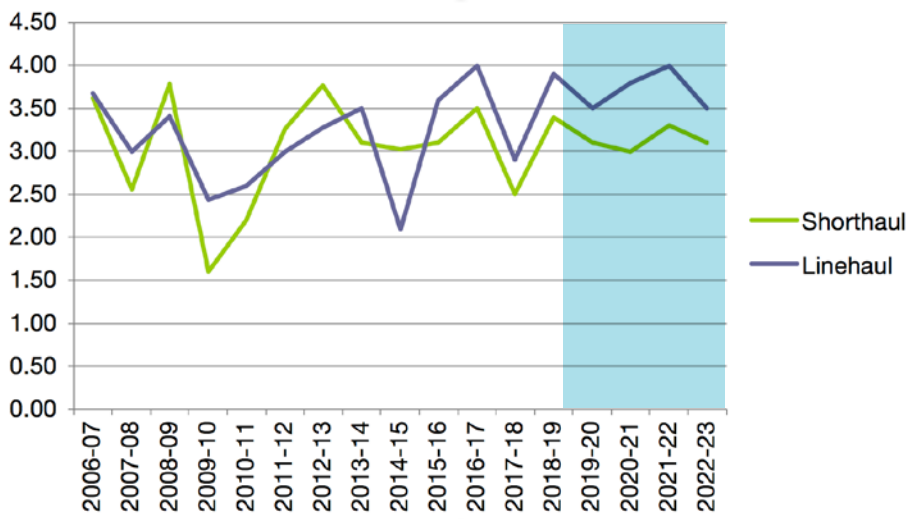
Table 5.2 provides information on vehicle maintenance cost indices operating in the shorthaul segment and indicates that maintenance costs are expected to rise at an annualised rate of 3.18 per cent over the five year forecast period.

Table 5.2 Road Freight Maintenance Shorthaul
Cost Index 2010-11=100

Year	Indices	% Change
2004-05	83.46	3.39
2005-06	86.32	3.42
2006-07	88.89	2.98
2007-08	92.12	3.64
2008-09	95.36	3.51
2009-10	97.47	2.21
2010-11	100.00	2.60
2011-12	103.26	3.26
2012-13	107.15	3.77
2013-14	110.47	3.10
2014-15	113.81	3.02
2015-16	117.34	3.10
2016-17	121.45	3.50
2017-18	124.48	2.50
2018-19	128.71	3.40
2019-20	132.70	3.10
2020-21	136.69	3.00
2021-22	141.20	3.30
2022-23	145.57	3.10

Source: TransEco Estimates

Chart 5.1 Percentage change for linehaul and shorthaul



5.3 VEHICLE RELATED COMPLIANCE COSTS

Motor vehicles are a significant contributor to urban air pollution and noise in major cities. To date, the principal measure used in Australia for reducing vehicle emissions and noise has been the introduction of tighter emission standards for new vehicles through the Australian design Rules (ADRs). ADRs set the standards that each vehicle model is required to meet, prior to their first supply to the market. In the environmental context, the ADRs set standards for emissions, noise and fuel consumption labelling. Australia has a commitment to harmonise with the vehicle standards developed by the UN Economic Commission for Europe (UN ECE) wherever possible. The emission standards now in place reflect that commitment.

The development of emission standards for highway vehicles and engines is coordinated by the National Transport Commission (NTC). The Regulations (ADRs) are administered by the Department of Transport and Regional Services. It is to be noted that the emission performance of vehicles once they are on the road (in-service) is the responsibility of the State and Territory Governments. Australian emission standards for heavy vehicles are based on European regulations, with the acceptance of selected US and Japanese standards. For instance, all new diesel powered commercial vehicles with gross vehicle mass of more than 3.5 tonnes from 1 January 2011 had to abide by Euro 5 or US07, JE05 standards.

A smoke emission ADR (ADR30/01) also applies to all categories of diesel vehicles. Further compliance is required through ADR 80/02 that requires heavy-duty vehicles to have on board diagnostics (OBD) systems meeting the Euro 4 (or Japanese) requirements to warn against functional failures. ADR 80/03 requires vehicles to have OBD systems meeting the Euro 5 requirements to directly monitor emission levels against set OBD thresholds. In addition the new emission requirement are synchronised with new diesel fuel specifications of reduced sulphur content such as 10 ppm sulphur effective from 1 January 2009.

The above provides some evidence of the operating conditions of suppliers of road freight services. This regulatory compliance attracts additional costs that have to be absorbed within a competitive market. TransEco modelling indicates that compliance to emission regulations have added nearly 0.5 cents per kilometre to the cost of operating a B-Double rig between Melbourne and Sydney as of 1 January 2011.

In November 2012, the Federal Government through its Department of Infrastructure and Transport is considering the merits of introducing a new ADR 80/04, based on Euro VI standards for heavy vehicles, subject to a formal assessment of the costs and benefits via a Regulation Impact Statement. To allow manufacturers greater flexibility, while delivering similar air quality outcomes, the equivalent European Commission Regulations 595/2009 and 582/2011, along with the US EPA 2010 and Japanese Post New Long Term 2009 standards could also be considered as suitable alternative standards, consistent with the approach used in previous emission standards for heavy vehicles. The Feds believe that a suitable time for implementation could be by year 2020.

A periodical blitz on heavy vehicle safety in Victoria in 2017 by regulators and enforcers found that just under 80 per cent of vehicles inspected were defective, mostly concerning defective braking systems. It is TransEco's conjecture that no operator seeks to operate defective vehicles knowingly. However, given commercial reality such as freight rates growing at a slower rate than costs, leads to postponement of maintenance schedules and thus defective vehicles. It is up to road freight operators to negotiate realistic rates with shippers, with the latter enjoying stronger bargaining power due to the low barriers to entry into the road freight industry.

It is most likely, that there will be further requirement to comply with regulations in the future as the community as a whole demands safe and environment friendly road freight services.

5.4 SUMMARY AND CONCLUSION

- Major cost components of maintenance are price of labour and price of parts, with 40 per cent of parts being imported and whose price is subject to the strength of the Australian dollar relative to its main trading partners.
- Vehicle Maintenance costs in the linehaul road freight segment are expected to rise at an annualised rate of 3.74 per cent over the forecast period.
- Vehicle Maintenance costs in the shorthaul road freight segment are expected to rise at an annualised rate of 3.18 per cent over the forecast period.
- Compliance to emission regulations cost B-Double operators between Melbourne and Sydney approximately 0.5cents per kilometre as of 1 January 2011.
- It is likely that the Federal Government will introduce Euro VI and equivalent standards for emission controls on heavy vehicle operations by 2020.

ROWING INTEREST RATES

Movements in interest rates play a significant role in determining capital costs for a road transport operator as most purchases of mobile equipment such as trucks and trailers are debt funded; and along with depreciation constitute total vehicle capital costs.

The three year fixed interest rate for loans to small businesses is an appropriate indicator of movements in interest rates. When interest rates are on the rise, loan repayments increase and therefore increase vehicle capital costs. It is acknowledged there are instances of leasing vehicles rather than purchasing; however for the purpose of forecasting it is assumed that vehicles are purchased through debt funding.

Table 6.1 provides historical and forecast data on lending rates reported as a percentage and real GDP growth as a general indicator of the strength of the Australian economy over time. There is a strong correlation between general economic activity and three year fixed lending rate to small businesses. Real GDP is expected to increase by a rate of 2.66% per annum over the forecast period to 2022-23.Accommodative monetary policy settings remain and are continuing to support key areas of the economy. The official cash rate remains at a historic low and has now been stable for the longest period in Australia's history. In line with the stable cash rate, the three year fixed interest rate for small businesses loans is not expected to be volatile in the near future.

While Australian government debt is expected to remain manageable over the outlook period, the global nature of the banking system means that higher rates internationally will result in higher rates domestically. This is due to the fact that domestic banks source a proportion of funding from foreign sources. Toward the end of the outlook period, economic growth is forecast to slow as major Asian trading partners, notably China, face heavy inflationary pressures and decreased capital expenditure. Funding costs for banks are thus predicted to climb as offshore credit becomes more expensive.

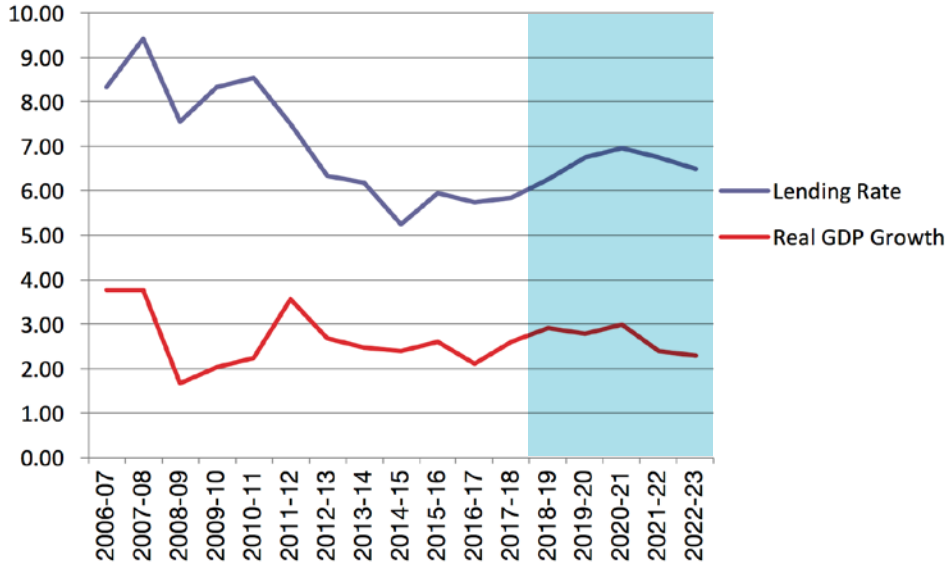
Risk margins are predicted to be higher as perceived defaults on small business borrowings increase toward the end of the outlook period. A higher cash rate is also anticipated to result in higher business rates during the last two years of the forecast period. It is forecast that three year fixed business loan rate will increase by an average of 0.13 percentage points per year to 6.50% in 2022-23. As a consequence, there would be an upward pressure on vehicle capital costs in the road freight transport industry in Australia.

Table 6.1: Three Year Fixed Lending Rates for Small Businesses

Year	Lending Rate	Absolute Change	Real v Growth
2005-06	7.66	0.08	3.92
2006-07	8.34	0.68	3.77
2007-08	9.41	1.07	3.77
2008-09	7.56	-1.85	1.66
2009-10	8.34	0.78	2.02
2010-11	8.53	0.19	2.24
2011-12	7.51	-1.02	3.57
2012-13	6.33	-1.18	2.67
2013-14	6.18	-0.15	2.46
2014-15	5.25	-0.93	2.39
2015-16	5.95	0.70	2.55
2016-17	5.75	-0.20	2.10
2017-18	5.85	0.10	2.61
2018-19	6.25	0.40	2.90
2019-20	6.75	0.50	2.79
2020-21	6.95	0.20	3.00
2021-22	6.75	-0.20	2.40
2022-23	6.50	-0.25	2.30

Source: RBA, ABS and TransEco Estimates

Chart 6.1 Percentage change in GDP and Absolute Change in Lending Rates



6.2 VEHICLE PRICES OUTLOOK

- Nearly eighty per cent of commercial vehicles sold in Australia are imported; and as a consequence the price of new vehicles is influenced by strength of the Australian dollar. The Australian dollar is forecast to remain stable in the next five years, which will help keep imported commercial trucks price movements relatively low. Additionally, relatively low tariff levels and a growing number of free trade agreements are expected to provide wholesalers with the impetus to introduce a number of new imported models, especially in the light commercial vehicle market. However, price competition between comparable models is expected to intensify as distributors fight for market share over the next five years.

- Prices are also influenced by compliance to regulations. For instance, demand in 2009-10 for commercial vehicles was driven by the anticipated commencement of Australian Design rule (ADR) 80/03, which took effect for all new models from 1 January 2010 and all models on 1 January 2011. New design rules generally means higher price trucks. As a result, trucking firms often purchase trucks prior to the commencement of a new rule to avoid paying higher for compliant trucks; thus contributing to pent-up demand. On the other hand, the introduction of new more fuel-efficient models will promote some sales in the replacement market, as they will suit companies with older fleets.

- The trailer and vehicle body market is less reliant on imports and prices of its products are mainly influenced by cost of raw material such as steel and aluminium.

- The other component of vehicle capital costs is the depreciation regime on prices paid for new commercial vehicles.

6.3 VEHICLE CAPITAL COSTS

Table 6.2 provides vehicle capital cost forecast for shorthaul operations. It shows that capital costs on average are expected to increase on average by 1.84 per cent annually over the next five years to 2022-23.

Similarly, Table 6.3 provides vehicle capital cost forecast for linehaul operations and indicates that on an annualised basis, capital costs are expected to increase at an average rate of 2.66 per cent for each year to 2022-23.

Table 6.2: Vehicle Capital Costs Forecasts (Shorthaul 2010-11=100.00)

Year	Index	% Change
2005-06	91.16	3.26
2006-07	93.74	2.83
2007-08	95.27	1.64
2008-09	97.63	2.47
2009-10	98.91	1.32
2010-11	100.00	1.10
2011-12	100.50	0.50
2012-13	102.97	2.46
2013-14	104.16	1.15
2014-15	107.04	2.77
2015-16	109.45	2.25
2016-17	111.47	1.85
2017-18	112.78	1.17
2018-19	114.92	1.90
2019-20	117.34	2.10
2020-21	119.62	1.95
2021-22	122.14	2.10
2022-23	124.58	2.00

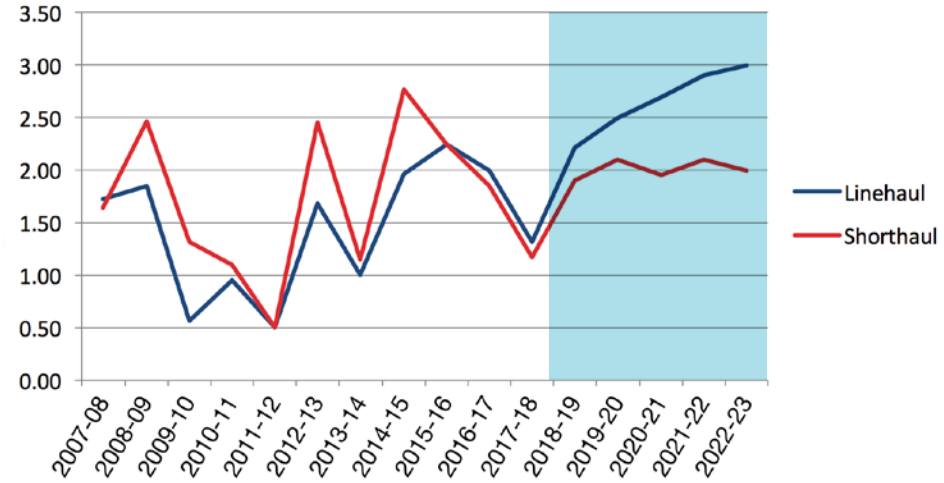
Source: TransEco Estimates

Table 6.3: Vehicle Capital Costs Forecasts (Linehaul 2010-11=100.00)

Year	Index	% Change
2005-06	91.64	3.44
2006-07	95.07	3.74
2007-08	96.71	1.73
2008-09	98.50	1.85
2009-10	99.06	0.56
2010-11	100.00	0.95
2011-12	100.50	0.50
2012-13	102.19	1.68
2013-14	103.21	1.01
2014-15	105.23	1.96
2015-16	107.60	2.25
2016-17	109.75	2.00
2017-18	111.20	1.32
2018-19	113.67	2.22
2019-20	116.51	2.50
2020-21	119.66	2.50
2021-22	123.13	2.90
2022-23	126.82	3.00

Source: TransEco Estimates

Chart 6.2 Percentage Change in Vehicle Capital Costs for Linehaul and Shorthaul



6.4 SUMMARY AND CONCLUSIONS

- Movements in interest rates play a significant role in determining capital costs for a road transport operator as most purchases of mobile equipment such as trucks and trailers are debt funded; and along with depreciation constitute total vehicle capital costs.
- The relatively lower interest rate regime over the outlook period will contribute to dampen Increases in capital costs of road freight mobile equipment.
- Eighty per cent of commercial vehicles sold in Australia are imported, and as a consequence the price of new vehicles is subject to movements in exchange rates.
- The trailer and motor vehicle body market is less reliant on imports and prices of its products are mainly influenced by cost of raw material such as steel and aluminium.
- Over the outlook period to 2022-23 vehicles related capital costs are expected to rise by an average annualised rate of 1.84 per cent for shorthaul and 2.66 per cent for linehaul.

CHAPTER 7:
MOTOR VEHICLE INSURANCE COST OUTLOOK

7.1 DETERMINANTS AND TRENDS

There are number of key determinants that influence the cost of insurance and these include: total number of commercial vehicles on register and utilisation; interest rate movements; natural disasters; and legislative compliance requirements for general insurance.

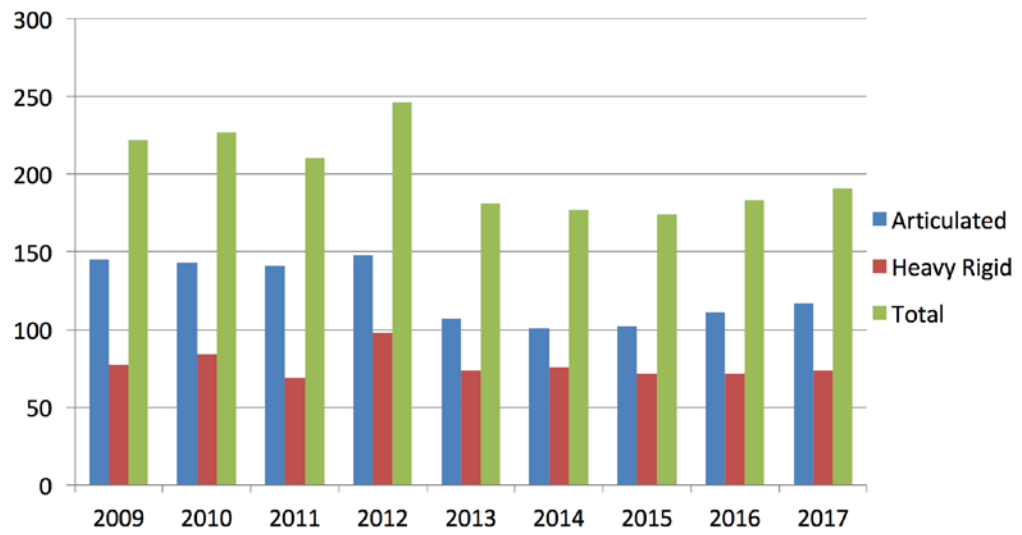
Demand for commercial motor vehicle insurance depends on the number of vehicles registered and their aggregate value. During economic downturns, growth in vehicle registrations will tend to be slow as vehicle spare capacity increases. Year on year increases in aggregate value of commercial vehicles will also tend to shrink as trucking companies defer motor vehicle purchases. Another factor that impinges on the cost of insurance is the rate of utilisation of vehicles. In the case of high vehicle utilisation the cost of insurance premiums increase more than the rate of utilisation. The number of commercial vehicle accidents in any given period is also a determinant of the size of insurance premiums. Statistics of fatal accidents involving trucks is provided as a proxy for accidents and is provided in table 7.1 and indicates a strong correlation between accidents and insurance costs.

Table 7.1: Number of Fatal Crashes Involving Heavy Trucks

Financial Year	Articulated	Heavy Rigid	Total	% Change
2005	155	88	243	
2006	170	80	250	2.88
2007	182	85	267	6.80
2008	149	93	242	--9.36
2009	145	77	222	-8.26
2010	143	84	227	2.25
2011	141	69	210	-7.49
2012	148	98	246	17.14
2013	107	74	181	-26.42
2014	101	76	177	-2.21
2015	102	72	174	-1.69
2016	111	72	183	5.20
2017	117	74	191	4.37

Source: DOTAR

Chart 7.1 Fatal Crashes Involving Heavy Trucks



Interest rate movements influence investment revenue and demand. High interest rates enable insurers to generate more investment income from new bonds, but they often precede an economic slowdown.

General insurers provide coverage to businesses and households for catastrophic natural disasters. Insurers' profitability depends on the frequency and severity of these unanticipated events. Climate change is increasing the frequency and severity of natural catastrophes.

The regulatory burden on motor vehicle insurers is heavy and much of it concerns capital adequacy requirements. Any increase in the amount of capital required per premium will limit the industry's ability to underwrite new insurance business. Similarly, an increase in regulatory compliance requirements will generally raise compliance costs and ultimately result in increased prices for services rendered.

General insurers entered the last five-year period in the middle of an intensifying price war, and it seemed the soft market conditions would persist for some time as strengthening investment conditions supported the industry's surplus capital position. However, as prices reached long-term lows, high catastrophic losses combined with the arrival of the global financial crisis battered the industry's exposed bottom line. Two years of poor profitability eroded the industry's capital surplus, constraining underwriting capacity. At the same time, turmoil in the global reinsurance market meant Australia's general insurers faced higher reinsurance prices.

With the financial crisis deeply setting back the industry in terms of profitability and its ability to generate revenue from investments, the case for premium price rises quickly materialised. Further adding to the need for price rises was the increase in catastrophic losses incurred. Prices were the lowest in 2007-08, when investment income plunged combined with relatively high claims, which saw the industry's combined ratio edge closer to 100%. In 2008-09, the combined ratio continued to climb, exceeding 100%. This meant that the industry had incurred a loss from underwriting activities, as insurers paid out more in benefits than they received in premium revenue. This further built the case for the need to increase premium prices. The 2009-10 financial year saw prices edge higher, claims expenses came down and investment income grew as the Australian economy began its recovery. This helped the industry push the combined ratio back down below 100%.

Tables 7.2 and 7.3 provide forecasts of vehicle insurance in the shorthaul and linehaul markets respectively.

According to data sourced from the Insurance Council of Australia, total insured losses stemming from natural disasters rose significantly in calendar 2017. Most of the damage incurred was by Cyclone Debbie that hit Queensland and affected New South Wales in March 2017.

Due to the inherent unpredictable nature of natural disasters, it is impossible to forecast individual incidents over a five year outlook period. However based on the rising trend of insured assets, it is believed that the cumulative cost of damage associated with natural disasters to approximate $10 billion over the next five years. Various levels of government across Australia are expected to invest in several initiatives to reduce the effects of natural disasters and mitigate any major losses, as the severity and frequency of natural disasters continue to rise due to global warming and climate change.

Table 7.2 Shorthaul Vehicle Insurance Cost Index Forecast (2010-11=100)

Year	Index	% Change
2005-06	99.78	4.06
2006-07	103.83	4.06
2007-08	97.34	-6.25
2008-09	95.51	-1.88
2009-10	99.50	4.18
2010-11	100.00	0.50
2011-12	107.00	7.00
2012-13	114.13	6.66
2013-14	119.26	4.50
2014-15	123.79	3.80
2015-16	129.36	4.50
2016-17	133.89	3.50
2017-18	134.16	0.20
2018-19	138.32	3.10
2019-20	142.47	3.00
2020-21	146.46	2.80
2021-22	148.65	1.50
2022-23	152.37	2.50

Source: TransEco Estimates

Chart 7.2 Percentage Change of Shorthaul Vehicle Insurance Cost

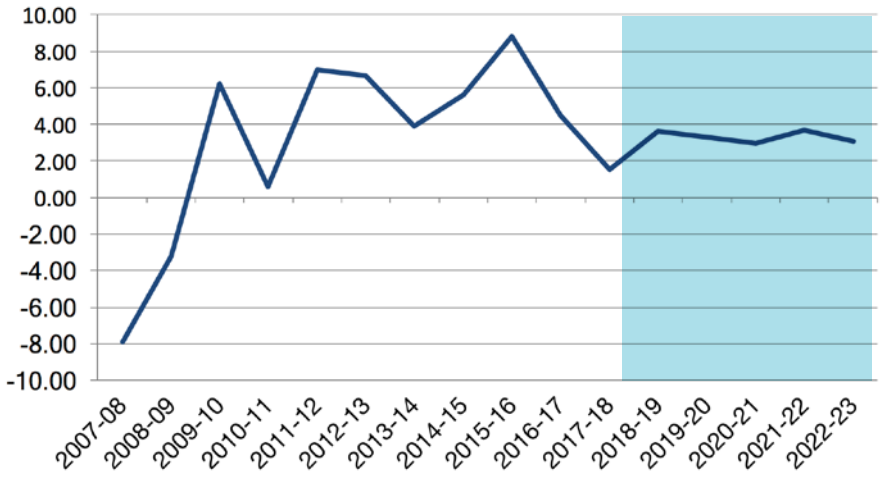
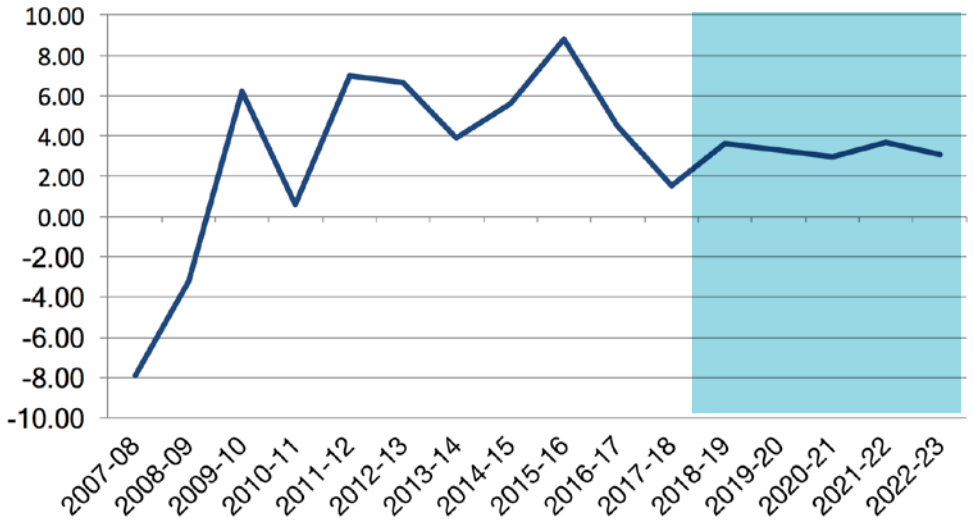


Table 7.3 Linehaul Vehicle Insurance Cost Index Forecast (2010-11=100)

Year	Index	% Change
2005-06	99.88	5.09
2006-07	104.97	5.10
2007-08	96.66	-7.92
2008-09	93.57	-3.20
2009-10	99.40	6.24
2010-11	100.00	0.60
2011-12	107.00	7.00
2012-13	114.10	6.64
2013-14	118.55	3.90
2014-15	125.19	5.60
2015-16	136.21	8.80
2016-17	142.34	4.50
2017-18	144.55	1.55
2018-19	149.75	3.60
2019-20	154.69	3.30
2020-21	159.27	2.96
2021-22	165.16	3.70
2022-23	170.28	3.10

Source: TransEco Estimates

Chart 7.3 Percentage Change of Linehaul Vehicle Insurance Cost



7.2 COMPULSORY THIRD PARTY (CTP)

In each state, except for New South Wales, Queensland and the Australian Capital Territory, CTP is underwritten by the respective state government. In the privately underwritten states, insurance is underwritten through a scheme under the supervision of a government entity. In States where CTP business is controlled by the public sector, there is an expectation that this business will be transferred to the private sector over the next three years. This has significant implications on the road freight industry as private insurers are usually general insurers and the risk taken is usually shared across the economy. Therefore, the CTP is expected to rise in line with other general insurance products, once all states and territories have privately underwritten insurers. It all also means that movement in CTP would not be immune to effects of natural disasters such as floods and earthquakes. Public insurers account for about 48 per cent of CTP motor vehicle insurances.

7.3 SUMMARY AND CONCLUSION

- Key determinants that influence the cost of commercial motor vehicle insurance include: total number of commercial vehicles on register and utilisation; interest rate movements; natural disasters; and legislative compliance requirements for general insurance.
- Commercial vehicle insurance premiums are expected to keep rising throughout the outlook period to 2022-23.
- Shorthaul vehicle insurance costs are expected to increase by an annualised rate of 2.6% over the next five years; while linehaul vehicle costs are expected to expand by 3.3% per annum over the same period.
- Over the next three years, the compulsory third party (CTP) premiums are expected to rise as all states and territories offer privatised CTP underwriting.
- Due to the inherent unpredictable nature of natural disasters, it is impossible to forecast individual incidents over a five year outlook period. However based on the rising trend of insured assets, it is believed that the cumulative cost of damage associated with natural disasters to approximate $10 billion over the next five years.

CHAPTER 8:
VEHICLE REGISTRATION COST OUTLOOK

8.1: HEAVY VEHICLE CHARGES DETERMINATION

All heavy vehicles in Australia are charged an annual registration fee and a road user charge (RUC) levied on each litre of diesel fuel. These charges are determined according to a charging framework known as PAYGO. The primary objective of this 'user pays' principle is to efficiently recover the cost of providing and maintaining the road network.

In November 2012 the Standing Council on Transport and Infrastructure (SCOTI) directed the National Transport Commission (NTC) to review the heavy vehicle charging system and complete a new determination that recommends heavy vehicle charges based on the findings and recommendations of the completed review.

At its May 2013 meeting, SCOTI endorsed NTC proceeding with a determination on the basis of the review recommendations, with one of the key recommendations being to include options for raising the RUC above its current level of 62.0% (38% from registration charges).

Heavy vehicle registration charges are automatically adjusted each year by the annual adjustment factor under regulations and laws in each state and territory. The NTC uses an economic formula (the annual adjustment formula) as documented in the Model Heavy Vehicle Charges Act 2007 (as amended) to determine the annual adjustment factor. This formula takes into account changes in road expenditure and changes in heavy vehicle road use to determine the extent of the price changes.

The road expenditure factor (REF) reflects the change in expenditure across the four different road types: rural arterial, urban arterial, rural local and urban local. Arterial expenditure relates to state/territory expenditure, while local expenditure refers to local government expenditure. Federal government grants such as the Building Australia Fund road projects are included in both these categories. Arterial road expenditure data is sourced directly from States and Territories utilising NTC template and local road expenditure is sourced from the Australian Bureau of Statistics (ABS). In addition in calculating the changes in road expenditure, seven year moving average results is used to compute the charges.

The road user data used to derive the total value of registration and road user charge revenue is obtained from the Australian Bureau of Statistics' Survey of Motor Vehicle Use (SMVU series) using annual survey data provided to the NTC by heavy vehicle class. The exception is data on trailer numbers, which are based on NTC estimates using SMVU vehicle type data as a foundation.

In preparing the annual adjustment the NTC makes sure that two key principles are met as set by COAG in April 2007 and these are as follows:

There is ongoing cost recovery.
a. No cross-subsidies between vehicle classes arise over time.

b. NTC conducts a validation analysis process of total cost recovery and during this process takes into account structural changes in road operators' behaviour (such as road train operations) and reacts accordingly.

In its 2013 review of charges and determination, the NTC addressed the limitation of the current PAYGO system by improving methodology and integrity of datasets. The following changes were significant:

a. The adoption of an exponential moving average of nominal expenditure over seven years (as against simple seven year moving average);

b. The review concluded that an up-to-date vehicle number data set was required and opted to use actual registration data supplied by jurisdictions;

c. While the NTC methodology seems robust enough to model registration charges based on road expenditure and vehicle usage patterns, TransEco believes that road expenditure

itself may not be derived from efficient road construction and maintenance regimes. Any inefficiency in the road construction and maintenance expenditure would lead to the road freight industry being overcharged in registration fees. To this regard, the NTC proposes audits and benchmarking processes later in 2015;

d. The adoption of an axle grouping charges for all trailer axles so as to calculate charges for articulated trailers;

e. In estimating relative levels of pavement wear, the NTC proposes the use of modular ESAs for the purposes of calculating heavy vehicle charges.

f. The adoption of the dynamic annual adjustment formula for future annual adjustments of heavy vehicle charges.

Table 8.1 provides outlook of registration charges of selected vehicles (6 axle articulated and 9 axle B-double).

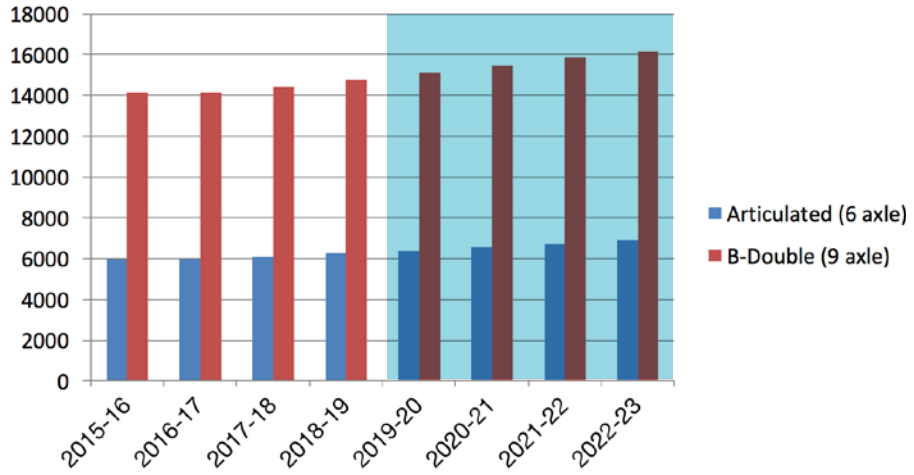
The high registration charges on B-Doubles in the recent past, have been due to the removal of subsidy for B-Double configurations over three years from 2008. The subsidy was first applied to encourage the use of B-Doubles, and this strategy was successful in introducing wide spread use of B-Doubles.

Table 8.1 Registration Charges Outlook ($) - Selected Vehicles

Period	Articulated (6 axle)	% Change	B-Double (9 axle)	% Change	Total	% Change
2009-10	5310		12214		17524	
2010-11	5612	5.69	15340	25.59	20952	19.56
2011-12	5746	2.39	15708	2.40	21454	2.40
2012-13	6394	11.28	14407	-8.28	20801	-3.04
2013-14	6528	2.10	14710	2.10	21238	2.10
2014-15	5758	-11.80	13607	-7.50	19365	-8.82
2015-16	5983	3.90	14138	3.90	20120	3.90
2016-17	5983	0.00	14138	0.00	20121	0.00
2017-18	6115	2.20	14449	2.20	20564	2.20
2018-19	6255	2.30	14781	2.30	21037	2.30
2019-20	6396	2.25	15114	2.25	21510	2.25
2020-21	6556	2.50	15492	2.50	22048	2.50
2021-22	6739	2.80	15895	2.60	22634	2.66
2022-23	6874	2.00	16133	1.50	23007	1.65

Source: TransEco Estimates Based on NTC Determinations

Chart 8.1 Registration Costs of Selected Vehicles



8.2 LINEHAUL REGISTRATION CHARGES OUTLOOK

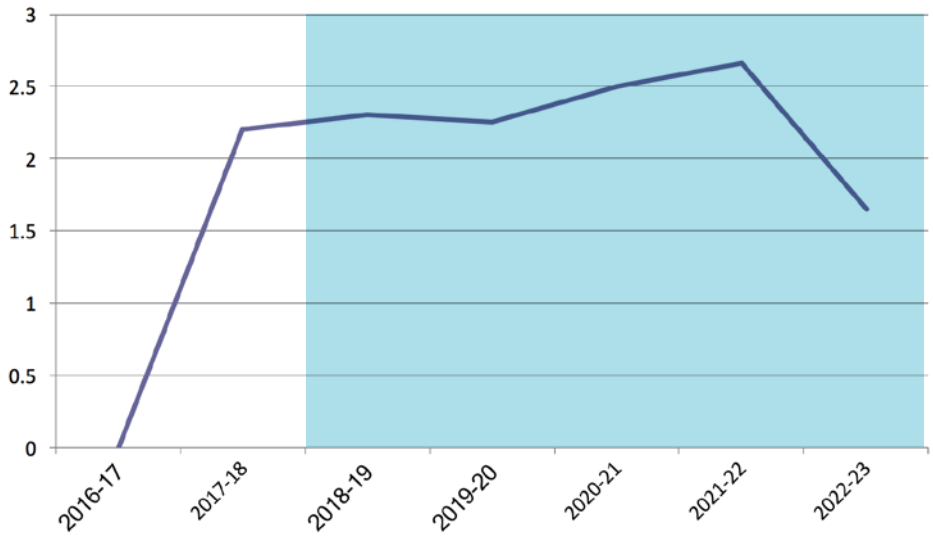
Table 8.2 provides details for movements in registration costs to operators to 2022-23 and indicates that registration charges are expected to increase by an annualised rate of 2.27 per cent over the five years to 2022-23. The forecasts are sensitive to introduction of widespread longer and heavier vehicles on arterial roads, which would skew allocated expenditure towards these new configurations. However there is little chance for such a scenario to arise over the next five years.

Table 8.2 Registration Charges Outlook (2010-11=100) Linehaul

Period	Index	% Change
2009-10	83.64	
2010-11	100.00	19.56
2011-12	102.40	2.40
2012-13	99.29	-3.04
2013-14	101.78	2.51
2014-15	96.69	-5.00
2015-16	100.46	3.90
2016-17	100.46	0.00
2017-18	102.67	2.20
2018-19	105.30	2.30
2019-20	107.39	2.25
2020-21	110.08	2.50
2021-22	113.01	2.66
2022-23	114.87	1.65

Source: TransEco Estimates Based on NTC Determinations

Chart 8.2 Percentage Change Linehaul Vehicles



8.3 SHORTHAUL REGISTRATION CHARGES OUTLOOK

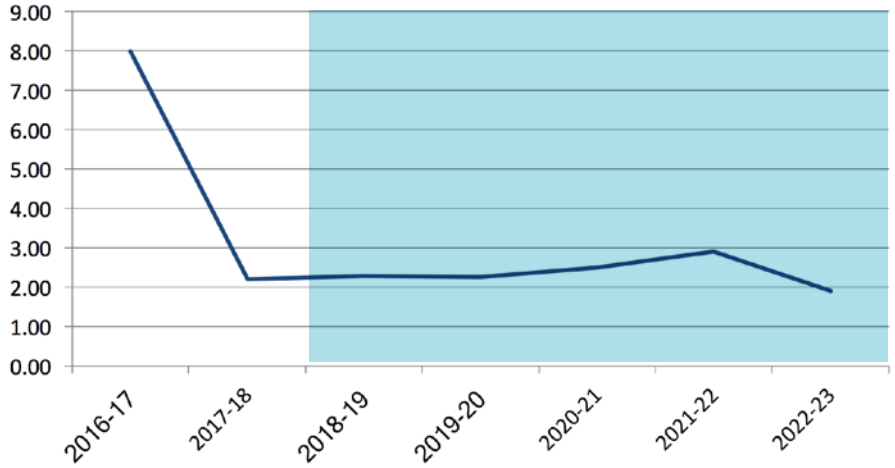
Table 8.3 outlines details of movements in shorthaul registration costs to a road freight operator in Australia. It shows that over the next five years to 2022-23, shorthaul operators would experience an average of 2.37 per cent increase in registration costs annually.

Table 8.3 Registration Charges Outlook (2010-11=100) Shorthaul

Period	Index	% Change
2009-10	96.62	
2010-11	100.00	3.50
2011-12	102.40	2.40
2012-13	104.96	2.50
2013-14	108.63	3.50
2014-15	101.57	-6.50
2015-16	105.53	3.90
2016-17	113.98	8.00
2017-18	116.48	2.20
2018-19	119.16	2.30
2019-20	121.84	2.25
2020-21	124.89	2.50
2021-22	128.51	2.90
2022-23	130.95	1.90

Source: TransEco Estimates Based on NTC Determinations

Chart 8.3 Percentage Change Shorthaul Vehicles



8.4 SUMMARY AND CONCLUSION

- In preparing the annual adjustment the NTC makes sure that two key principles are met as set by COAG in April 2007. Firstly, there is ongoing cost recovery, and secondly, no cross-subsidies between vehicle classes arise over time.

- While the NTC methodology seems robust enough to model registration charges based on road expenditure and vehicle usage patterns, TransEco believes that road expenditure itself may not be derived from efficient road construction and maintenance regimes. Any inefficiency in the road construction and maintenance expenditure would lead to the road freight industry being overcharged in registration fees. In its latest draft determination, the NTC acknowledges this shortcoming and proposes an audit and benchmarking process to be established in the near future.

- Registration charges to line haul operators are expected to increase by an annualised rate of 2.27 per cent over the five year period to 2022-23.

- Shorthaul operators are expected to experience an average rise in registration costs of 2.37 per cent per annum over the next five years.

CHAPTER 9
CARBON ECONOMY OUTLOOK

9.1 STATE OF PLAY

There is enough scientific evidence to suggest that the global carbon cycle is changing in that the Earth's surface is warming at a relatively rapid rate and the primary reason for this warming, at least since the middle of the 20th century, is the increase in carbon dioxide (CO2) in the atmosphere. The increase is believed to be due to the operation of the natural carbon cycle and modification of the cycle by human intervention.

Recognition of climate change sciences began universally in 1994 when UN Framework Convention on Climate Change was ratified by 197 countries. Following this was the Kyoto Protocol which came in force in 2005; and it essentially operationalised the UN Convention. Then the Paris Climate Conference, in late 2015, emphasised the need to accelerate anti-global-warming efforts. The Paris Agreement came into force on 4 November 2016. On ratifying the Paris Agreement on 9 November 2016, Australia indicated it would reduce emissions to 26-28 per cent on 2005 levels by 2030. This target represents a 50-52 per cent reduction in emissions per capita a 64-65 per cent reduction in the emissions intensity of the economy between 2005 and 2030. It is doubtful that Australia will meet its targets under current climate change policies and initiatives.

According to the World Resources Institute, the Australian transport sector includes emissions from the direct combustion of fuels in transportation by road, rail, domestic aviation, and shipping. Transport is responsible for about 17 per cent of Australia's emissions and is a fast growing emission source. From 1990 to 2011, transport emissions Increased by 38 per cent (23 Mt CO2). In 2012, transport emissions increased by 2.8 per cent from 2011 and totalled 91.5 Mt CO2.

Passenger cars were the largest transport source, contributing nearly half of all transport emissions (52.5 Mt CO2). However, this sector is growing much slower than others with emissions from road freight increasing by 80 per cent since 1990.

The carbon price is indirectly imposed on some sources of transport emissions via an equivalent reduction in business fuel tax credits. Currently this mechanism applies to off-road vehicles (such as trucks at mining sites), domestic shipping and rail.

Climate change is now a stark reality. The growing consensus is that no individual, business, community, government of nation can avoid the consequences of climate change with experts forecasting average global temperature increases of up to 6.4 per cent by 2100 if no action is forthcoming.

The take-up rate of climate change issues in the transport and logistics sector globally has been encouraging in terms of environmental impact reporting and goal-setting but much slower than other sectors of the economy. Transport is responsible for almost 60 per cent of oil consumption in the OECD countries and for an estimated 13% of all global emissions. The industry also employs millions of people globally and facilitates the flow of goods and commerce that lead to economic prosperity.

A survey conducted with the largest 291 transport and logistics companies globally in 2009 and presented as the Carbon Disclosure Project (CDP) Transport Report found the following trends:
In South America, 60 per cent and in Europe 52 per cent of all transportation companies asked to report through CDP have set an emission reduction plan, compared to 18 per cent in Asia and 47 per cent in the US and Canada.

Only 36 per cent of transport companies have set reduction targets, compared with 51 per cent within the largest global companies (Global 500 index of companies). This implies that many more transport companies need to set reduction plans in order to catch up with other sectors.

Nearly half of the world's largest transport companies have not yet recognised risks and opportunities associated with the carbon economy. Around 53 per cent of the world largest 53 transport companies cite regulatory risks and 59 per cent regulatory opportunities. Despite the fact the transport is exposed to a range of regulations globally, this figure is

considered to be low, when compared to peers in other sectors within the Global 500, where the comparable figures are 64 per cent and 69 per cent respectively. However, those transport companies that do report climate change risks and opportunities, show a detailed understanding of the issues. In particular regulatory risks such as caps and taxes are most frequently cited. In addition companies cite other risks such as increased operating costs, increases in extreme weather and associated disruption and decrease of high carbon services.

Leading companies are also identifying and developing opportunities in low carbon fuels and advanced technology vehicles (such as hybrids or hydrogen vehicles). They have also reported that competitive advantages can be achieved through carbon efficient products and cost savings from increased fuel efficiency

Some companies have reported significant investments into carbon reductions and low carbon technologies. Although carbon investment reporting is in its infancy, with just 9 per cent of 291 companies reporting data on current investments, significant capital investment is flowing into the development of low carbon solutions in the transport sector. Around US$31.93 billion has been invested into low carbon solutions in the sector. New technologies and processes include installation of renewable energy systems; developing more efficient transport routes, low carbon fuels, and innovative vehicle design; or product innovation into hybrids or electric powered vehicles.

In Australia, a survey of 136 senior executives, conducted by the Economist Intelligence Unit, found an overwhelming believe carbon pricing will survive and those directly affected have started taking steps to reduce greenhouse gas emissions. Nearly three-quarters believed the carbon price scheme would remain despite political interference, but half thought the scheme would eventually be replaced with an improved model. Given these sentiments of manufacturing, construction, real estate and retail executives, the road freight transport industry is required to evaluate the increase in operating costs reflecting the impact of carbon pricing of any form. The ACCC has indicated that it will not accept industry benchmarks that are not based on sound methodology. It is TransEco's believe that the additional impost of costs for each road transport enterprise to evaluate its carbon footprint is formidable especially for tier two and tier three road freight companies.

9.2 CURRENT AUSTRALIAN INITIATIVES AND LIKELY OUTCOMES

Based on modelling by the Bureau of Infrastructure, Transport and Regional Economics in 2008, tail pipe emissions from freight transport are predicted to increase by almost 100 per cent on 1990 levels by 2020 with emissions growing from 22.5 megatons (Mt) of CO2e in 1990 to 44.6 Mt by 2020. This predicted growth in emissions needs to be set aside the fact that in order to play its parts in averting dangerous climate change, Australia must reduce its emissions by at least 40 per cent by 2020 on 1990 levels and effectively decarbonise by 2050. Australia's ratification of Kyoto Protocol confirmed that Australia sought to restrict its 2012 emissions to 108 per cent of 1990 levels. Importantly, the predicted growth in freight transport emissions is not only inconsistent with the deep cuts required in the coming decades but is also inconsistent with the modest target under the Kyoto Protocol.

Projections for the growth of emissions from freight transport ensure a growing share of national emissions for the sector. Whilst tail pipe emissions from freight transport accounted for 4.07 per cent of Australia's emissions in 1990, this figure had grown to almost 5.5 per cent by 2006 and is set to increase to as much as 13.46 per cent by 2020. This trend suggests that freight transport is currently unprepared to contribute to Australia's entry into a carbon constrained world.

If the rapid growth of freight transport emissions continue unabated, it is likely that regulatory obligations for freight transport will be brought into greater alignment with those currently facing large energy users. This will be particularly true for road based freight which accounts for the bulk of freight emissions.

Whilst policy makers have identified a range of strategies to respond to the increasing emissions profile of road freight transport it is likely that demand management will feature prominently. Other risks that the logistics and freight transport sector is expected to experience from climate policy implementation includes compliance risk; exposure to operating cost structures in fuel, electricity, water and insurance; reputational risk; market risks; and growing investor demands.

The policy responses to climate change and its environmental implications will lead to significantly increase the operating cost structure of road freight operators. As transport fuels enter into an emission trading scheme fuel costs will rise. The ultimate increase in price will be determined by the carbon intensity of the respective fuels.

The Clean Energy Legislation (Carbon Tax repeal) Act 2014 has repealed the Clean Energy Act 2011. This abolished the carbon pricing mechanism with effect from 1 July 2014.

The Coalition Federal Government, while discarding an emission trading scheme, is yet to detail its Direct Action policy. Direct Action establishes a fund that will award grants to companies that come up with promising emission reduction schemes. The recent review of the Renewable Energy Target (RET) found that RET had two failings.

One was that it ensured new renewal energy initiatives took business from existing providers. The other was that it was an expensive way to cut emissions.

On cost matters, the panel found that the cost of abatement is an estimate of the cost of a policy measure in reducing carbon dioxide equivalent emissions, expressed in dollars per tonne of abatement. It is a tool that enables an assessment for the relative cost-effectiveness of different emissions reduction policies.

That tool showed the cost of using the RET to reduce emissions was $35 to $68 a tonne of carbon dioxide or equivalent. This is significantly higher the carbon tax cost of $24.15 per tonne. Halfway through 2015 the tax was due to transition to a true emission trading scheme which allowed polluters to buy and sell emission permits and trade them overseas pushing the cost down to $10 per tonne.

If cost per tonne is the best tool to assess the worth of an emissions reduction scheme, Australia's planned trading scheme is much superior to the Coalition's current direct action policy.

If the past operation of a grant-based emission reduction scheme is of any indication, the cost of grants is expected to be much higher than a trading scheme. In 2010 the Audit Office calculated an average of $140 per tonne.

Firms were reluctant to devote the time needed to comply with regulations and regulators were unable to process applications quickly. The Audit office found it commonly took two years before approved programs could start. None of the grant-based schemes managed to spend more than 40 per cent of their budget.

In an early recognition of this, the Coalition Government has slashed the four year total allocated to Direct Action from $2.55 billion to $1.15 billion.

An emissions trading system wins hand down on the RET review panel's preferred measure.

A Carbon Trading Scheme charges big polluters as much for the right to pollute as is needed to achieve the reduction target, no more. Businesses that buy permits they no longer need because they have cut more emissions than expected can cash in by selling their excess permits to another business that needs them more. Businesses that find it expensive to cut their emissions will buy permits rather than pay the cost. Businesses that find it cheap will sell permits and cut emissions. It will ensure emissions are cut by the cheapest possible means first.

The ruling Coalition government has brought the possibility of resurrecting an emission trading scheme. The Turnbull government signed up to a New Zealand-led at the Paris climate summit in December 2015 backing the use of carbon markets in tackling climate change. The declaration, which is not binding focuses on working out rules for how international carbon markets will operate after 2020, when a Paris agreement would come into effect. The Turnbull government is considering allowing businesses to buy overseas carbon credits to meet Australia's emissions reduction targets once rules have settled after 2020. At present, international permits are significantly cheaper than the cost of abatement domestically under the Emissions Reduction Fund, although overseas credits will likely become more expensive as global demand rises.

9.3 IMPLICATIONS ON ROAD FREIGHT INDUSTRY IN AUSTRALIA

In 2013, transport in Australia emitted 96.7 million tonnes of carbon dioxide into the atmosphere. Road freight is the largest commercial transport emitter of carbon dioxide. In 2013, the operation of rigid and articulated trucks as well as buses produced 20.8 million tonnes of carbon dioxide. This is expected to increase to 24 million tonnes by 2020.

Fuel is a leading cost for Australian trucking companies, with the average operator spending about 29 per cent of income on fuel. A tonne of carbon at $24.15 (the second stage price) equates to $520 million increase in fuel costs in 2014. Although, this is a considerable dollar value, it represents just over 2.1 per cent increase in total operating costs.

The carbon pricing changes will effectively increase the cost of fuel for transport industries, making fuel-efficient modes of transport, such as rail and water transport, relatively more competitive within the constraints for current infrastructure. The need for additional infrastructure to support the use of these modes means that non-bulk road freight is likely to remain dominant. For example, the dramatic increases in the global crude oil price in the years through 2007-08 resulted in limited modal shift, even though the associated fuel price movements were far greater than those under the Direct Action scheme.

The Australian Government has started to index excise duty rates for most fuels every six months linked to movements in the Consumer Price Index.

The changes to road user charges are expected to affect industry cost structures, as all transport modes would experience increased purchase costs assuming constant or increasing oil prices. In concentrated industries, any increase in fuel costs has a tendency to inflate industry revenue through increased fuel surcharges, which are passed on to freight users. Operators with low levels of market power are still likely to experience profit margin pressure.

While carbon abatement schemes will affect purchase costs, transport industries have absorbed more extreme fuel-price rises in the past five years and continued to grow. As the price of oil is expected to rise in the coming five years, all transport industries will be looking to increase their use of fuel-efficient technologies and working practices, irrespective of regulatory requirements

9.4 THE US EXPERIENCE

The US Environmental Protection Agency (EPA) and Department of Transportation's National Highway Traffic Safety Administration (NHTSA) have jointly finalised standards for medium and heavy-duty vehicles that will improve fuel efficiency and cut carbon pollution. The final phase two standards were called for by President Obama's Climate Action Plan, and respond to the president's directive in early 2014 to develop new standards that run into the next decade.

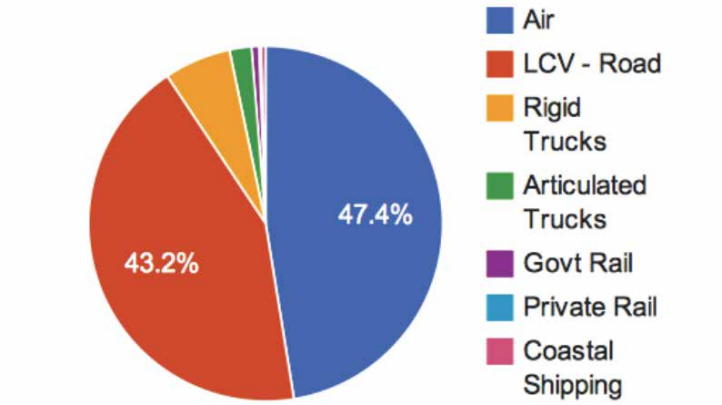
The final phase two program promotes a new generation of cleaner, more fuel efficient trucks by encouraging the wider application of currently available technologies and the development of new and advanced cost-effective technologies to the end of model year 2027. The final standards are expected to lower CO2 emissions by approximately 1.1bn metric tonnes, save vehicle owners fuel costs of about US$170bn, and reduce oil consumption by up to 2bn barrels over the lifetime of the vehicles sold under the program. Overall it is claimed that the program will provide $230bn in net benefits to society and these benefits outweigh costs by about an 8 to 1 ratio. The final standards are also claimed to be cost effective for consumers and businesses, delivering favourable payback periods for truck owners. The buyer of a new long-haul truck in 2027 would recoup the investment in fuel-efficient technology in less than two years through fuel savings.

Heavy-duty trucks are the second largest segment and collectively make up the biggest increase in the US transportation sector in terms of emissions and energy use. These vehicles currently account for about 20% of GHG emissions and oil use in the US transportation sector. Globally, GHG emissions from heavy-duty vehicles are growing rapidly and are expected to surpass emissions from passenger vehicles by 2030. Through the Paris climate agreement and discussions with other countries, the US Is working with other major economies to encourage progress on fuel economy standards, and reduce GHG emissions that improve global energy and climate security by reducing reliance on oil.

This final rule-making builds on the fuel efficiency and GHG emissions standards already in place for model years 2014-18, which alone will result in CO2 emissions reductions of 270m metric tonnes and save vehicle owners more than $50bn in fuel costs.

However, with the Trump led victory of the Republican party in the US presidential elections in late 2016, the dependence on fossil fuels is expected to increase, while developments in alternative energy is expected to weaken. The new US Government has already signalled its scepticism to climate change. It has also made its intentions known that it would withdraw from the Paris Agreement and perhaps seek lower targets.

Chart 9.1 Emissions by mode tkm



The consequences of inaction by the road freight industry on climate change issues can be significantly dire.

Strategies have to be in place to absorb these higher costs through a myriad of actions that lead to low carbon emissions. There is a strong possibility that there would be some government assistance in the interim as road freight service producers implement these strategies.

In addition shippers would demand low carbon emission road freight services as part of their own accounting of carbon footprint. Therefore the move to low carbon emission road freight not only provides a defensive position but also provides a competitive edge in the market place.

9.5 SUMMARY AND CONCLUSION

- Climate change issues have to be addressed now. The growing consensus is that no individual, business, community, government or nation can avoid the consequences of climate change with experts forecasting average global temperature increases of up to 6.4 per cent by 2100 if no action is forthcoming.
- The take-up rate of climate change issues in the transport and logistics sector globally has been encouraging in terms of environmental impact reporting and goal-setting but much slower than other sectors of the economy. Transport is responsible for almost 60 per cent of oil consumption in the OECD countries and for an estimated 13% of all global emissions.
- Whilst tail pipe emissions from freight transport accounted for 4.07 per cent of Australia's emissions in 1990, this figure had grown to almost 9.1 per cent by 2012 and is set to increase to as much as 13.46 percent by 2020. This trend suggests that freight transport is currently unprepared to contribute to Australia's entry into a carbon constrained world.
- The policy responses to climate change and its environmental implications will lead to a significant increase in operating cost structure of road freight operators.
- It is unlikely that Australia will meet its Paris Agreement targets unless it changes current climate change policies.

APPENDIX

APPENDIX 1: SUMMARY OF COST OUTLOOK BY SEGMENT

LINEHAUL INDICES (2010-11 = 100.00)

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5 year Growth Rate
Labour	119.01	122.71	126.08	130.39	134.66	138.72	143.02	147.47	3.20% p.a.
% Change	3.11	3.11	2.74	3.42	3.28	3.01	3.10	3.11	
Fuel	82.77	85.47	96.89	96.97	104.11	107.23	112.45	114.69	3.40% p.a.
% Change	-19.42	3.26	13.36	0.08	7.36	3.00	4.87	1.99	
Tyres	118.45	121.29	126.02	128.04	132.39	136.03	140.25	144.39	2.76% p.a.
% Change	2.50	2.4	3.90	1.60	3.40	2.75	3.10	2.95	
Maintenance	116.46	121.12	124.63	129.49	134.02	139.12	144.68	149.75	3.74% p.a.
% Change	3.60	4.00	2.90	3.90	3.50	3.80	4.00	3.50	
Capital	107.60	109.75	111.20	113.67	116.51	119.66	123.13	126.82	2.66% p.a.
% Change	2.25	2.00	1.32	2.22	2.50	2.50	2.90	3.00	
Insurance	136.21	142.34	144.55	149.75	154.69	159.27	165.16	170.28	3.30% p.a.
% Change	8.80	4.50	1.55	3.66	3.30	2.96	3.70	3.10	
Registration	100.46	100.46	102.67	105.03	107.39	110.08	113.01	114.87	2.27% p.a.
% Change	3.90	0.00	2.2	2.3	2.25	2.50	2.66		
Toll Charges	123.25	177.39	184.66	191.81	199.89	210.29	216.81	224.40	4.00% p.a.
% Change	4.26	43.93	4.10	3.87	4.21	5.20	3.10	3.50	

Source: TransEco Estimates

SHORTHAUL INDICES

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	5 year Growth Rate
Labour	119.58	123.24	126.56	130.48	134.51	138.37	142.28	146.63	3.00% p.a.
% Change	3.23	3.06	2.69	3.09	3.09	2.87	2.82	3.06	
Fuel	83.60	86.50	98.05	98.14	105.36	109.03	114.44	116.96	3.60% p.a.
% Change	-19.34	3.46	13.36	0.08	7.36	3.48	4.97	2.20	
Tyres	118.64	121.13	124.89	126.76	130.81	133.69	137.57	141.01	2.46% p.a.
% Change	2.50	2.10	3.10	1.50	3.20	2.20	2.90	2.50	
Maintenance	117.34	121.45	124.48	128.71	132.70	136.69	141.20	145.57	3.18% p.a.
% Change	3.10	3.50	2.50	3.40	3.10	3.00	3.30	3.10	
Capital	109.45	111.47	112.78	114.92	117.34	119.62	122.14	124.58	1.84% p.a.
% Change	2.25	1.85	1.17	1.90	2.10	1.95	2.10	2.00	
Insurance	129.36	133.89	134.16	138.32	142.47	146.46	148.65	152.37	2.60% p.a.
% Change	4.50	3.50	0.20	3.10	3.00	2.80	1.50	2.50	
Registration	105.53	113.98	116.48	119.16	121.84	124.89	128.51	130.95	2.37% p.a.
% Change	3.90	8.00	2.2	2.30	2.25	2.50	2.90	1.90	
Toll Charges	123.25	177.39	184.66	191.81	199.89	210.29	216.81	224.40	4.00% p.a.
% Change	4.26	43.93	4.10	3.87	4.21	5.20	3.10	3.50	

Source: TransEco Estimates

APPENDIX 2: USD – AUD EXCHANGE RATES

The exchange rate is influenced predominantly by interest rate differentials, GDP growth, inflation levels, current account positions and equity flows. Over recent years, strong demand for commodities has been a large factor in the Australian dollar's growing value. These factors determine the supply and demand conditions for the Australian dollar relative to its US counterpart; the higher the demand for Australian dollar is in exchange for the US dollar, the higher the exchange rate.

Prior to a significant decline from 2013-14 onwards, the A$ appreciated significantly against the US$ and other currencies largely due to strong demand for Australian commodities exports to China.

However, fears about the strength of the Australian economy will reduce demand for the A$ in 2014-15, putting downward pressure on its value.

Slowing economic growth in China, will also affect Australia through reduced export demand. Chinese demand for Australian raw materials, particularly iron ore, protected the Australian economy from the worst effects of the global financial crisis and the European sovereign debt crisis, as other advanced economies suffered recessions and sluggish growth. The investment phase of Australia's mining boom is winding down, and this has had negative implications for the wider economy. The AUD has been steady over 2016-17, but sustained low inflation and high levels of household debt has reduced the likelihood of the RBA raising interest rates over the short term.

Non-mining Industries such as those in the manufacturing sector have become relatively uncompetitive in international markets due to inflated $A and their recovery will not be immediate even with the correction on the value of A$ against the US$. However, recovery of mineral resource prices and bumper production of agricultural commodities in 2016-17 has had an appreciating impact on the A$.

It is expected that the A$/US$ exchange rate to decline by 1.59% in 2018-19 to $0.7319.

In summary, the Australian dollar is forecast to increase at an average annualised rate of 0.34% over the five year outlook period to 2022-23 to 75.66 US cents.

USD/AUD EXCHANGE RATE INDEX (2010-11=100.00)

Period	Index	% Change
2001-02	52.66	-1.34
2002-03	59.10	12.24
2003-04	71.68	21.28
2004-05	75.75	5.67
2005-06	74.92	-1.09
2006-07	79.38	5.95
2007-08	90.82	14.42
2008-09	74.71	-17.74
2009-10	88.74	18.77
2010-11	100.00	12.69
2011-12	104.03	4.03
2012-13	102.14	-1.82
2013-14	91.00	-11.13
2014-15	83.0	-9.27
2015-16	72.50	-12.70
2016-17	75.42	4.03
2017-18	74.37	-1.39
2018-19	73.19	-1.59
2019-20	74.45	1.72
2020-21	74.64	0.26
2021-22	74.98	0.46
2022-23	75.66	0.91

APPENDIX 3: NATIONAL TRANSPORT COMMISSION ANNUAL ADJUSTMENTS TO HEAVY VEHICLE CHARGES

Date of Application	% Change	Applied to Rego Charge	Applied to Fuel Charge	Fuel Charge c/ litre	Diesel Fuel Excise c/ litre	Fuel Tax Credit c/ litre
July 1 2000		Nil	11%	20.000	38.143	18.143
July 1 2001	3.30%	3.30%	Nil	19.633	38.143	18.510
July 1 2002	3.20%	3.20%	Nil	19.633	38.143	18.510
July 1 2003	3.00%	3.00%	Nil	19.633	38.143	18.510
July 1 2004	0.30%	0.30%	Nil	19.633	38.143	18.510
July 1 2005	1.00%	1.00%	Nil	19.633	38.143	18.510
July 1 2006	2.70%	2.70%	Nil	19.633	38.143	18.510
July 1 2007	3.50%	3.50%	Nil	19.633	38.143	18.510
July 1 2008			7%	21.007	38.143	17.136
July 1 2009	3.20%	3.20%	3.20%	21.680	38.143	16.463
July 1 2010	4.20%	4.20%	4.20%	22.590	38.143	15.553
July 1 2011	2.40%	2.40%	2.40%	23.132	38.143	15.011
July 1 2012	3.50%	2.50%	10.20%	25.500	38.143	12.643
July 1 2013	2.50%	2.50%	2.50%	26.138	38.143	12.005
July 1 2014	2.20%	2.20%	2.20%	26.140	38.143	12.003
July 1 2015	3.90%	1.50%	1.50%	26.140	39.292	13.152
July 1 2016	0.00%	0.00%	0.00%	26.140	40.318	14.178
July 1 2017	2.20%	2.20%	2.20%	26.715	41.273	14.558
July 1 2018	2.30%	2.30%	2.30%	27.330	42.099	14.769
July 1 2019	2.25%	2.25%	2.25%	28.013	42.983	14.970
July 1 2020	2.25%	2.25%	2.25%	28.643	43.885	15.242
July 1 2021	2.25%	2.25%	2.25%	29.288	44.851	15.563
July 1 2022	2.25%	2.25%	2.25%	29.946	45.882	15.936

Source: Direct Communications with NTC and TransEco Estimates

Note:

1 N/A denotes outcomes of determinations imposing increases by types of vehicles as against a uniform outcome.

2 Forecast of annual adjustments is sensitive to outcome of the next heavy vehicle charge determination.

3 The proposed budgetary indexation increase in fuel excise is not expected to impact on the road sector owing to exemptions.

APPENDIX 4: TRADE WEIGHTED INDEX OUTLOOK

Australia's Trade Weighted Index (TWI), which represents the value of the Australian dollar (AUD) compared to a basket of 16 currencies of Australia's major trading partners. The index is weighted according to the share of trade conducted with each country. The five largest weights are for the Chinese Renminbi (27.5%), the Japanese Yen (10.7%), the Euro (9.8%), the US dollar (10.3%) and South Korean Won (5.4%), as of 1 December 2017

Over the five years through to 2017-18, the average annual TWI decreased from 70.30 points to 64.30 points, a depreciation of 6.00 index points, for an annualised decline rate of 2.2%. The TWI fell sharply in 2008-09 down 9.3 points due to the global slowdown, before posting solid growth until 2012-13.

Over the five years through to 2022-23, the Australian dollar will continue to benefit from strong economic ties with China, as demand continues for Australia's mineral and agricultural resources and terms of trade remain stable. However, Australia's increasing reliance on commodities and consequent growth in emerging economies and Investors attitudes to risk, will lead to higher volatility of the Australian dollar in the next five years.

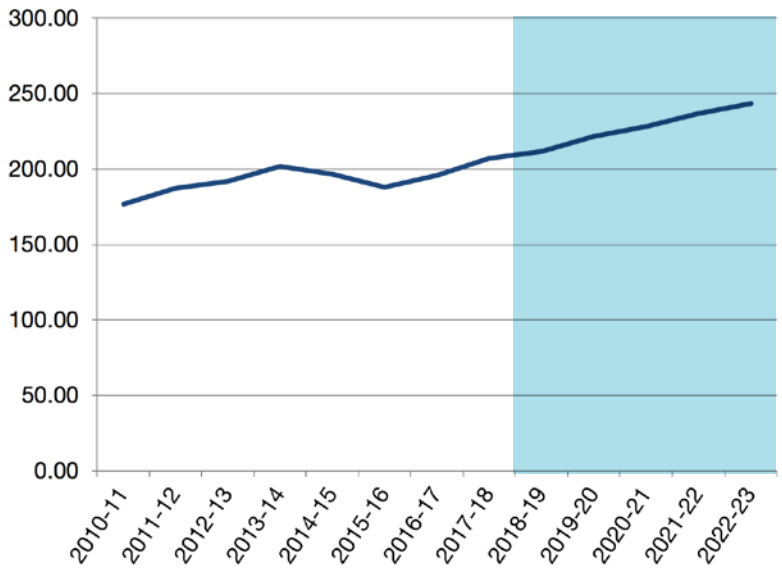
In the longer term, the Yuan is expected to increase its weighting in the TWI basket as China cements its position as Australia's number one trade partner, while the use of the Euro as a reserve currency is likely to increase at the expense of the US dollar. China is also likely to gradually appreciate its currency in order to transition from a manufacturing based economy to consumption based as incomes rise. A higher Yuan will make Australian commodity exports cheaper for the Chinese, increasing demand. However, a more sober scenario is for the TWI to reach to around the 65 point mark in 2022-23 as the Australian dollar strengthens in the later stages of the forecast period. In summary the TWI is expected to rise by an annualised rate of 0.25 per cent over the forecast period.

Period	Index	% Change
2009-10	69.00	
2010-11	74.40	5.40
2011-12	76.30	1.90
2012-13	76.60	0.49
2013-14	70.30	-6.50
2014-15	66.20	-4.10
2015-16	61.85	-6.60
2016-17	64.25	3.90
2017-18	62.80	-2.30
2018-19	61.10	-2.70
2019-20	61.10	0.00
2020-21	62.00	1.50
2021-22	63.00	1.60
2021-23	65.10	0.50

APPENDIX 5: FORECAST OF B-DOUBLE OPERATING COSTS (CENTS/KM)

Year	Labour	Fuel	Tyres	Maintenance	Capital	Rego	Insurance	Tolls	Total	Fuel/Total
2004-05	32.29	42.67	14.29	15.19	24.78	3.77	1.64	2.10	136.74	31.21%
2005-06	33.40	56.00	15.21	15.66	26.08	3.81	1.71	2.20	154.07	36.35%
2006-07	34.61	53.87	15.68	16.14	26.35	3.89	1.78	2.30	154.62	34.84%
2007-08	35.98	66.51	16.16	16.47	26.88	4.01	1.59	2.40	170.00	39.12%
2008-09	37.44	62.16	16.66	16.98	27.16	4.14	1.70	2.50	168.73	36.84%
2009-10	39.00	55.32	16.83	17.33	27.43	4.93	1.73	2.60	165.15	33.49%
2010-11	40.62	63.95	17.00	17.50	27.43	5.60	1.73	2.80	176.63	36.21%
2011-12	42.49	70.30	18.21	18.03	27.57	5.73	1.85	3.50	187.68	37.46%
2012-13	43.79	71.21	18.59	18.62	28.03	5.56	1.97	4.30	192.08	37.08%
2013-14	45.40	76.92	19.30	19.27	28.31	5.70	2.05	4.80	201.74	38.13%
2014-15	46.88	65.71	19.64	19.67	28.87	5.41	2.17	8.10	196.46	33.45%
2015-16	48.34	52.95	20.14	20.38	29.52	5.63	2.36	8.90	188.21	28.13%
2016-17	49.85	54.68	20.62	21.20	30.11	5.63	2.46	11.50	196.03	27.89%
2017-18	51.21	61.98	21.42	21.81	30.51	5.75	2.50	12.00	207.18	29.92%
2018-19	52.96	62.48	21.77	22.66	31.18	5.88	2.59	12.40	211.92	29.48%
2019-20	54.70	67.08	22.51	23.45	31.96	6.01	2.68	13.00	221.39	30.30%
2020-21	56.35	69.09	23.13	24.35	32.83	6.16	2.76	13.60	228.5	30.27%
2021-22	58.09	72.45	23.84	25.32	33.78	6.33	2.86	14.10	236.77	30.60%
2022-23	59.90	73.89	24.55	26.21	34.79	6.43	2.95	14.50	243.22	30.38%

Source: TransEco Estimates



Notes:

1 The above operating costs are exclusive of GST, Profit Margins and Compliance Costs

2 Compliance costs (Fatigue and Emissions) are estimated to be 2.93 cents per km for B-Double operations in 2010-11.

3 Based on 280,000 km per year (fleet operations)

APPENDIX 6: FORECAST OF CONSUMER PRICE INDEX (CPI)

The inclusion of CPI forecast in this report is due to the Federal Government's decision to index fuel excise to movements in CPI.

The CPI measures the price of a basket of goods consumed by the average Australian, and is the standard measure of inflation in Australia. Indexes are calculated for each of the capital cities and then are combined as a weighted average to obtain a nationwide value. In this instance, the average quarterly value of index over each financial year is used to arrive at the appropriate index.

The growth rate of the CPI is largely determined by real GDP growth, interest rate levels and the strength of the Australian dollar. Interest rates are expected to be stable during 2017-18, as the Reserve Bank of Australia (RBA) moves to retain the existing cash rate. The RBA aims to keep CPI growth within a target band of 2-3%, and due to this occurring over the past three years; there is minimal need to adjust the cash rate during the current year. The Australian dollar is projected to depreciate in 2017-18, which can make the price of imports higher and drive greater inflation.

Steady inflation despite falling interest rates over the past five years indicates that the RBA's economic forecasts signalled weakening economic conditions that were catered for. While real GDP growth remained consistent, a significant portion of Australia's economic growth has been through the resources boom. The resources boom resulted in the Australian dollar remaining persistently strong, keeping the price of imports cheaper. It also masked slow growth or even declines in other sectors of the economy that more closely relate to consumer spending and therefore drive inflation.

CPI is forecast to reach 112.30 index points in 2018-19, which represents an estimated 1.9% increase over the previous year. Real GDP growth is expected to improve significantly in 2018-19, but unlike the past five years, this growth will occur with significantly less assistance from the resources boom. This means that economic growth will come from other sectors of the economy, pushing increased consumer demand and driving inflation upwards within the RBA's target band. The RBA cash rate is expected to increase in 2018-19 as a result of inflation, but this will be in reaction to inflation rather than the cause of inflation, meaning the effect of an increase in the cash rate will occur beyond 2018-19.

Over the next five years, an overall improvement in the unemployment rate will support growth in demand for goods and services. The RBA is expected to keep the rise in the cash rate relatively low over the period to combat potential economic downturns. These factors are expected to fuel higher household consumption expenditure, driving the CPI upwards. Furthermore the increase in CPI is likely to be amplified by a projected rise in world prices over the next five years.

Overall, the CPI is forecast to grow by a compound annual 2.3% over the five years through 2022-23, to reach 125.8 index points.

Year	Units	% Change
2010-11	97.70	3.1
2011-12	100.00	2.35
2012-13	102.3	2.3
2013-14	105.0	2.6
2014-15	106.8	1.7
2015-16	108.3	1.4
2016-17	110.2	1.8
2017-18	112.3	1.9
2018-19	114.70	2.
2019-20	117.50	2.5
2020-21	120.30	2.4
2021-22	123.30	2.5
2022-23	125.80	2.0

APPENDIX 7: FORECAST OF ROAD, BRIDGE & TUNNEL TOLL CHARGES

The value proposition of toll roads is that they allow users to save travel time in exchange for a fee. The fee is used to provide a return to the operator for their management of the asset, and a return to the owners for the capital utilised. As toll roads in Australia are increasingly involving extensive tunnelling, the industry's asset base is growing.

Most tolling assets have been built through public-private partnerships (PPP), in which the private sector is granted a concession to build, own, operate and transfer (BOOT) road assets. Private sector project proponents typically finance road construction in return for the right to charge users for access over an extended period, often 20 or 30 years.

The acceptance of tolling by users has allowed operators to increase tolls on mature assets ahead of Consumer Price Index (CPI).

Increasing congestion on non-toll roads and the expanding urban sprawl are anticipated to support growth in the number of journeys on toll roads over the next five years. Congested roads provide the largest incentive for road users to pay for toll roads.

However, over the last five years, journey times have steadily being reduced as toll roads themselves become congested particularly in Sydney and Melbourne and to a lesser extent in Brisbane. The net benefit of using certain toll ways have been eroded due to increasing toll way congestion and rising toll charges. Furthermore, planned additional toll infrastructure is being based on increasing current toll charges on freight vehicles. As a consequence, toll prices for trucks and heavy vehicles have risen at a faster rate than tolls for passenger vehicles.

Major new projects in Victoria, New South Wales and Queensland are expected to increase toll way capacity. The North East Link project in Victoria will contain 26 kilometres of road including 5 kilometre of tunnel and is expected to carry 100,000 vehicles each day. Construction on the West Gate Tunnel in Melbourne began in January 2018. Transurban will deliver the project, which includes a new bridge over the Maribyrnong River, widening of the West Gate Freeway to 12 lanes, and a tunnel connecting the west Gate Freeway with the Maribyrnong River and the Port of Melbourne. The West Gate Tunnel is forecast to be completed in 2022, and CityLink tolls will increase by 4.25% each year from 2019 to 2029 inclusive to support funding for the project. The F6 Extension in Sydney will be 23 kilometres long, with construction projected to begin in 2019. Stage one will include a four-kilometre tunnel and connect the WestConnex toll road with President Avenue.

The Toowoomba Second Range Crossing in Queensland is slated for completion in late 2018. The contract to finance, build, operate and maintain the $1.6 billion toll road was awarded to Nexus Infrastructure in August 2015, in a 25 year public-private partnership with the Queensland Government.

Over the forecast period to 2022-23, toll charges are expected to increase on average by 4.0 per cent per annum.

Table: Toll Charges Index

Year	Index	% Change
2010-11	100.00	
2011-12	104.60	4.60
2012-13	108.69	3.91
2013-14	113.56	4.48
2014-15	118.21	4.09
2015-16	123.25	4.26
2016-17	177.39	43.93
2017-18	184.66	4.10
2018-19	191.81	3.87
2019-20	199.89	4.21
2020-21	210.29	5.20
2021-22	216.81	3.10
2022-23	224.40	3.50

Chart: Toll Charges Index