About Regional Development Australia - Central West

Regional Development Australia – Central West is part of a national network of 55 locally managed, not-for-profit incorporated associations and is jointly funded by the Australian and NSW Governments. Our region extends from Lithgow in the east to Lake Cargelligo in the west and comprises the local government areas of Lithgow, Oberon, Bathurst, Blayney, Orange, Cabonne, Cowra, Parkes, Forbes, Weddin and Lachlan.

Contributing Agencies

The NSW Central West Freight Study is a key research paper prepared on behalf of:

[Logos of Regional Development Australia, Invest NSW, An Australian Government Initiative, and a NSW Government Initiative]

RODA Central West Disclaimer

This report was produced by RDA Central West and does not necessarily represent the views of the Australian or NSW Governments, their officers, employees or agents.
TABLE OF CONTENTS

1.0 FORWARD 1

2.0 STUDY FINDINGS 2
2.1 Freight Volumes 2
2.2 General Study Findings 3
   2.2.1 Road Findings 3
   2.2.2 Rail Findings 3
2.3 Recommendations 5

3.0 INTRODUCTION 7
3.1 Context 7
3.2 Purpose of the Central West Freight Study 8
3.3 Strategy Framework 8
   3.3.1 Regional Development Australia 8
3.4 Previous Freight Studies and Policy Context 10

4.0 CENTRAL WEST REGION 11

5.0 CENTRAL WEST FREIGHT NETWORK 12
5.1 Freight Network Overview 12
5.2 The Combined Central West Freight Network 13
5.3 Key Interstate Routes through the Central West 14
   5.3.1 Within Range However Still Out of Reach 14

6.0 CURRENT FREIGHT TASK 15
6.1 Current Freight Volumes 15
   6.1.1 Combined Volume on Road and Rail 17
6.2 Production Driven Freight 18
   6.2.1 Production Across NSW 18
   6.2.2 Production within the Central West 18
   6.2.3 General Goods driven by Consumer Demand 19
6.3 Through Freight 19
   6.3.1 Road Through Freight 20
   6.3.2 Rail Through Freight 20
6.4 Key Freight Flows 21
   6.4.1 Major Road Freight Flows (Over 3 Million Tonne per annum) 21
   6.4.2 Minor Road Freight Flows 22
   6.4.3 Rail Freight Flows 23
   6.4.4 Air Freight Flows 24

7.0 PROJECTING FORWARD TO 2034 25
7.1 Predicted Increase in the Total Freight Task 25
7.2 Predicted Increase in Freight by Commodity 25
7.3 Predicted Increase in Freight by Mode 26
7.4 Key Routes by Volume 26
   7.4.1 Combined Road and Rail Projected Increases 29

8.0 ROAD NETWORK 30
8.1 Primary and Secondary Routes 30
8.2 Vehicle Types and Volumes 31
   8.2.1 Heavy Vehicle Routes 33
8.3 Management of Road Networks 34
8.4 Road Network Capacity 34
8.5 Road Network Condition 37
TABLE OF CONTENTS

9.0 RAIL NETWORK ................................................. 38
  9.1 Demand for Rail Services .................................. 38
  9.2 Current Rail Services ...................................... 39
  9.3 Management of Railway Networks ......................... 43
     9.3.1 Country Regional Network (CRN) ..................... 44
     9.3.2 ARTC Network ........................................ 44
     9.3.3 Sydney Trains Network .............................. 44
     9.3.4 Private Siding Owners .............................. 45
     9.3.5 Intermodal Terminals ................................ 45
  9.4 Rail Network Capacity .................................... 46
     9.4.1 Line Classification .................................. 49
     9.4.2 Rail Network Condition ............................. 49

10.0 AIR FREIGHT NETWORK ...................................... 51
  10.1 Aerodromes in the Central West ......................... 53
  10.2 Air Network Capacity ................................... 54
     10.2.1 Condition of Air Facilities ......................... 54
     10.2.2 Recommendations to Increase Air Freight Usage in the Central West 55

11.0 PRODUCTION GENERATED FREIGHT SUMMARY BY COMMODITY GROUP .............. 56
  11.1 Total Production across the Central West ................ 56
  11.2 Coal Production across the Central West ............... 57
  11.3 Minerals Production across the Central West .......... 58
  11.4 Grain and Other Crop Production across the Central West 59
  11.5 Fruit and Vegetable Production across the Central West 60
  11.6 Livestock and Meat Product Production across the Central West .......... 61
  11.7 Consumption of General Goods across the Central West .... 62
  11.8 Production of Forestry Products across the Central West 63

12.0 CATERING FOR THE INCREASED FREIGHT TASK ............................................. 64
  12.1 Freight and Ports Strategy ................................ 64
  12.2 Projects and Initiatives of Benefit to the Central West .... 64
     12.2.1 Great Western Highway Upgrade .................... 64
     12.2.2 Bells Line of Road Expressway ..................... 64
     12.2.3 Newell Highway Upgrade ............................. 65
     12.2.4 Heavy Vehicle Bypasses ............................. 66
     12.2.5 Inland Rail ........................................... 66
     12.2.6 Maldon to Dombarton Rail Line ................. 67
     12.2.7 Reopening of the Blayney to Demondrille Rail Line .... 68
     12.2.8 Additional Capacity through the existing Central West Rail Lines .... 69

13.0 CENTRAL WEST FREIGHT MODEL ......................................... 71
  13.1 Modelling the Network ................................... 71
  13.2 Data Sources .............................................. 72
  13.3 Using Vehicle Counts to Determine Net Volume .......... 73
  13.4 Freight Model Assumptions ................................ 74
TABLE OF CONTENTS

14.0 PROJECT LIST 143

TABLES
Table 1 – Summary Freight Volumes 2
Table 2 – Classification of the Central West Roads 30
Table 3 – Vehicle Capacity Guidelines 35
Table 4 – Ratio of Air Freight Transported by Population 52
Table 5 – Common Routes and Services – Commercial Passenger 52
Table 6 – Common Routes and Services – Mixed Services 53

FIGURES
Figure 1 – Central West of NSW 9
Figure 2 – Population Density in the Central West 11
Figure 3 – Central West Road, Rail and Airport Network 12
Figure 4 – Central West Rail Network 12
Figure 5 – Regional Airports 13
Figure 6 – Combined Freight Network 13
Figure 7 – Interstate Freight Network Overview 14
Figure 8 – Road Freight Network Approximate Volumes 2014 16
Figure 9 – Rail Freight Network Approximate Volumes 2014 16
Figure 10 – Air Freight Network Approximate Volumes 2014 17
Figure 11 – Combined Road and Rail Approximate Volumes 2014 17
Figure 12 – Freight Generated by Commodities Produced in the Central West 19
Figure 13 – Major Through Freight Flows across the Central West 20
Figure 14 – Major Road Freight Flows across the Central West 21
Figure 15 – Minor Road Freight Flows across the Central West 22
Figure 16 – Rail Freight Flows across the Central West 23
Figure 17 – Regular Air Freight Routes in the Central West 24
Figure 18 – Predicted increase in the NSW Freight Task 25
Figure 19 – Road Freight Projected Increases (2014 to 2034) 27
Figure 20 – Rail Freight Projected Increases (2014 to 2034) 28
Figure 21 – Combined Road & Rail Freight Projected Increases (2014 to 2034) 29
Figure 22 – Major Roads 30
Figure 23 – Austroads 12-Bin Classification System (Truck Classifications) 31
Figure 24 – Road Volumes at Stn 93242 (North of Parkes) 32
Figure 25 – B-Double Routes in NSW (Figure from NSW Freight and Ports Strategy) 33
Figure 26 – Relative Road Congestion 2034 36
Figure 27 – Rail Lines in the Central West 38
Figure 28 – Rail Market Share in Australia 39
Figure 29 – Rail Volumes between Lithgow and Coxs River 41
Figure 30 – Average Train Numbers per Day between Lithgow and Coxs River 42
Figure 31 – Management of Railway Lines in the Central West 43
Figure 32 – ARTC Interstate Network 44
Figure 33 – Major Intermodal Terminals in the Central West 46
Figure 34 – Relative Rail Congestion 2034 47
Figure 35 – Line Classification in the Central West 50
Figure 36 – Aerodromes in the Central West 51
Figure 37 – Aerodromes in the Central West with a 100 km Radius Overlay 51
Figure 38 – Total Commodity Production across the Central West 2014 to 2034 56
Figure 39 – Coal Production across the Central West 57
TABLE OF CONTENTS

- Figure 40 – Minerals Production across the Central West  
- Figure 41 – Grain and Other Crop Production across the Central West  
- Figure 42 – Fruit and Vegetable Production across the Central West  
- Figure 43 – Livestock and Meat Product Production across the Central West  
- Figure 44 – Consumption of General Goods across the Central West  
- Figure 45 – Production of Forestry Products across the Central West  
- Figure 46 – Bells Line of Road Current Alignment  
- Figure 47 – Freight Model Segments and Nodes  
- Figure 48 – Freight Model Segments and Nodes  
- Figure 49 – Daily Vehicle Traffic Count at Stations used in the Freight Model  
- Figure 50 – Road Volumes at Stn 93300 (Newell North of Forbes)  
- Figure 51 – Road Volumes at Stn 93300 (Current & Future by Direction)  
- Figure 52 – Road Volumes at Stn 93810 (Newell South of Forbes)  
- Figure 53 – Road Volumes at Stn 93810 (Current & Future by Direction)  
- Figure 54 – Road Volumes at Stn 93909 (Newell North of Forbes)  
- Figure 55 – Road Volumes at Stn 93909 (Current & Future by Direction)  
- Figure 56 – Road Volumes at Stn 93002 (Newell North of Parkes)  
- Figure 57 – Road Volumes at Stn 93002 (Current & Future by Direction)  
- Figure 58 – Road Volumes at Stn 93122 (Newell South of Parkes)  
- Figure 59 – Road Volumes at Stn 93122 (Current & Future by Direction)  
- Figure 60 – Road Volumes at Stn 93242 (Newell North of Parkes)  
- Figure 61 – Road Volumes at Stn 93242 (Current & Future by Direction)  
- Figure 62 – Road Volumes at Stn 93237 (Orange Rd East of Parkes)  
- Figure 63 – Road Volumes at Stn 93237 (Current & Future by Direction)  
- Figure 64 – Road Volumes at Stn 93866 (Mitchell Hwy to Orange)  
- Figure 65 – Road Volumes at Stn 93866 (Current & Future by Direction)  
- Figure 66 – Road Volumes at Stn 93890 (Mitchell Hwy at Molong)  
- Figure 67 – Road Volumes at Stn 93890 (Current & Future by Direction)  
- Figure 68 – Road Volumes at Stn 93112 (Mid Western Hwy West of Grenfell)  
- Figure 69 – Road Volumes at Stn 93112 (Current & Future by Direction)  
- Figure 70 – Road Volumes at Stn 93862 (Mid Western Hwy Near Cowra)  
- Figure 71 – Road Volumes at Stn 93862 (Current & Future by Direction)  
- Figure 72 – Road Volumes at Stn 93409 (Canowindra Rd)  
- Figure 73 – Road Volumes at Stn 93409 (Current & Future by Direction)  
- Figure 74 – Road Volumes at Stn 93838 (Mid Western Hwy towards Grenfell)  
- Figure 75 – Road Volumes at Stn 93838 (Current & Future by Direction)  
- Figure 76 – Road Volumes at Stn 93895 (Mid Western Hwy Cowra towards Blayney)  
- Figure 77 – Road Volumes at Stn 93895 (Current & Future by Direction)  
- Figure 78 – Road Volumes at Stn 93101 (Mid Western Hwy Blayney towards Cowra)  
- Figure 79 – Road Volumes at Stn 93101 (Current & Future by Direction)  
- Figure 80 – Road Volumes at Stn 93654 (Mid Western Hwy Blayney towards Cowra)  
- Figure 81 – Road Volumes at Stn 93654 (Current & Future by Direction)  
- Figure 82 – Road Volumes at Stn 99323 (O’Connel Rd to Oberon)  
- Figure 83 – Road Volumes at Stn 99323 (Current & Future by Direction)  
- Figure 84 – Road Volumes at Stn 99612 (Mid Western Hwy Bathurst towards Blayney)  
- Figure 85 – Road Volumes at Stn 99612 (Current & Future by Direction)  
- Figure 86 – Road Volumes at Stn 99887 (Great Western Hwy Bathurst)  
- Figure 87 – Road Volumes at Stn 99887 (Current & Future by Direction)  
- Figure 88 – Road Volumes at Stn 99911 (Mitchell Hwy Bathurst towards Orange)
TABLE OF CONTENTS

Figure 89 – Road Volumes at Stn 99911 (Current & Future by Direction) 116
Figure 90 – Road Volumes at Stn 99921 (Great Western Hwy Bathurst) 117
Figure 91 – Road Volumes at Stn 99921 (Current & Future by Direction) 118
Figure 92 – Rail Volumes between Lithgow and Coxs River 121
Figure 93 – Average Train Numbers per Day between Lithgow and Coxs River 122
Figure 94 – Average Train Services per Day between Lithgow and Coxs River 123
Figure 95 – Rail Volumes between Bathurst and Tarana 124
Figure 96 – Average Train Numbers per Day between Bathurst and Tarana 125
Figure 97 – Average Train Services per Day between Bathurst and Tarana 126
Figure 98 – Rail Volumes between Blayney and Bathurst 127
Figure 99 – Average Train Numbers per Day between Blayney and Bathurst 128
Figure 100 – Average Train Services per Day between Blayney and Bathurst 129
Figure 101 – Rail Volumes between Dubbo and Orange 130
Figure 102 – Average Train Numbers per Day between Dubbo and Orange 131
Figure 103 – Average Train Services per Day between Dubbo and Orange 132
Figure 104 – Rail Volumes between Molong and Orange 133
Figure 105 – Average Train Numbers per Day between Molong and Orange 134
Figure 106 – Average Train Services per Day between Molong and Orange 135
Figure 107 – Rail Volumes between Parkes and Molong 136
Figure 108 – Average Train Numbers per Day between Parkes and Molong 137
Figure 109 – Average Train Services per Day between Parkes and Molong 138
Figure 110 – Rail Volumes between Bogan Gate and Parkes 139
Figure 111 – Average Train Numbers per Day between Bogan Gate and Parkes 140
Figure 112 – Average Train Services per Day between Bogan Gate and Parkes 141

APPENDICES
Appendix 1 – Central West Freight Model 70
Appendix 2 – Assessment of Road Volumes 76
Appendix 3 – Assessment of Rail Volumes and Train Numbers 120
Appendix 4 – Central West Project List 142
Appendix 5 – Central West Freight Drawings 150
1.0 FORWARDED

Connectivity to market is a key challenge for business within the Central West of NSW. Local and regional businesses rely on an effective freight network for the export of commodities produced in the Central West destined for national and international markets. This also applies for the import of goods consumed within the local area and goods required for other purposes such as mining and manufacturing.

Much of the cost of production to the end customer is contained in the transport charge. The components of these charges are complex. A more efficient freight network delivers real value to business through a reduction in freight charges and in turn the opportunity for growth. To make sound expansion plans, businesses which rely on the freight network should consider the benefits that various transport modes can deliver for their business. Journey time, reliability, vehicle capacity and cost are key factors in the selection of an appropriate transport mode.

To assist businesses with investment decisions relating to transport modes, Regional Development Australia Central West (RDACW) have assessed the freight task and freight movements within and through the Central West of NSW. This Study documents the freight task in terms of net tonnes transported via road, rail and air and highlights constraints and opportunities, considers possible network improvements and provides guidance on the benefits to the region of these improvements.

The freight task is made up of commodity generated freight as well as freight which passes through the Central West bound for other domestic regions or international markets. Based on an assessment of regional production, approximately 15 million tonnes of freight is generated annually within the Central West and transported either to adjacent Local Government Areas (LGAs) or to national and international markets. By 2034 this commodity based freight task is expected to rise to approximately 25 million tonnes. In addition to commodity generated freight, the Study has documented in the order of 10 million tonnes of freight that moves through the Central West on its way to export markets. Such movements occur primarily on the Newell and Great Western Highway road corridors and the Main West rail corridor.

The role of Regional Development Australia in relation to freight logistics is to support regional growth by providing information that assists government and businesses to make sound planning decisions. RDACW has assisted regional businesses in the Central West in many ways including the preparation of the Central West Regional Plan. RDACW are committed to improving the region’s capacity for growth, attracting new investment and enabling business development and to that end the Central West Freight Study is of significant value and importance.
2.0 STUDY FINDINGS

The findings of the Study are classified according to the following categories:

1. Freight Volumes; and
2. General Study Findings.

2.1 Freight Volumes

The freight task has been studied in detail with road, rail and air volumes being related on a net tonne per annum basis. Base data has been collected from a number of sources and translated so that net tonnes are expressed as the standard unit of measure.

Table 1 below shows the current and predicted estimated freight volumes related to the Study region.

<table>
<thead>
<tr>
<th>Freight Task</th>
<th>2014 Estimate</th>
<th>2034 Estimate</th>
<th>20 Year Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Million tonnes per annum)</td>
<td>(Million tonnes per annum)</td>
<td></td>
</tr>
<tr>
<td>Volume of freight originating from the Central West based on commodity production</td>
<td>14.5</td>
<td>24.7</td>
<td>É 70%</td>
</tr>
<tr>
<td>Peak freight flow on road through the north south Newell Highway corridor (2 way)</td>
<td>7.9</td>
<td>14.2</td>
<td>É 80%</td>
</tr>
<tr>
<td>Peak freight flow on road through the Great Western Highway corridor (2 way)</td>
<td>6.4</td>
<td>11.6</td>
<td>É 81%</td>
</tr>
<tr>
<td>Peak volume of freight on rail through the Main West Corridor at Lithgow (2 way)</td>
<td>5.8</td>
<td>10.4</td>
<td>É 79%</td>
</tr>
</tbody>
</table>

Table 1 – Summary Freight Volumes

The freight flows presented in Table 1 are net freight flows derived from the most current road and rail actual daily volumes. Rail movements were obtained over a 3 month period in late 2013 and thus could be influenced by seasonal and market movements. Road volumes were derived from Roads & Maritime Services supplied data, spanning from 2005 to 2013. The most recent relevant data was used in all cases to approximate net tonnage.
2.2 General Study Findings

Through consultation with regional stakeholders and research conducted by the Study Team a number of key themes have emerged and these are presented below as General Findings, which cover both constraints and opportunities.

2.2.1 Road Findings

- Road freight volumes are generally higher than rail freight volumes through major transport corridors of the Central West with the exception being the Main West rail line in the Lithgow LGA which experiences significant volumes of coal traffic and parts of the interstate line through the far western LGA’s.

- The incompatibility of local road traffic and heavy vehicles within close proximity to regional centres is a consistent and concerning issue.

- Long journey times and heavy vehicle restrictions on road freight from the NSW Central West to Sydney are considered a major impediment to regional growth. Limitations to the use of B Doubles, Road Trains and other Higher Productivity Vehicles lead to several ‘last kilometre’ issues as well as higher freight costs due to sub-optimal freight loading and movement.

- A large capacity issue exists in the movement of road freight from the eastern side of the Central West via the Blue Mountains into Sydney. Lithgow is an access point for 80% of the region’s road freight but only trucks less than 19 metres can traverse the existing route through to Sydney. A longer term solution involving the Bells Line of Road Expressway would be required to address this capacity issue.

- A restriction on the use of high productivity vehicles on rural roads results in inefficiencies for transport of commodities from the ‘farm gate’.

2.2.2 Rail Findings

- The movement of low volume general freight by rail is found to be generally uncompetitive in the Central West compared to road freight for short haul into the Greater Sydney region and NSW ports. This is due primarily to the extent to which costs are recovered through user pay arrangements. Above and below rail costs are generally recovered through the cost of freight whereas road freight costs are not recovered to the same extent. Rail is however the most efficient method of transporting bulk goods at high volumes.

- The Study Team believe that some commodities traditionally hauled by rail are at threat of being lost to road as road freight rates reduce through competition and road vehicles become more efficient. Existing rail users have also expressed the need for greater capacity through the Central West for rail to remain competitive. A loss of bulk rail freight services in rural towns would result in a significant additional burden on local roads, a number of which are not suited to heavy vehicle transport due to pavement width and safety issues.
- Different access regimes and the need to work with multiple rail owners to transport rail freight increases the complexity of rail transportation. There are 3 separate Network Managers across the Central West, which arguably increases the overhead component of rail freight costs.

- According to the recently released NSW Freight and Ports Strategy, over the next 20 years, the freight task across NSW is forecast to grow from 409 million tonnes to 794 million tonnes (an increase of 94 per cent). Rail freight needs to take on a significant share of this additional freight for goods to move efficiently. Network capacity and performance must develop ahead of demand.

- Whilst sections of the rail network in the Central West are on the preferred alignment for the ‘Inland Rail’, the movement of interstate freight between Melbourne and Brisbane is not currently a practical option through Central West NSW. The existing Australian Rail Track Corporation (ARTC) line north of Parkes through to Newcastle Port and the North Coast doesn’t support efficient movement of freight by rail, due to infrastructure capability and slow journey times.

- The journey time from the Central West through Sydney to Port Kembla reduces the efficiency of rail versus road. Feedback from rail customers indicates a need for additional track capacity through the predominately single track network in order to improve journey times, particularly for grain to Port Kembla.

- Rail freight access through Sydney is constrained due to train path availability. Expansions of the network that improve freight access from the Central West as outlined in the NSW Freights and Ports Strategy are strongly supported.

- There has been significant investment and several improvements to below rail infrastructure by Transport for NSW (TfNSW) and John Holland Rail (JHR) on the Country Regional Network (CRN) and ARTC across rail lines in the Central West over recent years. Ongoing maintenance funding is essential for the reliable operation of the rail network and the forward maintenance and capital programs of the ARTC and JHR are considered appropriate to deliver adequate service levels based on existing tonnage.

- Current Open Access regulated financial and safety regimes result in inflexible infrastructure and operational standards and rules/procedures due to regulated safety regimes and restricted revenue for marginal lines rather than letting the market dictate returns. Additional options for regional lines could be explored.

- The modal share of rail freight on the eastern coast of NSW has held steady on interstate routes in recent years despite significant capital investment particularly over the last decade. This questions the merits and value for money of additional eastern seaboard rail projects and further supports inland rail to develop the Melbourne to Brisbane modal shift to rail. The questions should be asked as to whether or not the State reap significant benefit through the continued delivery of freight projects north of Strathfield on the Main North, through Newcastle and onto the North Coast if the upgrades previously delivered have not yielded a material change in road/rail market share on the East Coast.
2.3 Recommendations

The recommendations of the Study are classified according to the following categories:

1. Projects that meet the Strategic Merit Test; and
2. Initiatives to Improve Freight Efficiency and Deliver Modal Shift.

Projects that meet the Strategic Merit Test

- **Heavy Vehicle Bypasses**: Access conflicts between High Productivity Vehicles and general traffic at city interface points should be removed over time. Areas the Study identifies as in most need of relief from increasing conflicts include Forbes, Parkes, Bathurst and Orange.

- **Bells Line of Road Expressway**: Improvements in efficiency of road haulage and connectivity to Sydney and export markets through the delivery of the Bells Line of Road Expressway is strongly supported.

- **Planned Upgrades of the Great Western and Newell Highways**: Such expansions will continue to reduce journey time, provide additional capacity and improve safety.

- **Inland Rail**: Inland Rail is strongly supported as it would provide an opportunity for regional businesses to access Melbourne and Brisbane markets and export ports as well as other regional nodes. The Project would also provide a viable alternative for freight travelling along the Newell Highway. Relatively poor connectivity to NSW ports and Melbourne and Brisbane markets impedes economic growth. Inland Rail from Melbourne to Brisbane would unlock significant value in the supply chain, open up new markets to freight users across the region and provide significant economic benefits to the region and the broader NSW economy.

- **Capacity Upgrades on the Country Regional Network**: Increases in rail capacity through increased axle loads, improved signalling and/or additional track passing loops are supported.

- **Improvements to the Sydney Metropolitan Road and Rail Network**: Upgrades through Sydney as outlined in the NSW Freight and Ports Strategy that improve road and rail freight access from the Central West are strongly supported.

- **Maldon to Dombarton rail line**: Improved freight connectivity to Port Kembla would result through the completion of the Maldon to Dombarton rail line, which offers a far less constrained path to the port than via the current Illawarra Line.

- **Blayney to Demondrille rail line**: Reopening of the Blayney to Demondrille line supports the export of locally produced commodities, provides an additional north-south transport corridor for through freight in the Central West and offers alternative access to Port Kembla via the existing Moss Vale to Unanderra rail line.
The Study Team believe these projects meet the Strategic Merit Test and would improve connectivity from the region to major national and international markets.

**Initiatives to Improve Freight Efficiency and Deliver Modal Shift**

Physical works that deliver increased capacity often take many years to deliver and at large expense to the State. In order to meet the forecast freight task across the Central West, major projects such as those listed above are unavoidable. Considering the TfNSW target of increasing modal shift to rail, the Study Team recommend that institutional initiatives be considered in addition to major projects which have the potential to unlock efficiencies.

There are a number of initiatives that could assist with a modal shift from road freight to rail freight over time, which may include but are not be limited to:

- Mass distance charging of heavy vehicles to establish a more level playing field.

- Removing red tape. There are 3 separate rail network managers in the NSW Central West. Is there an opportunity for consolidation?

- Support of viable Short Line operations across the region such as the current proposal to offer Blayney to Demondrille for private rail operation. The Short Line concept may allow private industry to manage the track infrastructure and rail operations (above and below rail) on marginal rail lines at lower cost than current network managers are able to, by creating a 'fit for purpose model', which is less constrained by onerous legislative and regulatory requirements.

- Support the development of intermodal terminals where likely to be economically viable and sustainable.
3.0  INTRODUCTION

3.1  Context

Efficient freight transportation facilitates growth particularly in regional areas which may see an increased benefit through connection to new markets and decentralisation opportunities. Pressure on our major cities to support increased production has resulted in an ever increasing urban and commercial sprawl, increasing journey to work times and cost of living impacts.

Regional areas provide an alternative for existing and new business with access to a captive skilled workforce, existing infrastructure and lower land development costs. Regional businesses that move goods require an efficient and capable transport network including efficient mode connectivity, capacity, transit times and axle loads that reduce capital requirements for operators. Regional businesses also require institutional arrangements that strip away ‘red tape’ and promote alignment of adjacent network owners all leading to a reduction in the total cost of transport, which is a major cost of doing business.

The Central West of NSW is ideally positioned to benefit from the decentralisation opportunities that could be created through an improvement in the efficiency of freight transportation with its geographical proximity to the Greater Sydney Region, location within key agricultural and mineral regions and direct access to interstate road and rail corridors. Improved transport linkages can allow freight to move from and to the major capital cities as well as strategic ports such as Port Botany, Port Kembla and the Port of Newcastle.

The importance of regional freight movement in NSW

“Economic growth in regional NSW relies on the movement of goods through efficient and effective transport networks. The ability of NSW producers to move agriculture, industrial products and natural resources to domestic and export markets in a timely and efficient manner directly impacts on productivity and competitiveness – and hence the economic performance of regional NSW”

NSW Freight and Ports Strategy

This report investigates the existing freight network in the Central West, reports on the condition and capacity of networks to support current freight movements within and through the LGAs of the Central West and provides discussion on the projects and initiatives which would provide significant benefits in reducing freight transportation costs and promoting regional growth.
3.2 Purpose of the Central West Freight Study

Regional Development Australia Central West has commissioned this study into the key drivers of freight movements within the New South Wales Central West region. The study has the following purposes:

- To provide an information source and opportunity matrix that can assist strategy and decision making with respect to new business development, business expansion and economic diversification.

- To provide an input for strategic planning and promotion of investment opportunities within the various 11 LGAs of the Central West region.

- To provide evidence based data on transport and distribution supply chain linkages and traffic routes to national and regional ports and, in particular, to provide a framework and information platform to attract and advocate for regional infrastructure investment as well as supporting information for NSW and National infrastructure planning.

- To provide consistent and reliable measurements to government agencies and key stakeholders that quantify the freight task in Central West NSW as well as forecasting increased growth and infrastructure requirements in the sector. These outcomes will enable government agencies and key stakeholders to improve freight infrastructure and inform changes to government policy in relation to road and rail funding.

- Freight infrastructure may include road, rail and air transport network upgrades as well as new intermodal and/or warehousing facilities on key freight routes that improve distribution efficiency.

3.3 Strategy Framework

3.3.1 Regional Development Australia

RDACW is one of 55 independent, not-for-profit Incorporated Associations that form the Regional Development Australia national network. It comprises a small team of dedicated staff and a committee of local people jointly funded by both Australian and State Governments. RDACW provides input to the Australian, State and local governments on regional development issues and priorities, promotes investment and regional prosperity and raises awareness of programs and services available to regional communities.

The RDACW Mission is to ensure long-term sustainable growth and development of the region by driving and contributing to initiatives that will support economic and community development, social inclusion and environmental sustainability. To this end the RDACW are developing a suite of economic development initiatives, discussed below.

Central West Regional Plan

RDACW recently completed a comprehensive plan for the region. This Regional Plan will help focus Governments and communities on strengths, issues, and a work plan to achieve those priority regional development goals.
Central West Import / Export Study

RDACW recently commissioned the AEC Group to deliver an Import / Export Study for the central west region focusing on the value of imports and exports, identifying contributory, import opportunities and export development.

Figure 1 – Central West of NSW

Central West Freight Study

A natural extension to the Import Export Study is the Central West Freight Study, which investigates at a transport mode and commodity level the existing and future freight movements within and through the Central West. It is aimed at providing a data base of commodity volumes and freight flows on primary and secondary corridors and an evidence base to underpin regional priorities.

This study forms part of the strategic framework that RDACW is working to in respect of economic development, namely:

- Facilitate alliances and develop networks of innovators, investors, entrepreneurs and government to increase commercial opportunity.
- Promote and assist with investment attraction, retention and employment growth.
- Support the development of targeted infrastructure projects to meet the needs and opportunities of the Central West region.
3.4 Previous Freight Studies and Policy Context

The freight task in the Central West has been studied previously and the Study Team have been cognisant of the findings of previous reports. Of particular importance is the recently released NSW Freight and Ports Strategy, November 2013. The findings of this investigation have been reviewed for consistency against the Freight and Ports Strategy and the recommendations align with the Action Plan prepared by TfNSW.

RDACW and the Study Team believe it is important to deliver a study which is focused at a regional and local level, providing stakeholders with current information on the key freight flows within the region as well as a synopsis on the potential projects and initiatives of the most benefit to the region. Business makes decisions on reliable and current information and to the extent possible, the Study Team have based the study on the most recent data available.

The key freight related reports considered during the preparation of the Central West Freight Study include but are not limited to:

- Central West Transport Plan, TfNSW, 2013.
- Melbourne to Brisbane Inland Rail Alignment Study, ARTC, 2011.
- Central West and Central Regional Economic Profile, AEC Group, 2011.
- NSW Long Term Transport Master Plan, TfNSW, 2012.
4.0 CENTRAL WEST REGION

The Central West Region of NSW extends from Lithgow in the east to Lake Cargelligo in the west and comprises the Local Government Areas (LGA’s) of Lithgow, Oberon, Bathurst, Blayney, Orange, Cabonne, Cowra, Parkes, Forbes, Weddin and Lachlan.

Each of the 11 LGA’s has infrastructure and business service industries that support local business and in turn generate modest freight and transport demands, however each of the areas are quite unique based on the commodities that originate from each area, whether driven by agriculture, minerals, grain or the many other commodities produced in the Central West.

Population drives demand for goods and services, which makes up a key component of the overall freight task in the Central West, particularly toward the eastern LGA’s surrounding the major centres of Orange, Bathurst and Lithgow.

Figure 2 – Population Density in the Central West
5.0 CENTRAL WEST FREIGHT NETWORK

5.1 Freight Network Overview

The current road, rail and aviation networks are summarised in the illustrations below.

Figure 3 – Central West Road, Rail and Airport Network

Figure 4 – Central West Rail Network
5.2 The Combined Central West Freight Network

The complexity of the freight network in the Central West becomes clear when the modal networks are combined to illustrate a single freight network as shown below, which combines the primary, arterial and sub arterial roads, operational and non operational rail lines and regional airports.
5.3 **Key Interstate Routes through the Central West**

The following provides an overview of the freight network within the Central West and highlights the strategic sitting of the region in relation to interstate freight corridors and NSW Export Ports.

![Figure 7 – Interstate Freight Network Overview](image)

**5.3.1 Within Range However Still Out of Reach**

Unfortunately connectivity to national and international markets is not as easy as it appears on the map. The rail line in North West NSW is discontinued past North Star (near the Queensland border) and even if it were to be operational through to Queensland it would meet with a Narrow Gauge Network, such is the tyranny of the mixed gauges across Australia.

Connectivity to the closest export ports at Botany and Port Kembla is constrained for road given current vehicle length restrictions on the Great Western Highway and a lack of direct and adequate road infrastructure. For rail, through train path capacity restrictions and an uncompetitive journey time are problematic.

It is against this background that the report investigates the current and future predicted freight task in the following sections.
6.0 CURRENT FREIGHT TASK

The study finds that the majority of the freight task in the Central West is driven by the movement of goods originating within the Central West and transported either to adjacent regions or outside the Central West boundaries either to destinations within Australia or to international export markets. A lesser portion of the freight task relates to freight passing through the Central West on interstate road and rail corridors, classified in this report as ‘Through Freight’. The import of goods into the Central West for local consumption accounts for a comparatively small fraction of the total freight task.

Whilst freight generated by the production of commodities has been quantified and approximated to be 14.5 million tonne pa, the quantification of through freight is a little more challenging and varies with specific corridors. The Study finds that the majority of freight travelling through the Parkes and Forbes LGAs on the Newell Highway is through freight as compared to local production driven freight. This is also the case on the Great Western Highway, whereas the predominant flow on arterial and sub arterial roads is driven by local and regional production. Apart from the export of Coal from the Lithgow LGA, the majority of rail movements are related to through freight and passenger services, effectively limiting the capacity for regional rail services. Detailed freight flows are contained in Appendix 2 and 3.

As reported in the NSW Freight and Ports Strategy, an indicator of the freight task in NSW is State Final Demand (SFD) for goods. Annual growth in exports of goods and SFD are forecast to average nearly 4.0 per cent over the next five years. Whilst SFD is an appropriate indicator for expected growth in freight demand, the growth in some key commodities will alter depending on global markets as well as local influences, not least of which is the efficiency of transport infrastructure to support increased freight. The forward freight projections included in this report assume that demand is unconstrained by infrastructure capacity. The increased freight task is thus used to identify areas where existing or known bottle necks will need to be addressed to allow production to match demand.

6.1 Current Freight Volumes

The current freight task can be depicted in terms of freight generation and consumption at a commodity level and also at a modal level. Freight volumes through the Central West are illustrated below. As with all other illustrations depicting the freight task in the report, volumes are shown as Net Tonnes per annum. Road volumes include freight flows from each direction and so volumes approximate net tonnes moved in both directions. Rail volumes are also shown as the combination of both directions and derived from gross tonnes per annum.
Figure 8 – Road Freight Network Approximate Volumes 2014

Figure 9 – Rail Freight Network Approximate Volumes 2014
6.1.1 Combined Volume on Road and Rail

The overlay of road and rail volumes by freight network segment provides a useful illustration of the dominant corridors through the Central West Region and also illustrates potentially the routes that could be serviced by alternative modes.
6.2 Production Driven Freight

6.2.1 Production Across NSW

As reported in the NSW Freight and Ports Strategy, NSW regions play a critical role in the production and movement of goods in the NSW economy. According to the TfNSW Study, approximately 260 million tonnes of goods originate from NSW regions with destinations in other NSW regions, metropolitan Sydney, interstate or internationally. This represents around 65 per cent of the total NSW freight task by volume. This compares with the Sydney metropolitan and interstate locations, which generate 15 per cent and 20 per cent, respectively, of the total freight task across NSW.

The largest product category hauled from NSW regions is mining products and this is also true for the Central West. Mining products, predominantly coal, account for 60 per cent of the total regional freight task by volume in NSW.

Agricultural products (livestock, grain, cotton, meat, wine, forestry) and other products (manufactured items, fuel, chemicals, building and construction products) account for 20 per cent, respectively, of the total regional freight task by volume.

Agricultural freight movements play a significant role in the Central West as with other western, northern and southern regions.

6.2.2 Production within the Central West

Freight driven by the production and transport of products in the Central West is the largest contributor to the region’s freight task with coal and grain being the commodity groups with the largest volumes being locally produced. The Study Team have assessed production volumes at the commodity level in order to determine the current and possible future transport volumes driven by locally produced commodities. 2011 data from the ABS on the volumes of commodities produced in NSW was used. The data was adjusted by the Study Team to approximate the annual volumes by tonne as many commodities are described with varying units of measure.

For the purposes of analysis the commodities were consolidated into the following broad groups:

- Coal;
- Other minerals;
- Grain;
- Fruit and Vegetables;
- Livestock and Meat;
- Forestry Products; and
- Population based General Freight.
The following approximates the current freight task by commodity group and illustrates the predicted increase in commodity movement over the next 20 years within the Central West.

### Figure 12 – Freight Generated by Commodities Produced in the Central West

#### 6.2.3 General Goods driven by Consumer Demand

It has been estimated that over half a million tonne of goods generated by consumer demand contributes to the freight task in the Central West annually (based on RDANI 2012 Freight Study population based freight methodology). This is assumed to be goods imported into the Central West predominantly through the Great Western Highway corridor however also through the Newell Highway corridor from the south and north.

#### 6.3 Through Freight

The Central West straddles a number of key interstate freight corridors and substantial volumes of freight pass through the Central West. The major through freight flows are approximated in the following illustration.
There are certainly advantages and disadvantages with the passage of through freight. Many local businesses survive on the passing trade, whether it is service stations, motels and fast food restaurants. Through freight however consumes capacity for local freight movements and contributes to significant congestion within city limits and degradation of assets, which are often maintained by local authorities.

6.3.1 Road Through Freight

Through Freight on Road is primarily on the Newell Highway and Great Western Highway Corridors. The Newell supports the movement of high volumes of general goods from Melbourne/Adelaide to Brisbane and various origin and destination combinations in between. The Great Western Highway supports transport of general goods to and from Sydney.

6.3.2 Rail Through Freight

The interstate East West rail network passes through the Central West with Parkes being an important intersection point between the East West ARTC network running from Perth to Parkes and to Cootamundra to link with the ARTC North South Network and the proposed Inland Rail. Parkes is also an interface point between the ARTC interstate network and the NSW Country Regional Network (CRN). Through Freight Services that traverse the Central West to external destinations include:

- Steel Train from Whyalla to Newcastle.
• Various General Freight services from the Dubbo Region to Sydney and Port Kembla.
• Intermodal services from Perth to Sydney.

The number of services per day or per week varies depending on seasonal and market factors. The rail volume flows at major segments on the network are illustrated in Appendix 3.

6.4 Key Freight Flows

6.4.1 Major Road Freight Flows (Over 3 Million Tonne per annum)

The major freight flows over 3 Mtpa are illustrated below (shown in million net tonne pa).

Figure 14 – Major Road Freight Flows across the Central West
6.4.2 Minor Road Freight Flows

Some of the key minor freight flows on arterial roads are illustrated below (shown in million net tonne pa).

Figure 15 – Minor Road Freight Flows across the Central West
6.4.3 Rail Freight Flows

A detailed analysis of rail freight flows by direction is included in Appendix 3. The major freight flows on rail are also illustrated below.

Figure 16 – Rail Freight Flows across the Central West
6.4.4 Air Freight Flows

The movement of freight by air supports high value as well as time sensitive freight including high value parcel freight, medical and mining supplies and equipment amongst other goods.

Regular Public Transport (RPT) flights operate between Sydney Airport (Mascot) and Bathurst, Orange and Parkes. These are operated by Regional Express Airlines (REX) utilising 34 seat Saab340 aircraft. Each flight carries on average approximately 25 kilograms of freight. With 61 flights per week in the Central West this amounts to 1.5 tonnes of freight per week or approximately 80 tonnes per year.

Toll Aviation operates air freight on behalf of Toll Priority. Toll Aviation has bases in Brisbane, Bankstown and Adelaide. A number of aircraft operate out of Bankstown for regional ports during weekdays. These include two Piper Chieftain twin-engine aircraft owned by AFS/Parkes Aviation and running to Bathurst, Orange, Parkes and Dubbo as per figure 17 below. Additionally a Piper Chieftain operated by Wagga Air connects in Young with traffic from Bankstown proceeding to Cowra then West Wyalong. Each Piper Chieftain carries on average 300 kg out of Bankstown per day and returning to Bankstown five days per week. This approximates 9 tonnes of freight per week and 450 tonnes per year. Toll air freight can also be considered a primary freight route for Central West NSW. Various bases in the Central West have light aircraft that are capable of carrying freight or passengers on Charter. Charter operations require a commercial certificate or registration.

Volumes on major routes such as Bankstown to Orange and Bankstown to Bathurst are estimated to be less than 200 tonne pa. RPT and commercially operated regular flight corridors are shown in the illustration below.

![Regular Air Freight Routes in the Central West](image-url)
7.0 PROJECTING FORWARD TO 2034

7.1 Predicted Increase in the Total Freight Task

The Freight Task nationally is widely predicted to double in the next 20 years. The recently released NSW Freight and Ports Strategy indicates that the NSW Freight Task is likely to increase from its current level of 409 million tonne per annum to an estimated 794 million tonne over the 20 year period from the completion of the report in November 2011.

![Figure 18 – Predicted increase in the NSW Freight Task (Source: NSW Freight & Ports Strategy)](image)

This Central West Freight Study has adopted the projected increases in the total freight task as well as the predicted growth rates for major commodities as depicted in the NSW Freight and Ports Strategy.

7.2 Predicted Increase in Freight by Commodity

The rate of growth in regional commodity production over future years has been incorporated into the Freight Model in order to approximate the commodity driven freight demand out to 2034. The rate of growth in regional commodity production has been estimated based on rates included in the NSW Freight and Port Strategy, which has a 2011 datum.

Over time, the growth rate for commodities is likely to vary with consumer demand, structural change across certain industries (particularly manufacturing), climatic conditions, population change and global demand for regional products including coal, minerals and agricultural commodities.

Since the release of the NSW Freight and Ports Strategy there has been a noticeable decline in both consumer sentiment and global demand for Australia’s resources. In NSW, coal prices are significantly lower than they were in 2011 and whilst production rates are generally being...
sustained, forward exports are considered unlikely to meet the growth projections of 2011. Whilst growth rates used in this Study have been approximated from those presented in the Freight and Ports Strategy, these rates should be considered in light of the current market should market conditions remain subdued for an extended period.

Growth rates in the Central West Freight Model have been applied to current tonnages for locally produced commodities and then factored into current road/rail volumes allowing for existing through freight in order to approximate future tonnages. Increases in through freight (such as Melbourne – Brisbane road volumes, which are expected to rise by approximately 80% over the next 20 years) are also approximated.

Expected growth in commodities over the next 20 years as incorporated into the development of the Freight Model:

- Coal: 80%
- Minerals: 110%
- Grain and Other Crops: 30%
- Fruit and Vegetable Production; 40%
- Livestock and meat commodities; 80%
- General Goods (based on consumer demand): 80%
- Forestry products: 40%

7.3 Predicted Increase in Freight by Mode

The review of the projected increase in total freight combined with the predicted movements in key commodities provided the basis for approximating the likely increases in transport by mode across the Central West. The increases in transport mode volumes as approximated in the Freight Model vary depending on the commodities being hauled and range from a compound annual growth rate of between 2% and 4% pa, with the exception of the Air Freight Services industry, which has grown at a compound annual rate of 4.4% over the past five years and this figure has been used to determine growth rates.

7.4 Key Routes by Volume

Based on the review of estimated growth rates for commodities and transport modes an approximation of net volumes at 2024 and 2034 is provided. It is important to note that this assessment is based on the existing freight network and does not factor in any modification in volume on existing/new alignments that may result due to the construction of major projects such as Bells Line of Road Expressway or the Inland Rail. The increased intensity of freight flows through regional roads as illustrated in the 2024 and 2034 assessment does however provide further support for these major projects.
Figure 19 – Road Freight Projected Increases (2014 to 2034)
Figure 20 – Rail Freight Projected Increases (2014 to 2034)
7.4.1 Combined Road and Rail Projected Increases

The combined road and rail volumes at 2014 and 2034 below clearly highlight the corridors and intersection points through the Network that are expected to increase in congestion. Overlaying road and rail volumes also illustrates the potential for modal shift on corridors such as the Mid Western Highway, which is predicted to increase in volume up to 2 million net tonne per annum (per direction). To deliver a modal shift on the Mid Western Highway would require reopening of the Blayney to Demondrille railway line.

Figure 21 – Combined Road & Rail Freight Projected Increases (2014 to 2034)
8.0 ROAD NETWORK

8.1 Primary and Secondary Routes

The road network through the Central West is expansive and has been classified for the purposes of the Freight Model in terms of primary, arterial, sub-arterial, local, and other minor roads. The classification is based on the Updated Guidelines for Functional Classification of Roads (Roads and Traffic Authority 1991). A broad definition of the road types is shown below.

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Roads</td>
<td>Form the principal avenues for communications between major regions, including direct connections between capital cities.</td>
</tr>
<tr>
<td>Arterial Road</td>
<td>Roads that predominately carry through and intra region traffic, forming principal avenues of communication for urban traffic movements.</td>
</tr>
<tr>
<td>Sub-Arterial Road</td>
<td>Roads which connect the arterial road to areas of development and carry traffic directly from one part of the region to another. They may also relieve traffic on arterial road in some circumstances.</td>
</tr>
<tr>
<td>Local roads</td>
<td>Roads that are within a particular developed area. These are used solely as local access roads.</td>
</tr>
</tbody>
</table>

Table 2 – Classification of the Central West Roads

The primary, arterial and sub-arterial road network is illustrated below (local and minor roads have been excluded from the illustration).
8.2 Vehicle Types and Volumes

The 12 Bin classification data used in the report allows the volume of goods moved on various truck classifications to be approximated.

An assessment of volumes by classification and direction at key nodes on the network is included in Appendix 2. The following provides a summary of truck volumes on the Newell Highway, which was assessed to be the highest road freight volume on the Network.
Figure 24 – Road Volumes at Stn 93242 (North of Parkes)
8.2.1 Heavy Vehicle Routes

The Central West is not well serviced by heavy vehicle routes within the region. High Productivity Vehicles are restricted (can operate under permit) from operating on the majority of the Newell Highway and Great Western Highways.

Road geometry, intersections and limited passing lanes particularly on the Great Western Highway impact on journey times for heavy vehicles and consequently the efficiency of freight transport. Similarly, the Newell Highway is limited in transit time and capacity by the road configuration as well as the confluence of interstate, regional and local traffic within the limits of major towns such as Forbes and Parkes.

The approved B-Double routes through NSW and the Central West are shown below in a figure from the NSW Freight and Ports Strategy (Nov 2013).

Figure 25 – B-Double Routes in NSW (Figure from NSW Freight and Ports Strategy)
8.3 Management of Road Networks

The Roads and Maritime Services (RMS) are responsible for the management of approximately 10% of the major arterial road network in NSW, known as State Roads. RMS provides funding assistance to councils for managing their regional roads and, to a limited extent, local roads through funding and other support. Additionally RMS manages a small number of regional and local roads in the far west of NSW.

RMS is responsible for managing the full width of the road reserve on those State Roads which are designated as freeways. RMS's responsibility for managing other state roads focuses on network development, building and maintaining roads, but only in relation to the carriageway and associated roadway elements necessary in order to make provision for the state significance of the route (Source RMS).

Generally, apart from freeways, Councils own and manage the land on all public roads.

8.4 Road Network Capacity

A detailed assessment of capacity generally requires the following inputs as a minimum:

- Road configurations including number of lanes.
- Vehicle numbers per day.
- Lane width.
- Road surface; and
- Number, length and location of passing lanes.

It's not possible to determine the system capacity and journey time implications across the network by assessing discrete road segments in isolation. However, consideration of the segment capacity does provide some guidance on the relative congestion of segments and the locations that are likely to experience high congestion, accelerated deterioration, delays during peak periods and safety incidents.

Whilst a detailed assessment of capacity of the existing road network was not carried out, advice was sought and received from the RMS Regional Office in Parkes on the appropriate guideline for assessing capacity of roads within the Central West. Based on consultation with RMS the following provides a guide as to the Typical Mid-block Capacity for Urban Roads with Interrupted Flow:
Table 3 – Vehicle Capacity Guidelines
(Source Austroads, Table 7.1)

Peak period mid-block traffic volumes may increase to 1,200 to 1,400 vehicles per hour on any approach road subject to conditions such as adequate flaring at major upstream intersections and/or uninterrupted flow from a wider carriageway upstream of an intersection approach and flowing at capacity.

The above guidelines have been used in the consideration of current and future relative congestion across the Central West based on the volume projections illustrated in Figure 19.

**Relative Congestion 2014**

Observations relating to the current relative congestion

- Road volumes on sub arterial roads outside cities and towns are unlikely to inhibit journey time for freight. Volumes on these roads are relatively low and well within suggested capacity limits. The prominence of higher mass vehicles is more likely to be the issue with local councils bearing the cost of maintenance on local roads.
A review of potential congestion indicates that the network nodes which are predominantly located at towns and cities are likely to be the areas of road use conflict. This conflict is exacerbated with the interaction of heavy mass vehicles and for local and regional traffic in areas where there is no heavy vehicle bypass.

**Relative Congestion 2034**

Based on the review of potential congestion, the predicted increase in production of commodities across the region as well as predicted increases in through freight over the next 20 years we have provided commentary on the likely relative congestion at 2034.

- Doubling of freight volumes (up to 6 Mtpa) on the Newell Highway and Great Western Highway. Acute at Forbes, Parkes, Bathurst and Lithgow.
- Increase in total volume through Mid Western Highway (up to 3 Mtpa) will see moderate congestion at Blayney and Cowra and localised congestion around Livestock Exchange in Carcarr. Increase up to 3 Mtpa on the Mitchell Highway will see congestion particularly through Orange.
- Increase in total volume on rural roads in the western LGA’s due to grain and livestock transportation (up to 2 Mtpa in some areas) will result in increased maintenance requirements and moderate congestion at intersections.
- Increase in total volume on Bathurst to Oberon corridor in line with increase in forestry products (up to 2 Mtpa).

**Figure 26 – Relative Road Congestion 2034**
This review is based essentially around the current network and ignores potential major upgrades and projects such as the Bells Line of Road Expressway, the Inland Rail and the Great Western Highway upgrade. These and other important projects are considered later in the report.

Key observations relating to congestion at 2034 include the following:

- Freight movement on the Newell Highway would increase at approximately 4% per annum and result in significant congestion at city interface points.

- Due to predicted freight increases, the Great Western Highway through Lithgow and Bathurst will experience major congestion without further expansion.

- Congestion on sub arterial roads outside of the population centres will rise modestly and in line with the predominant commodities produced and transported in the respective areas. Based on the projected increases it is unlikely that significant congestion will occur on these roads given low current volumes and only modest increases in the predicted volumes of some commodities produced in the rural areas such as grain, fruit and vegetables and the movement of livestock. Congestion however will arise at major towns and intersections; and

- Maintenance requirements and costs will rise in line with additional volumes on all roads.

8.5 Road Network Condition

The condition of the road network varies across LGA’s. The Study Team have not assessed the condition of roads during the study however have reviewed relevant reports into the condition of roads across the Central West in order to consider the reduced capacity any adverse conditions might impose.

The Phase 1 and Phase 2 Western NSW Road Plans commissioned by the Hon. Kevin Humphries MP and developed on behalf of councils within the Central West identifies specific road condition issues and provides a prioritised plan for upgrade over the next 10 to 15 years in order to boost productivity and efficiency in the region. Projects in the Plan were prioritised according to productivity, strategic links, safety and tourism, with productivity being the most significant.

The focus of the Plan is to identify where Local Government, State and Federal infrastructure funding should be directed in Western NSW. The report was prepared by J L Kilby Pty Ltd.

Major road upgrades recommended in the Western NSW Road Plan have been considered in the Strategic Merit test in Section 12 of this Report.
9.0 RAIL NETWORK

The rail network through the Central West is illustrated below.

![Rail Lines in the Central West](image)

**Figure 27 – Rail Lines in the Central West**

9.1 Demand for Rail Services

Rail transportation is considered the most efficient form of moving large volumes of freight. The Australasian Railway Association (ARA) in its Study ‘Towards 2050: A National Freight Strategy & the Role of Rail’ provided the following supportive metrics for rail transportation:

- Up to 10 times more fuel efficient and causes up to 10 times less emissions that road transport.
- Rail is 7-9 times safer than road freight.
- 1 freight train has the potential to remove up to 150 trucks off the road.

However, the efficiency of rail as a mode of choice depends particularly on haul distance and transit time. With close proximity to the Greater Sydney Region and reasonable road links, the majority of general freight is likely to continue to be transported on road. Rail is at a competitive disadvantage to road for short haul journeys due to ‘Last Mile issues’ and the need for modal interchange to achieve door to door service.

Long Haul interstate freight and transportation of bulk commodities however are ideally suited to rail transportation. This is evidenced by the market dominance of rail as the preferred mode for transportation of bulk commodities such as iron ore and coal, and general container freight over long distances such as the East West route between Perth and the North South route between capitals on the east coast.
The ARA provide figures on the movement of freight by rail and have recently indicated that 80% of freight currently moves on rail from Perth through to Sydney, illustrating the market dominance of rail for long haul journeys. By comparison however rail’s modal share, even for journeys between major capital cities can be very low depending on the journey distance. According to the ARA, current modal share on rail between Melbourne and Sydney is only 5%. This is despite the multi-billion dollar investment by the Australian Rail Track Corporation in upgrading the existing Melbourne to Sydney and Sydney to Brisbane rail corridor. This investment has strengthened the infrastructure, improved capacity and reduced journey times however real modal shift has yet to occur.

Figure 28 – Rail Market Share in Australia
(Source: Australasian Railway Association)

Barriers to entry for rail transportation are significant as compared to moving freight on road. The lack of modal shift on the East Coast network illustrates that improvements in fixed infrastructure alone do not necessarily create additional demand or deliver increased volumes on rail. As such, initiatives considered in this report include both fixed infrastructure improvements as well as multi mode system solutions.

9.2 Current Rail Services

Train services across the Central West are a mixture of general freight, grain, minerals, coal and passenger. General freight is a broad category that includes interstate intermodal services, regional container shuttles and a steel train that runs through the Central West from Whyalla in South Australia to Newcastle. Mineral services carry containerised mineral concentrates to Port Kembla and the Port of Newcastle, coal is carried from the Lithgow LGA to Port Kembla and various passenger services run from Sydney to Dubbo, Broken Hill and interstate through the Central West. The following individual services have been captured in the freight model:

- Coal: Lithgow to Central Coast / Newcastle
- Coal: Lithgow to Port Kembla
Current net rail volumes at key nodes on the network have been derived from a review of train running data from September to November 2013 provided by TfNSW. The total volumes across the network have been aligned to the gross train volumes published in the NSW Freight and Ports Strategy November 2013. Slight discrepancies were noted at network nodes and these are considered to relate to seasonal factors for commodities such as grain and market conditions for general freight and coal. The use of the actual train running data from late 2013 however does provide the most current analysis at an individual service level.

An assessment of net volumes by train service type and average train numbers per day at key sections on the network is included in Appendix 3. The following provides a summary of rail volumes between Lithgow and Coxs River, the most heavily congested section on the Network.
Figure 29 – Rail Volumes between Lithgow and Coxs River
Figure 30 – Average Train Numbers per Day between Lithgow and Coxs River
9.3 Management of Railway Networks

The major rail lines across the Central West are operated and maintained by three separate network managers. Numerous privately owned rail sidings, spur lines and loops are connected to the major networks. Each network manager has a unique set of standards, operating rules and procedures and commercial access arrangements in place governing the management of rail operations across their network. To move freight on rail across the Central West, a rail operator will need to negotiate separate access agreements with each Network Manager and pay tariffs generally on a regulated mass distance basis.

This overlay of network managers is considered a barrier to attracting additional freight onto rail and the challenge in delivering rail freight reliably and at an efficient cost.

The vast majority of rail lines in the Central West are owned and operated by TfNSW CRC. The exceptions are the Sydney Trains Network commencing at Lithgow and the portions of the ARTC Interstate Rail Network from Broken Hill to Parkes, Parkes to Cootamundra and Parkes to Narromine, which run through parts of the Central West.

The management of major rail lines in the Central West is illustrated below.

![Management of Railway Lines in the Central West](image)
9.3.1 Country Regional Network (CRN)

In January 2012, John Holland Rail commenced a 10 year contract to maintain and operate the NSW CRN on behalf of TfNSW CRC, whereby JHR has effective management control of the network and delivers infrastructure management and train operations against an open access mandate.

9.3.2 ARTC Network

ARTC maintain and operate the interstate freight network in New South Wales and are responsible for the management of over 8,500 route kilometres of standard gauge track Australia Wide. ARTC’s network extends into most State and Territories throughout Australia as shown in the Figure below.

![Figure 32 – ARTC Interstate Network](image)

Of importance to the Central West are the portions of the East West network that run from Broken Hill to Parkes and then to Cootamundra, passing through sections of the Parkes, Forbes and Weddin Shires. Of secondary importance currently is the portion of the ‘Inland Route’ from Parkes to Narromine to the north, which runs through Parkes LGA. Whilst operations on this northern connection are relatively modest all current alignment options for the Inland Rail Project adopt the section from Parkes to Narromine as a common corridor segment.

9.3.3 Sydney Trains Network

Formerly operating under the RailCorp banner, Sydney Trains now controls the infrastructure and operations for the Sydney Metropolitan Network providing passenger services in the Greater Sydney suburban areas, bounded by Emu Plains, Berowra, Waterfall and Macarthur. Sydney Trains operate regional passenger services throughout the Central West Region.
Sydney Trains operate a limited section of track within the Central West region, commencing around Lithgow and continuing towards Sydney in the east. While the amount of track infrastructure owned by Sydney Trains within the Central West is minimal it does prove to be a significant point to note as any operators wishing to transport freight out of the region along this line must negotiate with multiple Network Managers.

9.3.4 Private Siding Owners

Private Siding owners own private rail lines and hold Connection Agreements with the adjacent Network Owner. Often the prime generator of freight at the location of the Private Siding also owns and manages the private rail assets. Examples of Private Siding owners include GrainForce Terminal at Kelso and SCT Intermodal Terminal at Parkes.

9.3.5 Intermodal Terminals

Under the current infrastructure framework in NSW, Intermodal Terminals are delivered by the private sector. Traditionally there has been little support provided by levels of government into the planning and delivery of freight intermodal terminals with the exception of Parkes Intermodal Hub, where Parkes Council have played an active role over many years in facilitating the land requirements for the Hub.

With Open Access rail networks and little involvement in the planning of terminals by government agencies a number of intermodal terminals exist. The number of terminals in the Central West creates tough competition.

The recent issue of the NSW Freight and Ports Strategy by TfNSW signals an era of more strategic thinking and facilitation by Government to deliver appropriate infrastructure to meet the increasing freight task. This is a welcome change and where appropriate this report aligns with the recommendations of the Freight and Ports Strategy.
The following illustrates the locations of existing intermodal terminals in the Central West.

![Map of Central West rail network with intermodal terminals marked](image)

Figure 33 – Major Intermodal Terminals in the Central West

### 9.4 Rail Network Capacity

The system capacity of the Country Regional Network and portions of the Interstate Rail Network that exist within the Central West is in excess of the existing demand and utilisation however consultation with certain stakeholders has revealed that capacity constraints do exists.

The Central West Transport Needs Study of 2009 presented rail operational modelling to support the conclusion that capacity generally exists within the Central West rail system however is constrained by capacity for train paths through the Sydney Metropolitan Network. The Study Team agree with this analysis generally although in discussing rail’s competitiveness against road with particular stakeholders believe that a lack of capacity and reduced reliability results in transport cost increases and reduces the attractiveness of rail over road as a preferred choice.

Providing additional capacity to improve system efficiency is a complex issue and network modelling to determine absolute network constraints has not been undertaken during the Study. Projects and initiatives that could improve reliability and capacity for rail are however discussed further in Section 12 in relation to their relative benefit to the Central West. Improvements in signalling technology particularly in future years, and should the need arise; duplication of sections of the predominantly single track network would yield additional capacity.

The figure below illustrates sections of the network that based on volume increases up to 2034 are likely to require capacity enhancement in the form of track structure / signalling upgrades,
increased path availability through additional crossing loops or a combination of measures. The assessment assumes adjacent network segments are unconstrained and does not factor in major projects such as the Inland Rail or Maldon Dombarton. These and other major projects are discussed in section 12.

Figure 34 – Relative Rail Congestion 2034

The review of capacity indicates that on a segment basis additional capacity exists to support freight growth however based on stakeholder consultation we are aware of the inefficiencies in the rail system, which stifles growth and future opportunities. As indicated previously, demand for rail is not just dependent on fixed infrastructure. Any expansion in rail capacity, including expensive capital upgrades should consider system issues and recognise the advantages that road particularly has over rail for door to door short haul operation. Rail transport is suited for markets such as Port shuttles, bulk commodity haulage and interstate freight.

Individual network segments are discussed in more detail below.
**Kandos Line**

Capacity and freight volumes vary across the Central West region of New South Wales. For example, freight volumes on the Kandos line have traditionally been relatively high driven by the transportation of coal from central west coalmines to Port Kembla. Volumes on the Kandos line are predicted to increase in line with increased production of coal over the next 20 years, track structure and capacity enhancements will be required to cater for this expansion.

**Main West**

Whilst moderate in terms of freight volumes, the rail lines running from Parkes through Orange and Lithgow as well as the Main West from Dubbo to Orange and Lithgow carry moderate volumes of general freight, interstate containerised freight some bulk mineral commodities as well as bulk grain bound for Port Kembla. Passenger services on the Main West, the lack of passing loops, the existing train control system and a restriction on available train paths through the Sydney Metropolitan Network impact on system capacity and efficiency on these lines which would be considered the network segment with the highest utilisation to capacity ratio in the Central West.

**Interstate Network**

The East West Interstate Corridor and sections of the current designated Inland Corridor between Melbourne and Brisbane pass through some of the western portions of the Central West Region and intermodal terminals have developed in Parkes and Forbes around the increased rail/road traffic over recent years. Both of these corridors are maintained and operated by ARTC.

These lines see relatively light volumes presently (ie less than 2 million net tonne pa) however the construction of the widely publicised Inland Rail Project would see volumes increase substantially across these corridors, which in turn would promote growth within the region and create new opportunities for Central West businesses and an alternative freight distribution network with efficient linkages to Melbourne and Brisbane markets and export ports.

**Grain Lines**

The secondary lines and branch lines which connect to the major rail corridors in the Central West see relatively light volumes (less than 1 million tonne pa). These branch lines predominantly support grain traffic. Grain is predicted to increase by approximately 40% over the next 20 years and therefore modest increases in rail traffic on these branch lines are also expected to occur. Capacity is not likely to be an issue however maintaining the condition and reliability on marginal branch lines is very likely to continue being an issue. It is considered important from a Local Council perspective to keep these secondary lines open as grain freight movement would be forced onto sub-arterial roads which are often narrow and lower standard.

**Non Operational Lines**

A number of non operational lines exist through the Central West. The closure of rail lines in NSW and across the Country has been a contentious issue for many years. Under funding on marginal rail lines, significant upgrading of road networks, greater truck carrying capacity and fuel efficiency, complex regulatory regimes and rail access arrangements are all contributors in the dwindling freight volumes across the rail lines that have resulted in rail lines across NSW, Victoria,
Queensland and now very recently Western Australia being closed in recent years. Whilst rail lines are non operational, rail corridors have been preserved and offer significant latent capacity should a business case support substantial freight volumes and reopening of lines.

### 9.4.1 Line Classification

The definition of line classification differs across the network based on specific infrastructure standards adopted by Network Managers. The following generally describes the classification of lines in relation to Freight operation:

- **Class 1**: 25 - 30 tonne axle load with speeds permitted ranging from 60 km/h to 80 km/h.
- **Class 2**: 23 tonne axle load with speeds permitted ranging from 60 km/h to 80 km/h.
- **Class 3**: 21 - 23 tonne axle load with speeds permitted ranging from 60 km/h to 80 km/h.
- **Class 4**: 19 tonne axle load with speeds permitted ranging from 50 km/h to 60 km/h.
- **Class 5**: 19 tonne axle load with speeds permitted ranging from 30 km/h to 50 km/h.

### 9.4.2 Rail Network Condition

Rail condition across the lines in the Central West region varies significantly from class 1XC lines which are constructed to support 30 tonne axle loads at high speeds to Class 5 grain lines which support light axle loads at very low speeds. As a general assessment, the condition of the rail lines across the Central West region has improved over the last decade with significant State Government investment going into upgrading the Country Regional Network as well as strengthening of the Interstate rail network through the Central West by the Australian Rail Track Corporation particularly since 2011. This recent improvement in rail condition improves the reliability by reducing network incidents due to infrastructure failure and improving journey time through a reduction in temporary speed restrictions.

Whilst investment in the upgrading of existing infrastructure does not generally make the news headlines, investment by the NSW State Government and the ARTC in recent years has been significant to arrest the deterioration of what traditionally have been high maintenance rail assets. Some of the significant improvements undertaken in recent years through the region include the following:

- **Upgrade of the East West Corridor** from Broken Hill through to Cootamundra.
- **The upgrading to a virtual train order working system** implemented on take-up of the country regional network by John Holland Rail.
- **Rationalisation of Train Control Centres** in the Central West under the management of the Australian Rail Track Corporation between 2004 and 2009.
- **Upgrading to a higher standard line classification** of the Dubbo to Coonamble railway line.
- Renewal of a substantial number of culverts and bridges on grain lines throughout the Central West both under the management of ARTC and JHR.

- Replacement of life expired timber sleepers with new steel sleepers across the majority of lines over the last decade improving reliability and track quality.

Major periodic maintenance as well as capital projects are supplemented by the constant maintenance effort across rail lines in the Central West. The budget for rail maintenance and upgrading through the region is in the order of $200 million per annum.

The standards of the relevant Network Manager as well as the obligations of maintaining a safe railway network require the condition of infrastructure to be maintained in accordance with the designated track classification. The Study Team consider that the rail lines in the Central West are maintained to a standard at least meeting their line classification and further believe forecast maintenance effort is sufficient to sustain these lines at their designated classification. Thus it is relevant to provide the following illustration of line classification through the central west as an indicator of rail condition.

![Figure 35 – Line Classification in the Central West](image)
10.0 AIR FREIGHT NETWORK

The Central West is well served by aerodromes and airport facilities that support the movement of high value as well as time sensitive freight. The Central West aerodromes and airport facilities are illustrated below.

![Figure 36 – Aerodromes in the Central West](image1)

![Figure 37 – Aerodromes in the Central West with a 100 km Radius Overlay](image2)
The uptake of air freight over road and rail in the Central West is relatively low. The Central West averages approximately 1 tonne of air freight for every 394 people while the national average sits at approximately 1 tonne of air freight for every 43 people, as shown in the table below. The disparity may be explained by the utilisation of larger jet aircraft on major domestic routes that are capable of carrying a greater volume and heavier freight items compared to regional commuters and light aircraft operations. Discussions with regional freight operators reveal that public awareness of the cost and time-benefits of air freight is low.

<table>
<thead>
<tr>
<th>Assumed Population (ABS Census 2010)</th>
<th>Tonnes of Air Freight per Year (Net Tonnes)</th>
<th>Ratio of Air Freight Transported by Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central West 217,000</td>
<td>550</td>
<td>1 tonne : 394 people</td>
</tr>
<tr>
<td>Australia 22,000,000</td>
<td>507,000</td>
<td>1 tonne : 43 people</td>
</tr>
</tbody>
</table>

**Table 4 – Ratio of Air Freight Transported by Population**

The total air freight movement across Australia and the Central West is shown in the table below.

<table>
<thead>
<tr>
<th>Total Freight (Net Tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(BITRE AVLNE 2010/2011)</td>
</tr>
<tr>
<td>International: 812,000 (500,000 inbound, 312,000 outbound)</td>
</tr>
<tr>
<td>Domestic: 507,000</td>
</tr>
<tr>
<td>Central West 550</td>
</tr>
</tbody>
</table>

Air freight carried on regular public transport is subject to on time performance and reliability. Both commercial airlines surveyed during the report preparation including Regional Express, which operates passengers and freight to Parkes, Orange and Bathurst and Toll Airfreight which operates Toll Priority have on time running performance which indicates a reliable and predictable freight service. Common routes and services are shown in the table below.

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Airline</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney</td>
<td>Bathurst</td>
<td>Rex</td>
<td>18 / Week</td>
</tr>
<tr>
<td>Sydney</td>
<td>Orange</td>
<td>Rex</td>
<td>25 / Week</td>
</tr>
<tr>
<td>Sydney</td>
<td>Parkes</td>
<td>Rex</td>
<td>18 / Week</td>
</tr>
</tbody>
</table>

**Table 5 – Common Routes and Services – Commercial Passenger**
Combined routes and services through the Central West are shown in the table below.

<table>
<thead>
<tr>
<th>From</th>
<th>Stop 1</th>
<th>Stop 2</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bankstown</td>
<td>Bathurst</td>
<td>Parkes</td>
<td>Piper Chieftain 300 kg freight in the morning. Returning at 5 pm to Bankstown weekdays.</td>
</tr>
<tr>
<td>Bankstown</td>
<td>Orange</td>
<td>Dubbo</td>
<td>Piper Chieftain 300 kg freight in the morning. Returning at 5 pm to Bankstown weekdays.</td>
</tr>
<tr>
<td>Parkes</td>
<td>Condobolin</td>
<td>Lake Cargelligo</td>
<td>Piper Chieftain 300 kg freight aircraft connecting with the Piper Chieftain in Parkes then on to Lake Cargelligo via Condobolin. This service returns in the afternoon to connect with the Chieftain departing Bankstown.</td>
</tr>
<tr>
<td>Young</td>
<td>Cowra</td>
<td>West Wyalong</td>
<td>Piper Chieftain 300 kg freight in the morning. Returning at 5 pm to Young (connection to Bankstown) weekdays.</td>
</tr>
</tbody>
</table>

Table 6 – Common Routes and Services – Mixed Services

10.1 Aerodromes in the Central West

- Condobolin (CBX) – No regional passenger transport (RPT) airlines but this aerodrome is serviced by AFS air freight on the daily Toll Priority run (weekdays only).
- Parkes (PKE) – Currently serviced by REX Airlines with 18 inbound and outbound flights per week. Parkes is also the base for Air Freight Solutions.
- Forbes (FRB) – No RPT or regular freight / charter. Freight is driven to nearby Parkes.
- Cowra (CWT) – Toll Priority Freight flies from Young in the morning and then on to West Wyalong, returning the same day.
- Bathurst (BHS) – It is currently serviced by REX Airlines with 18 inbound and outbound flights per week.
- Orange (OAG) – It is currently serviced by REX Airlines with 25 inbound and outbound flights per week. Air Freight Solutions PA31 operates air freight return weekdays.
Other relevant Aerodromes outside the Central West area:

- Sydney (SYD) / Bankstown (BWU) – Major source of national and international freight.
- Canberra (CBR) – Less than a 40 minute flight time to Cowra with freight transport potential. Canberra International Airport will commence international flights in 2015 thereby providing an international freight opportunity which is closer to the Central West than Sydney.
- Young (NGA) – no RPT, Wagga Air operates Toll Priority flights.
- West Wyalong (WWY) – AFS air freight from Parkes and on to Lake Cargelligo.
- Dubbo (DBO) – RPT serviced by REX and Qantas Link. Air Freight operated by AFS.
- Wagga Wagga (WGA) – RPT by REX and Qantas Link. Wagga Air operates air freight.
- Mudgee (DGE) – RPT operated by Vincent Aviation from Sydney.

10.2 Air Network Capacity

Aerodromes in the Central West have sufficient capabilities to adequately handle the existing levels of air freight and aircraft type based on the current demand. PA31-350 aircraft such as those currently operating the TNT freight in the Central West through AFS contract have a carrying capacity of approximately 1.2 tonnes including the pilot (100kg) and fuel (600kg max) but currently only lift around 300kg. Air freight is similar to road freight in that it is a situation of supply and demand. If demand exists then additional or larger aircraft can be scheduled to meet this demand. Air freight is limited to operation at aerodromes or authorised landing areas of which there are seven in this region. All Central West aerodromes are operated 24/7 and have Pilot Activated Lighting (PAL) systems. All that is required for a charter operator is an apron area for the standing and loading of aircraft. Receipt and processing of freight doesn’t have to be at the aerodrome.

Each aerodrome operator in the Central West balances the need to charge landing fees to redeem the cost of maintaining the infrastructure with the sensitivities of adding to the cost of freight. Councils post landing fees as part of their Council Fees and Charges publications but are generally receptive to discussions with individual operators over pricing. A typical landing fee is based on both the MTOW (Maximum Take Off Weight) of the aircraft and the number of passengers per flight.

10.2.1 Condition of Air Facilities

All six of the aerodromes in this region are maintained by the relevant Shire or City Council to RPT standard. Forbes and Cowra haven’t seen RPT operations since 2001 when Country Connections Airlines ceased operations. All aerodromes have navigational aids such as non-directional beacons (NDB) and VHS omnidirectional range (VOR) which allows for arrivals in low cloud conditions.
10.2.2 Recommendations to Increase Air Freight Usage in the Central West

- Raise public awareness of the benefits of existing air freight in CW NSW.

- Facilitate a network of air freight operators and aerodrome owners in the Central West. At present aerodromes in the Central West are owned and operated by their respective councils. Aerodrome operators currently network for the purpose of safety and operational development but would also benefit from additional networking with aircraft operators to develop air freight and build aviation economic development. Stakeholders may include economic development practitioners both local government and private, NSW Trade and Investment, Regional Development Australia, CENTROC and air operators such as REX, TNT and Air Freight Solutions Parkes.

- Set targets to raise utilisation of air freight. As indicated earlier, one tonne of air freight per 394 people is approximately 10% of the national average air freight utilisation.
11.0 PRODUCTION GENERATED FREIGHT SUMMARY BY COMMODITY GROUP

The following illustrations provide a relative measure of the freight produced by commodity group within each LGA and across the Central West Region. For each commodity group, the total production and estimate of current production in 2034 is included.

11.1 Total Production across the Central West

Figure 38 – Total Commodity Production across the Central West 2014 to 2034
11.2 Coal Production across the Central West

Coal within the Central West is mined entirely within the Lithgow LGA at mines such as Angus Place, Clarence Mine, Baal Bone and Airly. Mining companies in the area include Centennial and Glencore.

With the recent downturn in the Coal industry, the Baal Bone and Airly mines are currently in ‘care and maintenance’.

Figure 39 – Coal Production across the Central West
11.3 **Minerals Production across the Central West**

Mineral production in the Central West is concentrated around Blayney with the Newcrest deposits at Cadia Hill, Cadia East and Ridgeway (Copper and Gold) as well as in the Parkes LGA which includes the Northparkes Mine owned and operated by Rio Tinto (Copper and Gold) and the Peak Hill mine owned and operated by Alkane resources (Gold).

Moderate increases in the demand for minerals is likely to see a continued expansion of these and new mines in the Central West and is an important core commodity for the rail network that supports the transportation of these commodities.

---

**Figure 40 – Minerals Production across the Central West**
11.4 Grain and Other Crop Production across the Central West

As illustrated in the production maps below the vast majority of grain and other crops are produced and transported from the far western LGAs. With modest increases in grain production additional maintenance and upgrade of rural roads will be required. Competition for transportation in the grain sector may see consolidation of grain facilities, potential transfer of management for marginal grain lines and innovation in the way grain is loaded and consolidated in future years.

![Map of Grain and Other Crop Production across the Central West](image1)

![Map of Grain and Other Crop Production across the Central West](image2)

**Figure 41 – Grain and Other Crop Production across the Central West**
11.5 Fruit and Vegetable Production across the Central West

Fruit and vegetable production is seasonal through the Central West and whilst tonnages are low, the transport task can be quite intense at harvest and is concentrated around the key production areas of Cabonne, Cowra and Forbes. Commodities with high volumes in the Central West include apples, cherries (particularly in the Cabonne LGA) oranges, peaches, citrus fruit, sweet corn and general vegetables such as lettuce and broccoli.

Figure 42 – Fruit and Vegetable Production across the Central West
11.6 Livestock and Meat Product Production across the Central West

Whilst livestock farming and transport is widespread throughout the Central West, consolidation points experience very heavy traffic at regular times governed by livestock sale dates. The Central Tablelands Livestock Exchange (CTLX) at Carcoar is considered to experience the most intense livestock transport congestion through the region. The CTLX is located 10 km south-west of Blayney. Volumes at this location on the Mid Western Highway are predicted to rise from around 1 Mtpa to over 2 Mtpa in 2034. Localised traffic upgrades would be required to support efficient freight movement at this location and other points where livestock congestion will increase significantly.

Figure 43 – Livestock and Meat Product Production across the Central West
11.7 Consumption of General Goods across the Central West

Population driven demand for commodities will see a significant increase in the import task for goods transported to the Central West primarily from the Sydney region. Given the population distribution these goods are consumed close to the point of import at the eastern LGA’s of Lithgow, Bathurst and Orange. The consumer driven demand for goods is predicted to increase the total freight task on road by around 500,000 tonne pa in the Central West, rising to almost 1 million tonne by 2034.

Figure 44 – Consumption of General Goods across the Central West
11.8 Production of Forestry Products across the Central West

Production is primarily centred around the Oberon LGA. Currently, the region markets about 600,000 cubic metres of sawlogs and 500,000 tonnes of pulp/preservation wood each year with the Carter Holt Harvey (CHH) particle board factory at Oberon creating the majority of the freight in this commodity group. Currently 80% of the Macquarie Region forest products are transported to industries in Oberon, however there is a significant component of other mills producing specific sawn and treated products for the landscaping, outdoor and packaging industries with mills also located in Blayney, Bathurst, Burraga, Lidsdale, Clarence and others outside the region.

Figure 45 – Production of Forestry Products across the Central West
12.0 CATERING FOR THE INCREASED FREIGHT TASK

12.1 Freight and Ports Strategy

A key document which outlines a vision for freight transportation improvement in NSW is the NSW Freight and Ports Strategy. The Strategy is arguably one of the most significant and widely accepted integrated logistics planning frameworks developed in NSW and provides an assessment of the Freight Task at a State level and recommendations across all freight modes as to a way forward to improve freight connectivity. The Study Team support the recommendations made in the Strategy as they relate to the improvement in connections to the Central West.

12.2 Projects and Initiatives of Benefit to the Central West

The Study Team have provided a review below on the benefits to the Central West of key projects and initiatives, some of which are included in the Freight and Ports Strategy. Each project and initiative has been considered in terms of its benefit to the Central West. The projects are not studied to the extent required to support their implementation however the review of the projects against the freight task as depicted in this report consider the strategic merits of the projects and initiatives and does provide a guide for stakeholders to consider the benefits of each.

12.2.1 Great Western Highway Upgrade

The upgrade of the Great Western Highway to the east of the Central West region in the Blue Mountains area involves widening the highway to four lanes between Emu Plains and Katoomba and to mostly three lanes between Katoomba and Mount Victoria.

The Great Western Highway through the Blue Mountains serves as the key freight route between Sydney and the Central West region for a number of businesses, including for the timber industry in the Oberon area.

Sections of the highway have already been upgraded with the section through Kelso to commence during 2014.

<table>
<thead>
<tr>
<th>Strategic Merit Test</th>
<th>Improved Safety</th>
<th>Regional Benefit</th>
<th>Improves Local Amenity</th>
<th>Regional Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ü</td>
<td>ü</td>
<td>ü</td>
<td>ü</td>
<td>ü</td>
</tr>
</tbody>
</table>

12.2.2 Bells Line of Road Expressway

The majority of businesses in the Central West rely on the road connections to and from Sydney for either export or import of goods from the region. Currently the journey time from the Central West to markets in Sydney is greater than the journey times possible for businesses operating from competing regions such as the Central Coast, Hunter Valley and the Illawarra. Reducing time to market would radically improve the competitiveness of many businesses in the Central West and is likely to result in additional businesses relocating or expanding operations.

LGAs in the east of the Central West would likely benefit the most from an expansion in road capacity through to Sydney as a result of reductions in journey times and the ability to use High Productivity Vehicles (HPVs). It is also expected that there would be flow on effects and significant benefits to centrally located LGAs to an improved road freight route to Sydney.
This project was arguably the most supported project during the Study consultation phase. Currently there is a restriction on the length and mass of heavy vehicles operating from the Central West to Sydney through the Blue Mountains. Whilst upgrades of the Great Western highway are progressing, the restriction on HPVs will remain due to the current topography.

The construction of a Bells Line of Road Expressway could logically provide a path for HPVs to operate into and out of the Sydney region. This project aligns with Task 1D-2 of the NSW Freight and Port Strategy ‘Provide necessary infrastructure to support High Productivity Vehicle access’ and well as Task 1A-5 ‘Promote efficient movement of general road freight’.

<table>
<thead>
<tr>
<th>Strategic Merit Test</th>
<th>Improved Safety</th>
<th>Regional Benefit</th>
<th>Improves Local Amenity</th>
<th>Enables Employment and Industry Growth</th>
</tr>
</thead>
</table>

![Figure 46 – Bells Line of Road Current Alignment](image)

12.2.3 Newell Highway Upgrade

Transport for NSW (TfNSW) in collaboration with Roads and Maritime Services (RMS) has recently prepared a draft Newell Highway Corridor Strategy to address the transport needs of the corridor, including support for greater use of HPVs. Given the current high tonnages on this route and considering the significant increase over the next 20 years as presented in this report, provision of additional capacity on the Newell is essential.

In a recently released statement on the proposed upgrade, the NSW Minister for Roads and Freight Duncan Gay announced a significant initiative to help fast-track historic upgrades to the Newell Highway. "The Newell Highway is the road transport and freight ‘spine’ of country NSW, helping to support dozens of communities along its 1,060 kilometre corridor. It deserves a comprehensive strategy to build on numerous upgrade works already actioned by the NSW
Government, including delivering extra overtaking lanes," Minister Gay said in the Media Release of the 6th May 2014.

Minister Gay said the focus of the corridor strategy was for the ‘communities and businesses of the Newell’ to drive the process; not government transport or road agencies.

The proposal to construct additional overtaking lanes would appear a reasonable next stage given the projected increased tonnage. The Inland Rail line is not expected to drastically reduce freight movement on the Newell. It will assist, however upgrades of the Newell appear required irrespective of the timing for construction of the Inland Rail. This project also aligns with Task 1D-2 and 1A-5 of the NSW Freight and Port Strategy.

**12.2.4 Heavy Vehicle Bypasses**

Interaction of light and heavy vehicles on the Newell Highway through Parkes and Forbes, the Mitchell Highway through Orange, the Great Western Highway through Bathurst and to a lesser extent Lithgow creates local congestion. This congestion is currently evident on the volume illustrations presented in this report and congestion is predicted to become much worse during the next 10 and 20 years in line with the increasing freight task.

Heavy Vehicle bypasses of major centres would provide additional capacity, reduce journey times and improve public amenity. It is noted that Orange Council have recently completed a Northern Bypass and planning for the construction of the additional section to the South is underway. Parkes and Forbes are less advanced in the planning of potential bypasses however the issue is no less acute. Heavy Vehicle Bypasses also align with Task 1D-2 and 1A-5 of the NSW Freight and Port Strategy. The completion of the Orange bypass would support the Council’s vision for 24/7 access for heavy vehicles to industrial precincts in the City.

**12.2.5 Inland Rail**

Currently in Eastern Australia, there is only one continuous rail corridor from Melbourne to Brisbane. Rail freight that originates in Melbourne travels to Albury and then to Sydney continuing generally along the coastline to Brisbane. Recently, the Australian Federal Government commissioned ARTC to conduct a study into the expected demand, ongoing costs, viability and potential route alignment for an inland railway line between Melbourne and Brisbane. ARTC’s analysis determined that the optimal inland route from Melbourne would proceed through the central and north west of New South Wales then into Queensland through Albury, Parkes, Narromine, Narrabri, Moree and Toowoomba. The route utilises approximately 65% of existing...
track and is expected to achieve an average Melbourne to Brisbane transit time (terminal-to-terminal) of 20 hours and 30 minutes over a distance of 1,731 kilometres.

The Project has gained a commitment to spend $300 million in progressing the Engineering to complete the designs and confirmation of the corridor. Inland Rail would provide direct efficient rail access to national and international markets through connection to the Ports of Brisbane and Melbourne. Inland Rail would likely boost regional growth in the areas along its immediate corridor.

Whist there is some uncertainty on the timing for completion of the project, the recent ARTC report included the following relevant notes on the project:

- There is a demand for an effective and competitive inland railway corridor.
- The proposed inland rail is expected to be 7 hours faster and 170 kilometres shorter than the current coastal railway.
- It is also expected to be more competitive on reliability, availability and, in particular, door-to-door freight prices, relative to road transport using the Newell Highway.
- The project cost is estimated at $4.7 billion (P90) and require 3 years of pre-construction activities (including preliminary design, approvals, tender and award period, and land acquisition) followed by a 5 year construction period (P90 indicates that the project will have a 90% chance of costing this value or less).
- The inland rail route would significantly alter the rail freight operations through the Central West region. An estimated 6 million tonnes of new freight would pass through the Central West by 2030 and more than double to 12.4 million tonnes by 2050.
- The Inland Rail project would provide a more competitive freight environment for long distance movements to Melbourne and Brisbane and also extend the reach of current businesses to the larger economies of major city centres.

<table>
<thead>
<tr>
<th>Strategic Merit Test</th>
<th>Improved Safety</th>
<th>Regional Benefit</th>
<th>Improves Local Amenity</th>
<th>Enables Employment and Industry Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.2.6 Maldon to Dombarton Rail Line

Currently, freight on rail bound for Port Kembla and on to export markets is required to pass through the congested Sydney Metropolitan rail network and then on to the Illawarra Rail line. An alternative route is available via the Main South and the Moss Vale to Unanderra Line however this route is longer, slower and load restricted.

The connection between Maldon and Dombarton would provide a more effective and reliable link for train services from the Central West to Port Kembla. Services would still be required to transit through the Sydney Metropolitan Network however the increased path availability and reduced journey time would provide a significant net benefit for commodities bound for export from the Central West.
Projects such as the Maldon to Dombarton line could effectively relieve the congestion issue in Metropolitan Sydney for export bound freight by delivering additional train paths for Central West services to Port Kembla. This project is considered mandatory based on the volume of additional coal that is expected from the Lithgow LGA unless additional capacity is created on the Illawarra Line, however with proposed increases to electric passenger services on the Illawarra Line, reservation for additional freight services seems unlikely.

The Study Team understand that TfNSW are progressing engineering studies on the potential construction of the Maldon to Dombarton railway line. This project aligns with Action 1E ‘Improve productivity of the rail freight network’ from the NSW Freight and Port Strategy.

### 12.2.7 Reopening of the Blayney to Demondrille Rail Line

The combined road and rail volumes at 2014 and 2034 in the Cowra and Blayney areas clearly highlight the corridors and intersection points through the Network that are expected to increase in congestion. Overlaying road and rail volumes also illustrates the potential for modal shift on corridors such as the Mid Western Highway, which is predicted to increase in volume up to 2 million net tonne (per direction). Such a modal shift on the Mid Western Highway would require reopening of the Blayney to Demondrille railway line or alternatively increasing the capacity of the Mid-Western Highway.

An additional north-south link in the form of either an enhanced road corridor linking the Central West to the M1 or the reopening of the Blayney to Demondrille rail line would play an important role in decongesting current and existing freight bottlenecks particularly in the southern areas of the Central West. By adding north-south transport infrastructure, it would provide additional capacity for expansion and deliver much needed growth capacity, while at the same time providing a back-up and alternative to the currently overused Blue Mountains into Sydney road and rail link. Blayney to Demondrille is the obvious rail corridor however options for improved road connectivity are less obvious and based on increasing freight volumes predicted in this southern region the assessment of a viable corridor should be considered as a regional priority.

The recommissioning the Blayney-Demondrille line would allow rail freight from the Central West access to Port Kembla via the Main South line and the Moss Vale to Unanderra line. Such an option should be considered against the cost of construction of the Maldon-Dombarton line as the concept supports the leveraging of existing assets and upgrade and maintenance of existing infrastructure should always be considered against the cost of new assets.
12.2.8 Additional Capacity through the existing Central West Rail Lines

The cycle times for Grain services to Port was raised as an issue through the consultation process. Additional capacity, reduced journey times and increased reliability would be the result of further capacity enhancements of the existing network (predominantly the Country Regional Network).

These capacity enhancements may be in the form of additional long passing loops which provide capacity on single line sections as well as signalling and network control improvements, which may include implementation of satellite based in-cab signalling to reduce section lengths and increase train capacity.

The Study Team believe significant value is gained through leveraging of the existing asset through such incremental improvements which also align with Action 1E in the NSW Freight and Ports Strategy.

<table>
<thead>
<tr>
<th>Strategic Merit Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Safety</td>
</tr>
<tr>
<td>Regional Benefit</td>
</tr>
<tr>
<td>Improves Local Amenity</td>
</tr>
<tr>
<td>Enables Employment and Industry Growth</td>
</tr>
</tbody>
</table>
