Murray-Mallee Regional Transport Study 2011

Final Report

Mildura Rural City Council

GANNAWARRA SHIRE COUNCIL

SWAN HILL Rural City Council

BALRANALD SHIRE COUNCIL

WSC WAKOOL SHIRE COUNCIL naturally

BULOKE SHIRE COUNCIL

Acknowledgments

We would like to acknowledge the invaluable contributions of the many people who contributed to this report. Special mention must be made of Ms Danielle Hearn, who designed and produced the report, Ms Sonya Mentha, of Swan Hill Rural City Council, who prepared the maps, and Ms Raewyn Parsons, who organized the meetings of the steering committee. Many other council officers assisted, as did managers and staff of freight organisations, agribusinesses and other organisations involved in the region, Our sincere thanks to them all.

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for the
North West Transport Study Steering Committee

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Preface

The Murray – Mallee Transport Study has been a successful exercise in both planning for efficient transport networks and improving cross border relationships at a State and Local Government level.

With the involvement of municipalities and road authorities in Victoria and New South Wales, and the Department of Transport in Victoria, the study has been able to view transport from a whole of region perspective, rather than by single communities.

This whole of region approach has enabled the study document to become a legitimate planning document that can ably complement state and regional strategic plans. Due to these strategic links, the Murray - Mallee Transport Study will be a critical working document to assist Local Government in Economic Development activities.

The assistance provided by officers of Vicroads, RTA and Department of Transport has been essential to guaranteeing the success of the document. This coupled with feedback and input from the various industry stakeholders has enabled the study to be created in a compact time frame, with valid recommendations to improve transport infrastructure and services across all modes of transport.

It is now crucial for all of the stakeholders involved in the study to display the same spirit of cooperation and facilitate the operation of the Murray – Mallee Transport Forum group to regularly review progress and update the document to meet current needs. It is this group that will work together to see the recommendations come to fruition.

On behalf of the steering committee representatives, we the Mayors of the Councils / Shires included in the study region, fully support the Murray – Mallee Transport Study and look forward to working together to implement the recommendations contained in it.

-The Mayors of Balranald, Buloke, Gannawarra, Mildura, Swan Hill and Wakool.

Executive Summary

The North West Transport Study region, comprising the local government areas of Swan Hill, Mildura, Buloke and Gannawarra in Victoria, and Balranald and Wakool in New South Wales, has not previously been the subject of a comprehensive transport strategy. Such a strategy is now appropriate because:

- The region is a dynamic agricultural and horticultural area, where new food production and processing industries continue to emerge, generating new transport supply chains for which appropriate infrastructure is needed;
- The region sits at the crossroads of important national transport routes, such as Sydney to Adelaide and Perth, as well as north south routes bringing livestock and agricultural products from New South Wales through Victoria to southern ports;
- The region is a large producer of bulk cereals and pulses, which rely on a recently refurbished but not yet optimal rail network to reach export terminals;
- The region contains two large and thriving regional centres in Swan Hill and Mildura, both needing careful transport planning so that the needs of local residents and businesses fit in with those of heavy transport routes originating in and traversing their streets;
- There is a strong interface between the economies of Balranald and Wakool shires, and those of the adjoining Victorian communities and road and bridge links, heavy vehicle routes and public transport connections need to support those links better;
- In relation to inter-town, local and long distance public transport, there are significant needs for convenient access to education, leisure and employment currently not met by public transport arrangements.

The Study has found that there are significant upgrades that need to be programmed over coming years to transport infrastructure in the region, notably:

- Highway and local road upgrades, to safely cater for the more widespread use of larger heavy transport vehicles
- Planned provision for the movement by road and rail of the massive production of mineral sands likely in coming decades
- The renewal of a number of bridges including several Murray River crossings (Swan Hill and Tooleybuc) that are inadequate for the quantity and weight of contemporary traffic;
- The improvement of rail freight utilisation in the region through a range of measures including grain super sites, progressive standardization, and the development of inter-modal facilities that

mesh with heavy road transport routes and focus heavy road transport on routes that by-pass the urban centres of Swan Hill and Mildura

- Improved local-inter-town and long-distance public transport including an evening passenger train from Swan Hill to Bendigo (with appropriate connections to regional towns in Victoria and NSW) so that public transport return journeys to and from the region for medical, business and social purposes can more flexibly be undertaken
- The need to plan new urban freight by-pass routes, particularly in Swan Hill and Mildura.

The Study follows the example of the Green Triangle Freight Action Plan (completed recently in south west Victoria and south east South Australia) by noting that planning and implementation of these developments and investments must involve all levels of Government and transport operators.

Therefore it recommends two important management changes:

- Creation of a Murray-Mallee Transport Forum, involving representatives from the Commonwealth, NSW and Victorian Governments, the six local governments involved in this study, and transport operators;
- Creation within Victoria of a North West local roads fund, focused on the investments needed to allow local roads upgrades needed to provide access by high performance freight vehicles.

1. Introduction

1.1 Background

The Swan Hill Rural City Council, acting as the lead municipality for a consortium of Councils in Northern Victoria and Southern New South Wales, commissioned this Study as a Transport Strategy for North West Victoria and South West New South Wales, the "Murray Mallee Region".

Northern Victoria is the State's food bowl and, coupled with the agricultural output of southern New South Wales is one of the largest contributors to Australia's food production. This produces a heavy freight load for the various modes of transport in the region. A co-ordinated approach to the freight task is necessary to secure the future of food production and processing industries.

The municipalities participating in the creation of this Transport Strategy are the Rural City of Swan Hill, the Rural City of Mildura, and the Shires of Balranald, Buloke, Gannawarra and Wakool. The Victorian Department of Transport, VicRoads and the Roads and Traffic Authority of New South Wales were also members of the Steering Committee and the Victorian Department of Transport contributed to the funding of the project. Wentworth Shire Council was also invited to participate in the project but did not accept the invitation.

1.2 Objectives of the Study

The objectives of the Study are to:

- Ensure regional industries can grow and continue to export their products
- Provide recommendations to upgrade infrastructure to cater for both residential and industry growth
- Create strategies that ensure safe interaction between commuter/passenger vehicles and larger freight vehicles
- Highlight anomalies that exist for transport operators managing the freight task across state borders
- Provide strategies that create a co-ordinated approach to managing the freight task across all modes of transport
- Secure levels of service currently provided in public transport across the area

1.3 Scope and Outcomes of the Study

The study collates available information provided by the various municipalities on all aspects of the transport task, including freight, passenger vehicle and rail. The strategy provides recommendations on how best to co-ordinate the various transport modes, improve the networks and ensure that local industries can cater for future commodity growth via a transport network that can handle the task. This study will provide a document that can assist in planning for industry growth and population growth. The document also identifies strategies that can assist municipalities to identify sources of funds to deliver the work needed. Arrangements for a co-ordinated approach to managing freight, utilising all modes of transport, which all municipalities in the study area would have access to, is proposed.
The study addresses, as required by its terms of reference:

- all modes of transport in the region, including road, rail and air transport, and relevant infrastructure
- intermodal facilities and containerisation
- bridges
- port links
- freight and passenger vehicle interaction
- needs of agriculture, horticulture, mining and tourism
- restrictions
- Air freight and passenger opportunities.

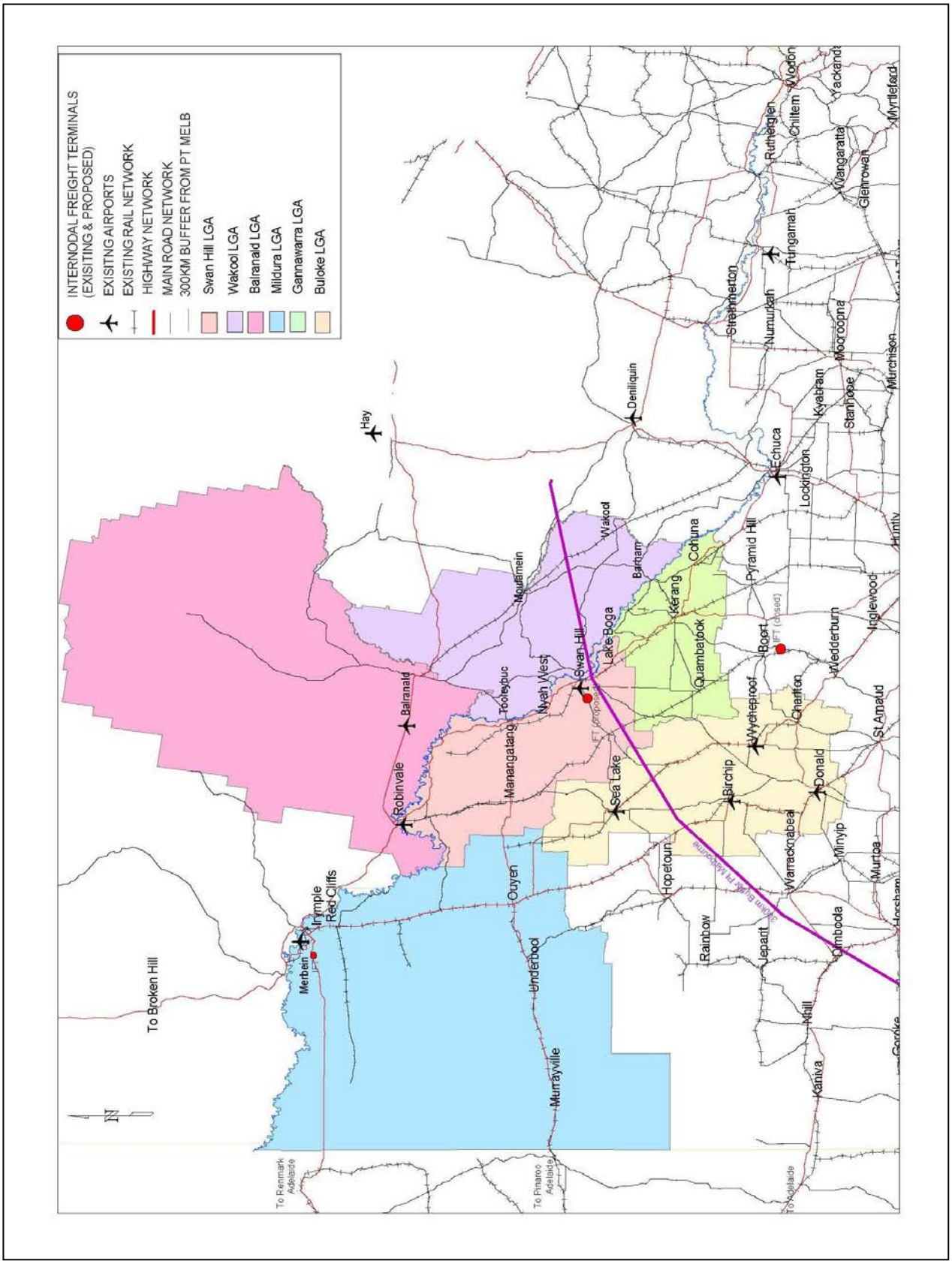
The geographical scope of the study comprises the six municipalities of Balranald, Buloke, Gannawarra, Mildura, Swan Hill and Wakool. In geographical and transport terms, the Shire of Wentworth would have been a logical inclusion. Throughout the study, reference is made to the “North West Region”, in accordance with the Terms of Reference under which it was commissioned. However, “North West Region” implies a Victorian perspective. The Shires in New South Wales involved in the study are in the Murray statistical region. It might be more correct to view this as a “Murray-Mallee Region Transport Study”. Should the recommendation within this Study for the creation of a Regional Transport Forum for the area be adopted, consideration should be given to the best descriptor for the region.

1.4 Study Methodology

The Study employed the following key methodological steps:

- Review of relevant regional, economic development and transport strategies
- Collation of data on existing and expected traffic movements
- Iterative development of key priorities by participating municipalities
- Review of priorities with state agencies
- Discussions with transport operators
- Month long period for review of draft proposals by participating Councils
- Preparation and circulation of Revised Draft Strategy
- Finalisation in collaboration with participating councils and government agencies.

The Study Area



2. Strategic Context

2.1 Alignment with Key Regional and Transport Strategies

Although this is the first Transport Strategy to address the needs of the North West Region of Victoria and the adjoining Balranald and Wakool Shires in New South Wales in a single framework, it is important to note that a wide variety of social, economic, regional development and transport strategies and plans have been developed over the past decade that apply to aspects of what is discussed here. We have reviewed many such documents (itemized in the references section of this report). It is important to build on previous work rather than overlook it.

More particularly, we highlight here the need for alignment with several strategies that have particular authority and currency, with which it is essential that the directions in this study be aligned. These are: the Northern Loddon Mallee Strategic Plan, the NSW Murray Regional Strategy, the Victorian Governments statewide freight policy document Freight Futures, and the SE NSW Road Freight Strategy, and the Victorian Freight and Logistics Council's Rail Freight Industry Issues Paper.

2.2 Regional Development Strategies

2.2.1 Northern Loddon-Mallee Strategic Plan

The Northern Loddon Mallee Strategic Plan covers the four Victorian Shires included in this regional transport plan, and also the Shire of Campaspe. The plan was endorsed in 2010 by the Loddon-Mallee Regional Development Australia Committee, and the Loddon-Mallee Regional Management Forum.

Section 4 of the Northern Loddon Mallee Strategic Plan concerns improvement of infrastructure.

The following are the infrastructure improvement objectives contained in the plan:

- Developing our freight transport infrastructure and services to support economic growth and overcome cross-border regulatory issues;
- Developing and implementing public and community transport services which will assist in connecting communities and addressing personal mobility issues;
- Prioritising, coordinating and implementing regional airport and aerodrome infrastructure investment;

- Ensuring that we have high quality infrastructure and services that support economic development including energy and telecommunications infrastructure;
- Ensuring that our energy demands are increasingly met from renewable sources including local large scale solar power generation.

This North West Regional transport study is entirely consistent with these objectives.

At the level of specific recommendations, Appendix C provides a table comparing the recommendations of this report and those of the Northern Loddon Mallee Strategic Plan. They are congruent.

2.2.2 NSW Draft Murray Regional Strategy

The Draft Murray Regional Strategy was placed on exhibition for public comment by the NSW Department of Planning in October 2009. The Murray Region includes the Shires of Balranald and Wakool (within this study) as well as other local government areas within New South Wales that abut the Murray as far east as Albury.

The study identifies a number of desired areas for improved cross-border co-ordination with Victoria, and these are relevant to the present Study. They include:

- To manage cross-border population growth and the provision of services in a co-ordinated and complementary way, and
- To achieve efficiencies in infrastructure and service provision.[1]

Principles and issues within the Draft Murray Regional Strategy that are relevant to this Study include:

- Provide transport networks that link bus networks into major regional centres[2]
- Many of the river communities on the NSW side of the border are disadvantaged by low quality bridges across the river [which can] act as a disadvantage in attracting particularly industry to locate on the NSW side of the river[3]

[1] NSW Department of Planning (2010), Draft *Murray Regional Strategy*. Covers all NSW shires abutting Murray River including Balranald and Wakool, p.10
[2] Ibid, p.22
[3] Ibid., p.31

The Draft Murray Regional Strategy sets out in Appendix 2, the specific infrastructure investments planned for the Murray Region in the 5 year period 2012-2017. None of these projects is in the study area.

The Draft Murray Strategy is focused more on land use planning, environment and heritage issues than on transport issues. However there is nothing in it that is inconsistent with the findings of the current study. Also, the Draft Murray Strategy emphasizes the importance of cross border collaboration in the provision of services and facilities needed by settlements. This is entirely consistent with the approach of this Study.

As the *Draft Murray Regional Strategy* was a policy released by the former New South Wales Government, it may become obsolete when the present government issues its planning policy for the region.

2.3 Transport Strategies

2.3.1 Freight Futures

Freight Futures was published by the former Victorian Government in 2008 and provides a comprehensive and future oriented assessment of the State's transport needs across all modes – road rail, sea and air.

Freight Futures is a long-term strategy to shape an efficient and sustainable freight network for Victoria. The strategy provides a blueprint for a secure and properly planned freight infrastructure network.

The strategy responds to the many factors that are driving changes in patterns of supply and demand. It aims to provide industry with long term security through a statement of what the principal freight network is now and in the future and a more predictable policy and regulatory environment.

Freight Futures acknowledges the important role of Local Government in the freight network. It recognises that many local Councils have or are developing regional transport plans that address freight transport issues. There is commitment to working with councils in the development and implementation of these plans, particularly in relation to the delivery of *Freight Futures.*

The key *goals* are to:

- maintain and improve the efficiency of the freight network – ensuring that the road and rail links, ports, terminals and related facilities for handling and moving goods around cities, towns and the State are operating to

their maximum efficiency to support Victoria's continued economic growth;
- ensure the availability of sufficient capacity in the freight network to handle the growing freight task – both through achieving better utilisation of existing infrastructure and providing new infrastructure as required; and
- enhance the sustainability of the freight network – by planning and operating the network in a manner that maximises public safety outcomes and minimises environmental and amenity impacts on the Victorian community.

In pursuing these goals and seeking to deliver a practical, long-term framework that will directly assist Victoria's freight and logistics sector to serve the growing state and national economies, *Freight Futures* adopts the following objectives:

- facilitate the efficient movement of freight in Victoria;
- reduce the cost and improve the reliability of supply chains;
- manage and mitigate any adverse impacts of freight planning and operations on communities and the environment;
- optimise the use of existing network infrastructure;
- provide appropriate priority for freight on the network in the context of competing demands
- plan and deliver new network infrastructure in a timely manner
- identify and protect freight network options where necessary to ensure future capacity, flexibility and certainty; and
- provide a policy environment that encourages private sector investment.

Within this context, *Freight Futures* identified and addressed a number of priorities relevant to the North West Region Transport Study including:

- effective targeting of infrastructure investment by optimising the use of existing public infrastructure, identifying future infrastructure priorities and, together with the Commonwealth Government, contributing to future infrastructure capacity;
- greater integration of the network – working in close collaboration with industry to deliver new initiatives that promote supply chain efficiency;
- improved regulatory arrangements – providing the right regulatory and institutional settings to foster a sustainable freight and logistics sector;
- effective management of community and environmental impacts – seeking to mitigate the negative impacts of freight growth; and
- continuous improvement of safety and security performance – adopting best practice safety management principles and implementing further measures to mitigate security threats to land, sea and air transport in accordance with relevant legislation

Freight Futures acknowledged the significance of increased use of intermodal solutions in response to the need to contain increasing costs.

Freight Futures noted that since the mid-1970s, articulated truck mass limits have risen from 30 tonnes Gross Vehicle Mass (GVM) to 68 tonnes GVM (for a 25 metre B-Double operating at Higher Mass Limits).

A key proposal in *Freight Futures* is to reshape the freight network by encouraging the development and growth of a relatively small number of key Freight Activity Centres (FACs), dispersed strategically around the periphery of the metropolitan area and in regional Victoria. To achieve this outcome, *Freight Futures* focuses on the more concentrated patterns of freight movement on higher capacity routes, carried by larger vehicles.

Freight Futures was also developed with a focus on the key priorities being pursued by Infrastructure Australia as it assesses projects for investment. A priority relevant to the North West Transport Strategy is the improvement of links to other projects and to other jurisdictions i.e. projects that benefit more than one State or Territory.

The Principal Freight Network in the North West Region, established in *Freight Futures,* includes:

- the Sturt Highway from Mildura to the South Australian border;
- the Calder Highway from Mildura to Charlton;
- the Mallee Highway from Ouyen, through Kulwin, to Piangil;
- the Murray Valley Highway from Piangil, through Swan Hill to Cohuna;
- the Sunraysia Highway from Ouyen, to Lascelles;
- the rail line from Mildura to Donald;
- the rail line from Ouyen to the South Australian border;
- the rail line from Kulwin to Charlton;

Freight Futures acknowledged the importance of intrastate rail freight and adopted the designations recommended by the *Victorian Rail Freight Network Review*:

- Platinum (the base network) with track maintenance as a result of current arrangements for the Mildura and the Swan Hill lines;
- Gold, the first priority for rehabilitation and restoration to original track standard, for the Mildura to Yelta and Piangil to Swan Hill lines;
- Silver, with undertakings from the grain industry to secure train capacity and improve loading facilities, for the Ouyen to Pinnaroo, Sea Lake to Charlton and Manangatang to Quambatook lines; and

- Bronze, where there are no plans for the Kulwin to Sea Lake, Robinvale to Manangatang and Moulamein to Barnes lines.

Freight Futures addressed the alignment of interstate regulations in the freight and logistics sector to reduce the regulatory burden on industries operating interstate and increasing the sector's productivity and competitiveness, especially in cross-border regions.

After extensive analysis of drivers and emerging trends, *Freight Futures* identified 20 Strategic Directions for future freight development. These were important areas where actions needed to be taken.

Of particular importance to the Region are the following Directions:
'

- Direction 1 – Identify and develop a Principal Freight Network for Victoria
- Direction 5 – Plan for Growth in Regional Freight
- Direction 6 – Improve Planning for the "Last Kilometre" of Freight journeys
- Direction 7 – Invest in the Principal Freight Network – Roads
- Direction 9 – Revitalise the Principal Freight Network – Rail
- Directions 17 and 18 propose improved Governance Arrangements for Ports and for the planned Melbourne Metropolitan Freight Terminal Network.

There is nothing in the present Study report that is inconsistent with the Strategic Directions of *Freight Futures*. The proposal in this report to introduce in the region some regional transport governance arrangements (similar to those in the Green Triangle Region), is consistent in spirit with Directions 17 and 18 which proposed new governance arrangements in the ports and the metro area. This Study is also consistent with Freight Futures in that it supports the development of the principal freight network; the development of inter-modal terminals; investment in the highway network, and the revitalization of the rail network.

Appendix 2 of *Freight Futures* provides some description and commentary on Regional Freight tasks in Victoria, although in the three years since it was published the end of drought conditions has altered circumstances to some degree. Appendix 2 acknowledges the role and importance of regional transport strategies such as the Northern Victoria Transport Strategy and the Hume Corridor Transport Strategy.[4]

[44] Victoria, (2008), Freight Futures, p. 91

Although this Study was initially commenced within the framework of *Freight Futures* , a policy released by the former Victorian Government, it is also consistent with the goals of the present government as expressed in *Transport Solutions,* outlined in Section 2.3.4 below.

2.3.2 SE NSW Road Freight Supply Chain Study

In 2010, the Roads and Traffic Authority of NSW (the RTA) published the South East NSW Road Freight Supply Chain Study. The Study does not apply to the region covered in this study, and focuses on the area east of the Hume Highway.

The Study provides intensive statistical information by product type of supply chains within its study area, providing a valuable base for road network planning. However the study area is distant from the North West Region and there are no recommendations in the report that bear directly on this Study.

2.3.3 Rail Freight in Victoria: Industry Issues Paper[5]

This Rail Freight Industry Issues Paper was prepared by the Victorian Freight and Logistics Council, a body supported by the Victorian Government and composed of transport industry professionals.

This recent paper was prepared to provide a basis for discussions within industry and government on how the sectors can work towards rail taking its place as a mode delivering a higher proportion of freight than in recent years.

The key issues that frustrate industry are the focus of the paper. These revolve around

- governance;
- regulation and access pricing;
- industry innovation and development;
- planning and investment frameworks; and
- rail workforce development.

In relation to intermodal terminals, the Paper suggests that, where private investments are made in them, a funding program is needed to help manage the high fixed costs at start up. Land use regulation will in turn need to manage co-located logistics and storage facilities, creating buffering and protection of corridors and sites.

[5] VFLC Infrastructure Working Group, December 2010

Recommendations relevant to this Study are the following:

- the Victorian Government should ensure the status of freight alongside passenger priority in legislation
- the Victorian Government should retain freight lines where externalities are avoided and social reasons exist for the retention and use of rail, such that Government access charges reflect social, environmental and economic benefits and are set to enable effective substitution of road freight;
- access to strategic pathways and intermodal hubs should be protected and access be allocated on a fair and cost-competitive basis with road;
- the Victorian and Australian Governments should require that all intermodal hubs in receipt of public investment or located on public land be declared open access and be subject to pricing that is competitive with road substitution access and pricing;

-the Victorian and Australian governments should develop programs to allocate development grants towards investment in fixed assets for intermodal hubs;

- the Victorian Government should determine with the rail asset manager a 10 year rolling asset investment plan which articulates with ARTC committed investments, including progressive standardisation of selected broad gauge freight rail pathways in Victoria that integrate with other modes to deliver freight; and

- the Victorian Government should support the development of regional freight strategies to articulate local planning with state level strategies, with regional freight network planning to include rail planning.

The Report supports the construction of a connecting standard gauge rail line from Mildura to the Parkes - Broken Hill rail line, to allow for double stacked container trains from Melbourne to Perth.

There is nothing in the present Study report that is inconsistent with the recommendations of the VFLCs Rail Freight Industry Discussion Paper.

2.3.4 Transport Solutions

The Victorian Government is currently developing a framework to address transport bottlenecks to help improve business and industry competitiveness in regional Victoria, attract new investment, create jobs and enhance regional growth.

Transport Solutions will identify, prioritise and provide a strategic basis for future investment in road, rail and port infrastructure across the local, arterial and national land transport corridors to facilitate the development and growth of regional Victoria that complements the Victorian government's Metropolitan Planning Strategy.

The present Study, and similar studies in other regions of Victoria, will assist in supporting and documenting strategic transport issues.

3. Drivers of Transport Demand

3.1 Economic Overview of the Region

The North West Region covered in this transport study is located within two statistical divisions – the Mallee Statistical Division in North West Victoria, and part of the Murray Statistical division in south west New South Wales. The two areas operate as an integrated economic and transport system; however there are sub-regional differences in agricultural specialties, as well as in transport systems, regulation and routes. Cross border economic interactions are important for agricultural industries and also influence the resilience of specific sectors, such as access to processing facilities and a skilled workforce.

The Mallee statistical division covers an area of 41,035 square km. Since the advent of irrigation, its economy has developed based on wine, fruits, olives, citrus and vegetables. Grain and livestock production is also important, as well as dairying in some locations.

The economy of the region is dominated by agriculture and in particular by its role as a food producing and food processing area. The total value of production in the Mallee Statistical Division in 2006 was $1,372,150,000. To this must be added the value of production in Balranald and Wakool Shires. In Wakool Shire the value of production in 2005/6 was $165.8 million[6]

The following were the six most important agricultural outputs of the Mallee Statistical Division in 2006[7] in order of gross value of production:

	Value
Irrigated Agriculture	$929 million
Fruit (including wine grapes)	$523 million
Dryland Agriculture	$418 million
Dairy Production	$302 million
Grains (cereals, oilseeds and legumes)	$192 million
Livestock for meat	$173 million

Agriculture employs fifty per cent more people in the Mallee statistical division than the next largest industry sector (retailing), and several other important industry sectors are linked to the agricultural sector. These include food processing and the transport industry.[8]

[6] Wakool Shire Council (2010), *Strengthening Irrigation Communities,* p.4.
[7] The last ABS Agricultural Census was conducted in 2006 and reported in 2008. The 2011 census is now taking place.
[8] Loddon-Mallee Regional Strategic Plan: Northern Region, p.7

The principal freight transport supply chains in the northwest region support these activities: the transport to domestic and export markets of unprocessed agricultural products (including livestock); the transport of the products of the various food processing industries; and the general freight requirements of the regional population and its industries. In recent years a fourth supply chain has emerged in support of the mineral sands mining industry. This involves the transport of mine products from the region (especially in the Kulwin area; in Wentworth Shire and in Balranald Shire) to mineral processing plants in Hamilton and Broken Hill (and thence to primarily overseas markets).

The New South Wales shires within the scope of this study form part of the ABS Murray Statistical Division. The Murray statistical division is vast in size, covering the area bordered on the south by the Murray River, north by the Sydney to Broken Hill railway, west by the South Australian border, and to the east by the snowy mountains.

3.1.1 Impact of Recent Climatic Events

The floods in January and February 2011 and the ongoing heavy rainfall throughout late 2010 and early 2011 had significant impacts on producers in the North West region. There will be an impact upon production within the region, as well as its transport infrastructure. In some areas, substantial volumes of water are lying on agricultural country and are likely to be in situ for some months and possibly longer than a year. Consequently, the sowing of crops and the utilisation of land for grazing has been severely restricted.

Flood Damage to Mallee Rail Network 2011
Photo: Cr Cliff Unger, Mayor Hindmarsh Shire

There have also been significant recent impacts on the region through the rapid expansion of pest populations, including locusts, mice and fruit fly.

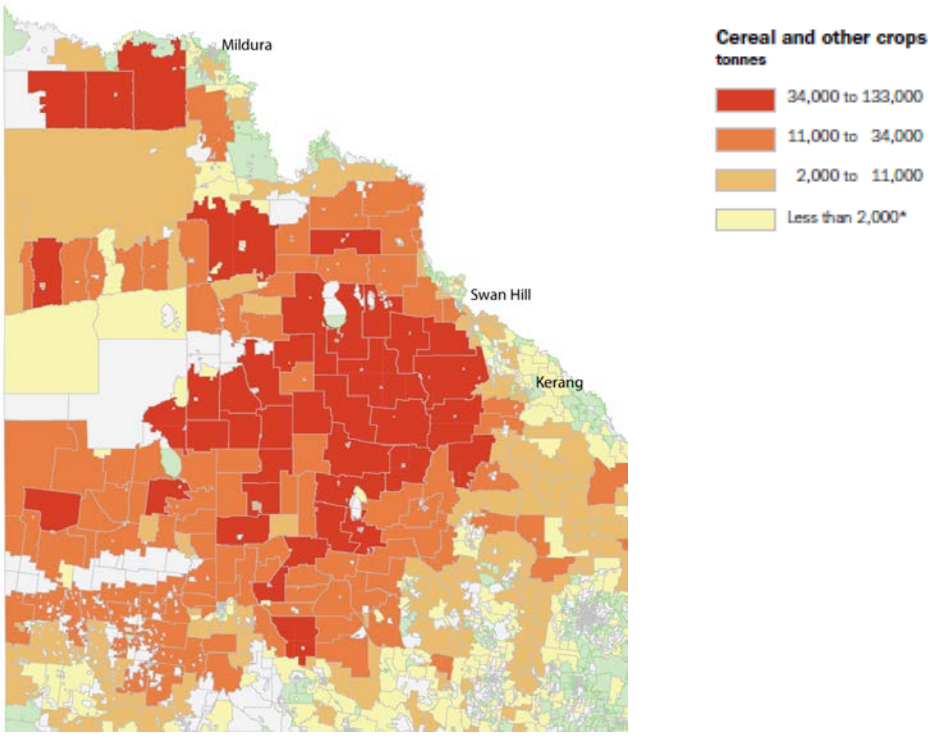
3.1.2 Grain

Wheat and Barley

Production of grain in the region is significant, particularly for the Mallee. In 2008 – 2009, cereal crops were valued at c. $282 million to the Mallee and $50 million to the Loddon sub regions. The relevant crops included

- wheat production of 650,000 tonnes in the Mallee (c.37 per cent of Victoria's wheat yield) and c. 71,000 tonnes in the Loddon sub region;
- barley production of 314,000 tonnes in the Mallee (c. 21 per cent of Victorian yield) and 65,000 tonnes in the Loddon sub region; and
- production of cereals other than rice in Wakool Shire in 2005/6 was valued at $32.6 million[9].

Hay production is also significant, with about 150,000 tonnes produced across the Mallee and Loddon sub regions, with a value of about $55 million. About 50 percent of hay produced in Loddon and slightly less than 70 percent of hay produced in the Mallee is sold to third parties, with a consequent demand for transport infrastructure. This is a significant task given the bulky nature of hay cartage.



[9] Wakool Shire Council, (2020), *Strengthening Irrigation Communities,* p.23

The 2009 – 2010 grain crop was very large in terms of volume, but not in terms of quality, as heavy rains and flooding resulted in a downgrading of significant areas of crops. This situation presented bulk handlers and transportation companies with logistical, storage and transport issues. There was a need to manage increased segregations of the crops in accordance with the grading as well as the requirements to move large volumes of feed grade wheat across Victoria and interstate.

The deregulation of the wheat industry 'single desk' has been an important change, which has contributed to the ongoing decentralisation of the bulk storage and handling of grain with on farm storage increasing significantly. ABS figures indicate that 750,000 tonnes of on-farm wheat storage capacity is located in the Mallee and 266,000 tonnes in the Loddon sub region.

Grain trucks unloading at Wycheproof Bulk Terminal

Increased containerisation of grain exports is also occurring. Farmers are increasingly able to take advantage of the increased marketing opportunities by grading their grain on the farm and selling to the larger number of exporters operating in the off shore grain market. Smaller and/or niche exporters will focus on the container trade as it permits a 'finer-tuning' of grain products to the more exact needs and preferences of customers. Consequently, there is an impact on the form of transport infrastructure that is required, for rail or road transport.

All grain production is subjected to variations from year to year, with a consequent impact on the utilisation of rail and road infrastructure. The fluctuations influence the return that is realised from the investment of public and private funds into fixed and mobile plant, equipment and structures, influencing the investment decision at the time that new development or acquisitions of rolling stock is being given consideration.

Wheat and Barley Supply Chains

Grain is produced in all Shires in the study area, and record outputs of wheat were produced in the last season. The traditional supply chain for export grain has been via the rail network, particularly the five broad gauge railways leading from the region to the ports of Melbourne, Geelong and Portland, namely the Pinnaroo (Murrayville), Mildura, Kulwin, Robinvale and Swan Hill railways. These are all broad gauge lines and most grain trains on these lines serve the Geelong terminal. More specifics on the operations of these supply chains are provided

elsewhere in this report. One shorter (20 wagon) grain train is allocated to supplying domestic mills within Victoria.

Another feature of the grain export supply chain include the capacity of grain to be exported by the standard gauge rail network that operates in South Australia and the western section of Victoria, servicing grain terminals at Port Adelaide as well as Portland in Victoria. Grain for these destinations can be consigned from Pinnaroo via South Australia, from Dimboola (and points on the Yaapeet and Hopetoun branch lines) to Adelaide or Portland.

There is also a developing export trade in containerised wheat, and a facility has been provided at the Merbein inter-modal terminal for filling containers with wheat. Such shipments do not require bulk terminals in Australia or recipient countries and containers of wheat can be trucked direct to mills in countries such as Indonesia or Korea.

Heavy road transport vehicles are playing an increasing role in the wheat supply chain. They already dominate movements of grain for stock feed, and in particular provide a west-east movement of stock feed grain from the region to farmers in Gippsland. There is no longer a rail supply chain for this movement. Heavy trucks also are in profusion around super grain terminals in the region, and provide flexibility for farmers with on-farm storage who may be able to secure better prices by varying the time or location at which they sell their grain. This flexibility was less possible when farmers used smaller trucks and restricted truck movement to carting grain to a local silo. Now a typical supply chain might involve a heavy truck journey from the region via the Sunraysia Highway to the stock feed processing facility at Ballan, which is not even located on the rail system.

In the New South Wales section of the study area, all grain is moved by road as there are no operational rail lines in Wakool or Balranald shires.

Rice

All rice in the region is grown in Wakool Shire, where rice plantings commenced in 1943 as part of the war effort. Rice grown at Wakool was formerly transported by the broad gauge railway to the Sunrice (Rice Growers' Co-operative) rice mill in Echuca which opened in 1949 and closed in February 2003, a casualty of the drought. Rice is the most significant single crop in Wakool Shire, which accounts for 11% of Australia's rice production. In 2005/6, the value of rice production in Wakool Shire was $30.2 million[10].

[10] Wakool Shire Council, *Strengthening Agricultural Communities,* p.24

Rice Supply Chains

Rice is another product where supply chains have been transformed in recent years. Since the closure of the Sunrice Echuca mill, there is no longer any traffic for the Wakool to Moama railway, and service on it has been suspended. Rice is now transported by truck to mills at Deniliquin and Coleambally, (refurbished in 2002) with requisite needs for the road to be maintained to support heavy truck traffic.[11]

Pulses

Another relatively recent food processing industry whose supply chain reaches from the study area around the world is Peaco, a pulse processing co-operative based at Donald. This company processes locally grown faba beans, an ancient form of pea known for its creamy flavor, as well as chick peas and other pulses. The product is used in India for the production of dahl, and in North Africa for the production of hommos, staple foods in both regions.[12] Peaco dispatches annually some 1400 containers of pulse based products to the port of Melbourne from its mill and intermodal facility at Donald, on the Mildura line.

Peaco Rail Loading Facility at Donald

Supply Chain for Pulses

The loadings are shipped on the thrice weekly Mildura container train. The operation illustrates an innovative niche operation, which is able to utilise rail transport through locating its processing plant at Donald railyards. Some state government funds have assisted in the cost of more efficient equipment for train loading at the facility. Originally containers were manually loaded with bagged product however pulses can now be dispatched in bulk form in containers. These can be trucked direct to market places in developing countries without the need

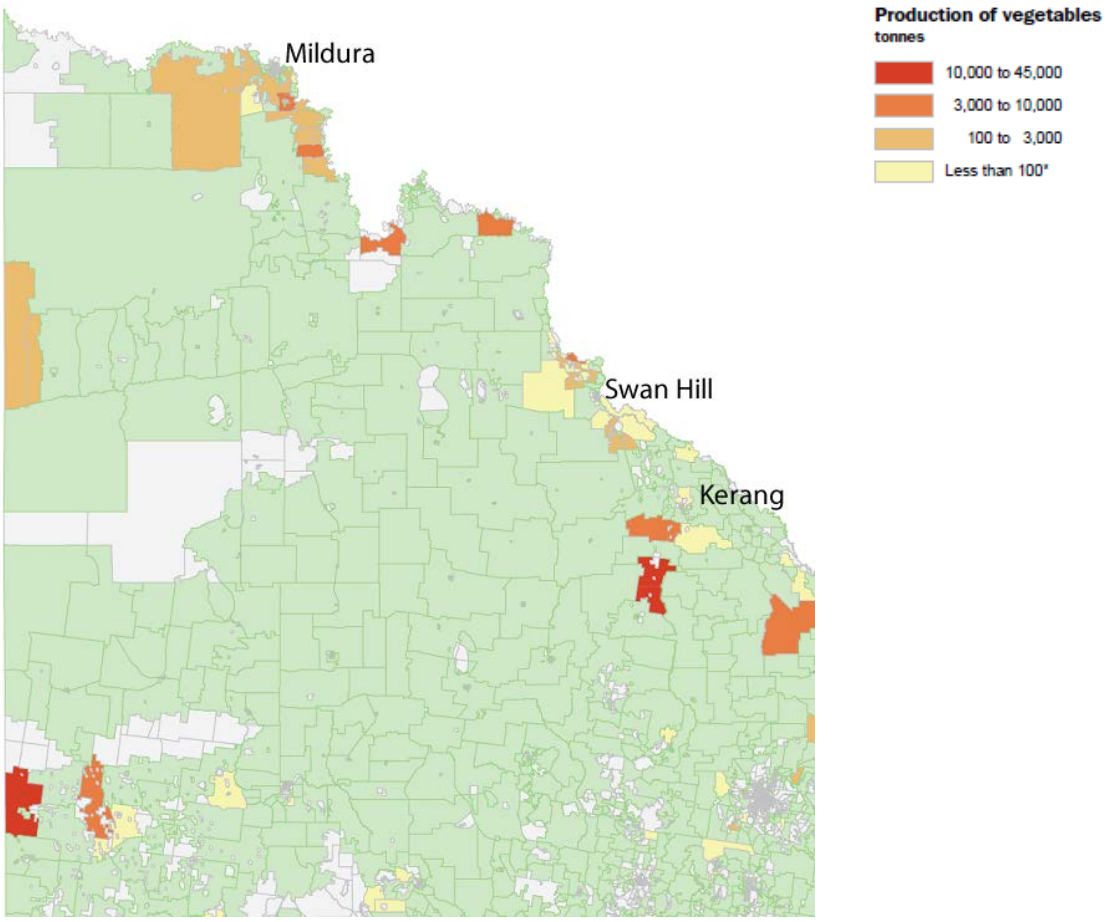
[11] Sunrice, Detailed Historic Timeline of the Australian Rice Industry.
[12] Interview with Mr Shane Wall, Manager Peaco (Peagrowers Co-operative), Donald, 23 05 2011

for specialised bulk handling equipment. This additional traffic assists in maintaining the viability of the Mildura container freight train service.

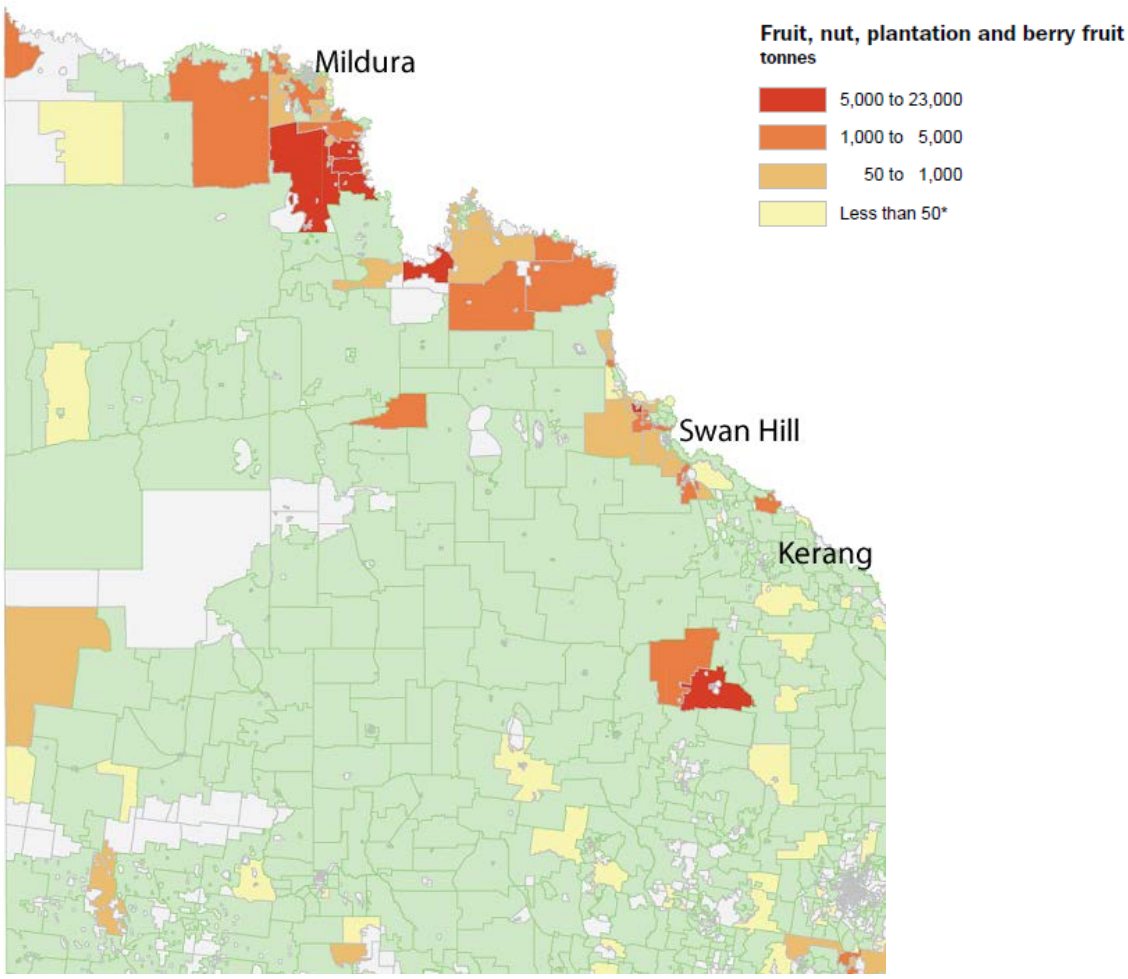
3.1.3 Horticulture and Viticulture

Vegetables produced for human consumption in the Loddon Mallee region were valued at c. $41 million, of which the bulk were grown in the Mallee sub region. Key crops included carrots ($11.5 million), mushrooms ($7 million), potatoes ($3.75 million) and capsicums and zucchini/squash ($1.5 million).

Northern Victoria is increasingly becoming important in vegetable production due to the growth of Melbourne and the impact on previously peri-urban horticulture. In addition, the production risks from weather and local disease can be spread and the land costs are cheaper.



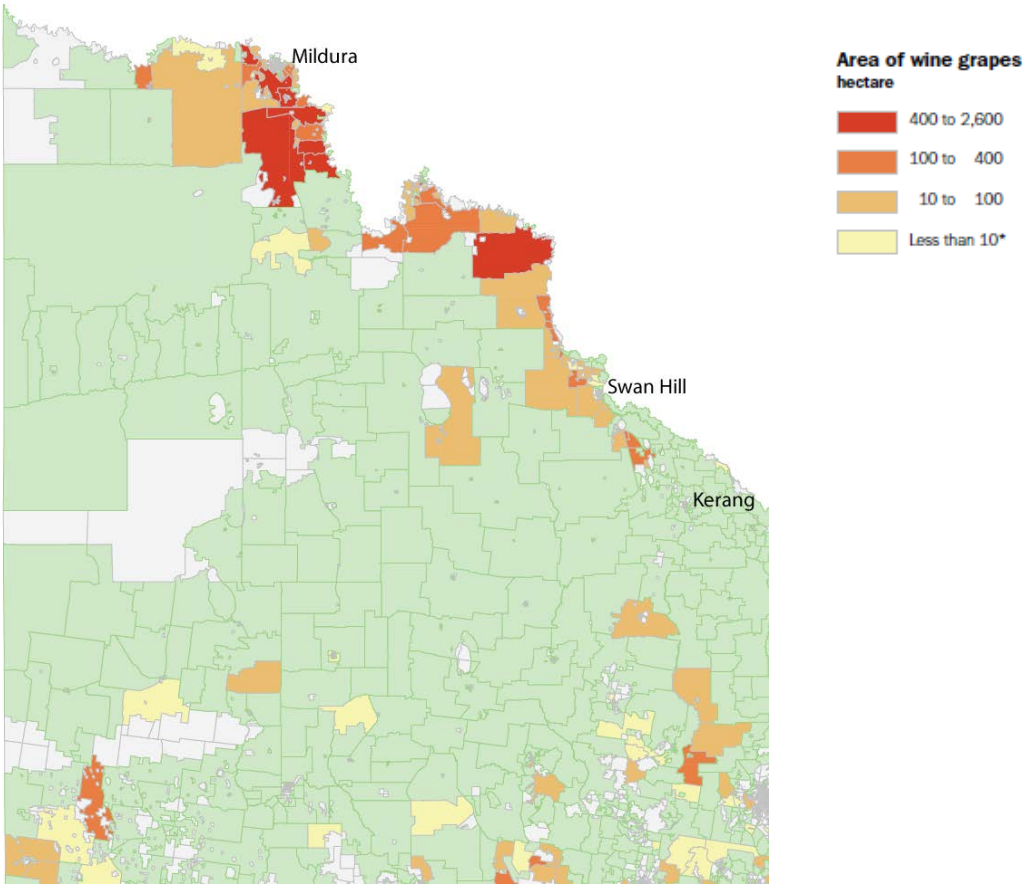
Fruit production is specifically strong in the Mallee sub region. Non grape fruit production is worth c. $172 million, comprising citrus ($62 million), stone fruit ($66 million) and nuts ($39 million, of which almonds are $34 million).
There has been significant growth in the last five years in the production of olives and almonds. Olive production has increased by 112 per cent and almond production by approximately 60 per cent since 2005 – 2006. It is likely that production will increase further as plantations reach maturity and show a yield.



Victoria's grape growing industry supplies the markets of wine making, dried grapes and table grapes. About 73 per cent of Victorian grape production is undertaken in the North West region.

The gross value of production of table grape production in the Mallee was $170 million, with dried grapes around $50 million and wine grapes estimated at $108 million. The value adding to these products significantly increases the value.
The Mildura and Swan Hill wine regions are generally considered to be hot climate zone grape production areas and the wine grapes produced generally go towards the production of cask and popular premium wines. However, wine production has decreased in recent years due to the impacts of adverse weather conditions and reduced irrigated water allocations. 2010-11 has been particularly challenging for grape growers, with the floods and heavy rainfall impacting on production.

Around 58 per cent of Australia's table grape production comes from Victoria, primarily from North-West Victoria. Exports are particularly important to the table grape industry and markets across Asia are the key customers. New market access opportunities are now opening up in China.



Horticulture and Viticulture Supply Chains

Horticultural and viticultural industries are the largest food industries in the region, and there are numerous food processing plants that transform these outputs into consumer products, especially wine, dried fruits, table grapes, olives and olive oil. The industry involves the packing and processing of fruit and vegetables, drying of grapes, and the crushing of fruit and vegetables to produce fruit juices and olive oil. Confectionary, sun dried vegetables and specialty food products are also produced. The typical supply chain for these products involves local transport from farms to packing or processing plants, and the preparation in these plants of consumer products. These products are typically dispatched in containers by road to domestic distribution points, including not only mainland state capitals, but also large food warehousing facilities such as Woolworths at Wodonga.

In relation to wine, there is also a significant rail based supply chain based on the intermodal terminal at Merbein. In this case, wine is warehoused at the rail terminal, and packed into export containers at that location for rail to the Port of Melbourne and export by ship.

Olives and Olive Oil

Olive plantations and olive oil production represent an important addition to the food processing and supply chains of the North West region over the past decade. Following the buyout of former TimberCorp assets, Boundary Bend Pty Ltd, an unlisted public company, now has 2.5 million olive trees on plantations totaling over 6000 hectares in Boort and Boundary Bend, which in 2009 processed some 44,000 tonnes of olives.[13] The Boundary Bend processing facility was opened in May 2004 and now the company now produces some 45% of the market for Australian produced extra virgin olive oil.

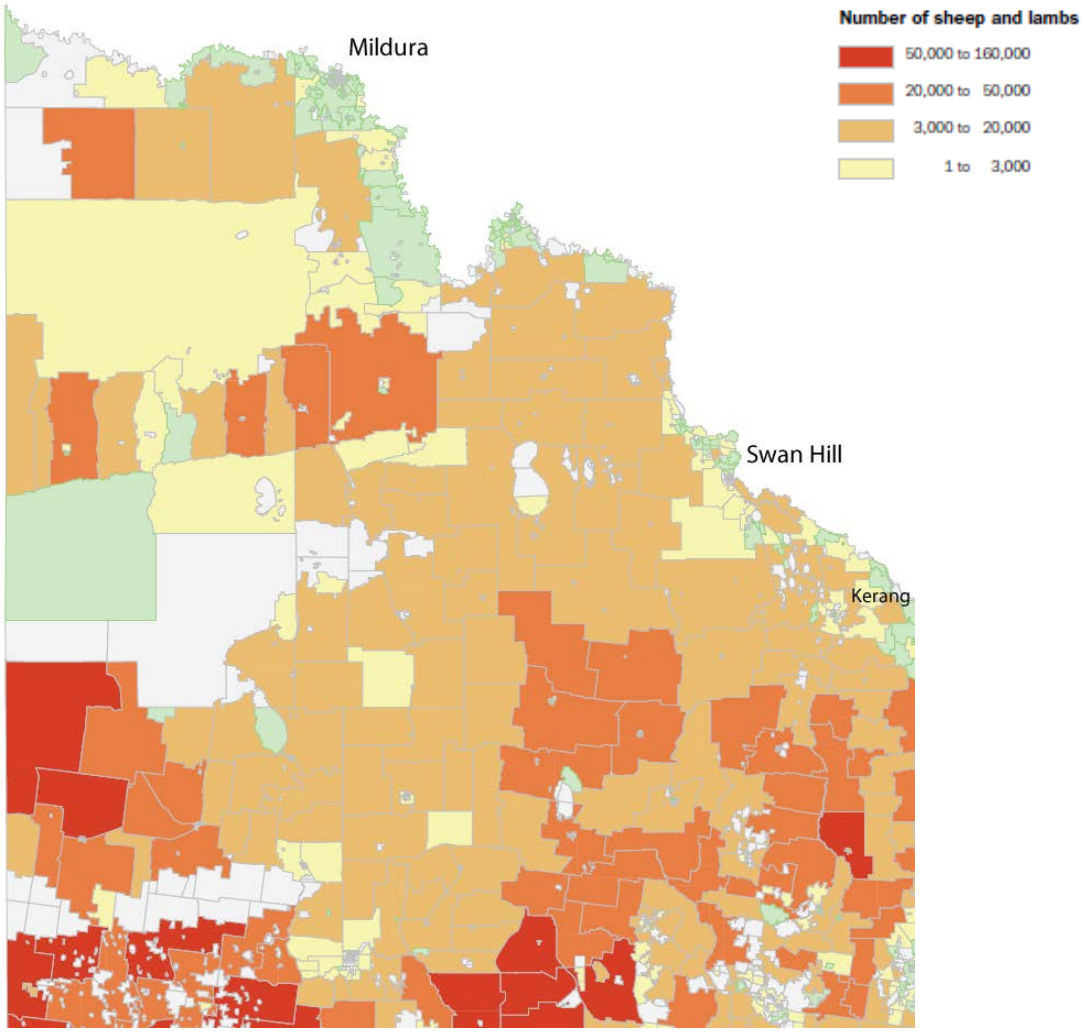
Olive Oil Supply Chains

The production volumes reported by the company would require some 2,000 truck journeys, in some cases on local roads not designed for heavy vehicles. Boundary Bend Olives Pty Ltd operates its olive nursery at Corio, near Geelong, and there are oil pressing facilities at Boort and Boundary Bend, as well as six separate plantations. All are linked by road transport.

[13] Boundary Bend Olives Pty Ltd (2009) *Prospectus,* p.21

3.1.4 Livestock

Sheep meat movements within the North West region are stronger in the Loddon sub region, with a gross value of production of c. $107 million in Loddon and $40.3 million in the Mallee. Wool production is a stronger industry in the Loddon sub region ($44 million) than in the Mallee ($17 million). It is estimated that there are 2.4 million sheep and lambs in the North West Region and the combined sheep industry has c. 30 per cent of the GVP in Loddon.



Within the North West, cattle numbers are small, with 85,000 across the two sub regions, with a value of $49 million. Broad acre livestock numbers have declined over the last decade as a result of drought and the impact of farmers de-stocking their herds. However, recent improvements in climatic conditions have encouraged farmers to re stock, with a likely increase in the numbers of stock, or, at the very least, a leveling of the decline.

The Central Murray dairy region remains important with a gross value of production in 2005/6 of $87 million, of which $14 million was in Wakool Shire[14].

Structurally, there has been a longer term shift away from sheep and a strong take up of cropping as a more profitable production system. Where sheep are produced, there has been a shift from wool to prime lambs.

The Swan Hill Regional Livestock Exchange, originally established in 1938 and refurbished in 1995, conducts fortnightly cattle and sheep sales on alternate fortnights, drawing on a large regional catchment that extends well into NSW.[15] The aggregate throughput of the sale yards in 2007/8 was $25.5 million, comprising $9.5m in sheep sales and $15.9m in cattle sales. Other sale yards serving the area include Wycheproof, Ouyen, Kerang, Echuca, Bendigo and Deniliquin, with Echuca currently the largest market for cattle and Bendigo the largest market for sheep.

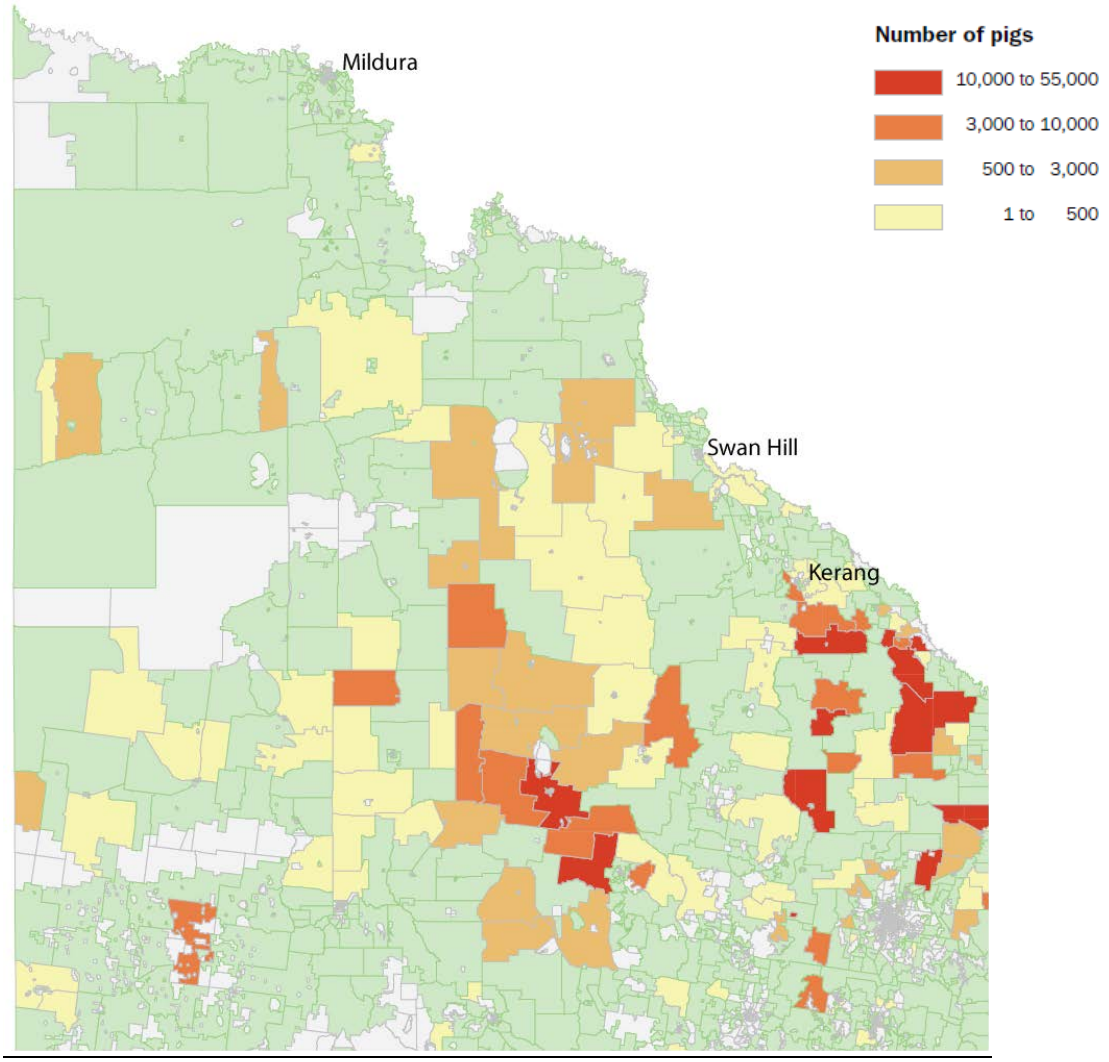
Livestock Supply Chains

About 2.4 million head of beef cattle and sheep in the North West are likely to be transported at some stage to sale yards, abattoirs, processors, domestic customers and export ports. In addition, the movement of stock into Victoria from interstate is continuing and growing. In 2009 – 2010, more than one million sheep were transported from Western Australia as a result of drought conditions in the west. The Charlton feed lot is a significant finisher of cattle brought to Victoria from interstate and the Swan Hill Regional Livestock Exchange undertakes the sale of livestock from both within the region and interstate, with stock arriving from NSW and South Australia.

[14] Wakool Shire Council, (2010), *Strengthening Irrigation Communities,* p.8

[15] Swan Hill Rural City Council (2008), Swan Hill Stock Selling Complex Future Directions Discussion Paper

Pigs are raised in the Region, with nearly 200,000 head across the region, with a value of $73 million. Increased water security arising from the Wimmera Mallee Pipeline may create opportunities for producers wishing to initiate more intensive animal production, including pigs and poultry. Consequently, transport volumes of stock to abattoirs in Castlemaine and Bendigo, outside the region, may increase.

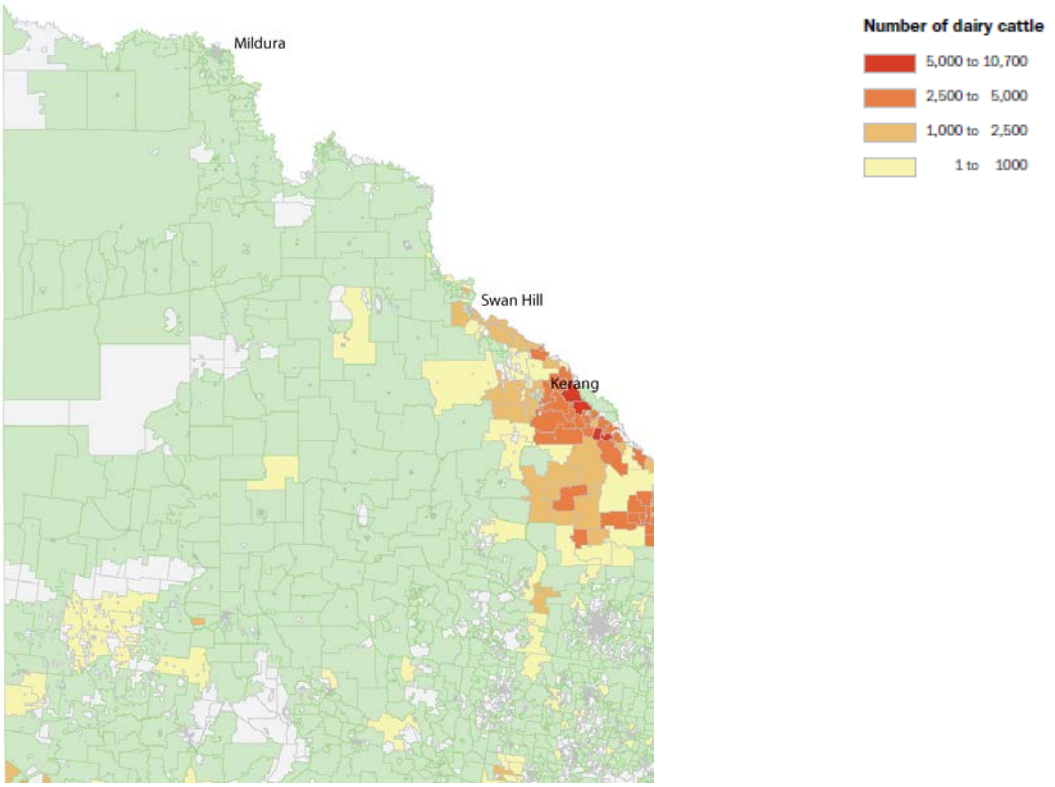


Dairy production occurs in the Gannawarra municipality, as the western most section of the northern dairy industry. The segment in the Loddon sub region is valued at about $106 million in 2008 – 2009. Production volumes are not available for the Gannawarra segment of the northern dairy industry which produced c. 1.67 billion litres in 2009 – 2010, reflecting a decade long decrease in production of about 1.3 billion litres, a result of drought, reduced irrigated water allocations and water being traded out of the district.

Currently, water allocations for the current season are at 100 per cent for all districts and despite the damage caused by floods and heavy rainfall, the seasonal conditions for dairying are very positive. Milk prices are strong and hay prices are weak, creating a positive economic environment for dairy producers.

Dairy Supply Chains

Dairy processing plants are generally located in the centre of the northern dairying region, with a need to transport product from Gannawarra producers by road transport. Transport requirements encompass the daily pick up of milk from the farm, with the provision of B-Double access. The movement of completed products to the Port of Melbourne and domestic consumers or distribution centres is a further source of demand for transport resources.
Other demands arise from the need to shift calves to the abattoirs, moving fed grain, hay and silage within and across the region and the distribution of fertiliser.



3.1.5 Mineral Sands and Quarry Materials

The mineral sand resources are located in a broad area stretching from south of Horsham north to Ouyen and into south west New South Wales in Wentworth and Balranald Shires. The deposits in Victoria are estimated to be 260 million tonnes, including 8 million tonnes of rutile and 6 million tonnes of zircon.[16] With an estimated 50 year reserve, a significant and ongoing freight operation is likely.

Mineral Sands Supply Chains

Iluka Resources Ltd runs the mineral sand operations in two locations near Ouyen. Iluka's Murray Basin Stage 2 mine is expected to produce an additional 45,000 tonnes of heavy mineral concentrate annually. The intended supply chain is for mineral sands to be transported by road from mining sites to Hopetoun and then by rail to Hamilton for mineral separation and concentration before the product is moved to Portland for export. In 2009, 136,000 tonnes of zircon and rutile were exported from Portland by Iluka. Victorian Government has invested in rail loading equipment at Hopetoun to support a supply chain in which this heavy bulk traffic is carried by rail for most of its journey rather than by road. Iluka in 2008 entered into a contract with rail operator El Zorro for this traffic.

Most of the waste material from the refining process is moved back up to the mines.

In July 2010, the Victorian Department of Primary Industries granted a Mining Lease (MIN 5532) to the China-based Astron Resources, which believes this may be the largest zircon deposit in the world, with equivalent titanium deposits.[17] This project is yet to reach the production stage.[18] Reserves are estimated at 477 million tonnes, and the intention is that mineral sands from Donald would be processed at a mineral separation plant in China. This would require very large movements of bulk ore to port. The likely supply chain would be to truck product 40 km to Minyip, where a rail loading facility would be needed for transshipment to standard gauge trains operating to Portland.

Bemax Resources Ltd, a Saudi owned private company, became the first mineral sands operator in the Murray Basin in 2005, and operates mineral sands operations in Wentworth Shire (such as the Gingko and Snapper mines between Mildura and Broken Hill) and is planning for mineral sands production at two locations in Balranald Shire, 90 km north of Balranald[19]. The first of these, the Campaspe mine, is planned to open in 2014.[20]

[16] Victoria, DPI, Victoria: a World Class Mineral Sands Province.
[17] Astron Resources, Donald Mineral Sands Project and Mineral Separation Plant.
[18] Ästron Mining Licence Granted, (MIN 5532) July 2010.
[19] Barrier Daily Truth 29 March 2011
[20] ABC Rural News 25 May 2011

Bemax transports ore 200km by road train from Gingko to Broken Hill for processing, from where it is shipped to Port Adelaide and Bunbury (where Bemax has another mineral sands operation) for export.[21] In preparation for production in Balranald Shire, consideration has been given to a road-rail supply chain, involving transshipping ore to rail at Ivanhoe or a similar location on the Sydney to Broken Hill rail line.

Quarries are also located across the North West Region and reflect an important domestic transport task. Examples are Morello Gypsum and Organic Manures at Buronga, and Hanson Quarries at Cardross and Irymple, Lake Boga Quarries at Lake Boga, and Mawson's, operating in Swan Hill, Mildura and Broken Hill.

3.1.6 Transport through the Region

In addition to the supply chains that originate with agriculture, horticulture or mining with the region. Of these, the east-west Sturt highway is currently the most important, and it carries the heaviest traffic of any highway in the region.

However several other categories of traffic across the region should be noted: As discussed earlier in this chapter, the largest cattle sales close to the region are at Echuca, and sheep sales are at Bendigo. These involve significant livestock movements across the region.

Secondly, mineral sands deposits are found across very large extents of the Parilla Sands in the Murray Basin, and these will require massive movements by road and rail to the two mineral separation plants, at Hamilton and Broken Hill, where processing occurs.

Thirdly, there are several medium term future long distance routes discussed in this report. These include the Mildura to Menindee transcontinental rail link, which would facilitate east west and north south long distance rail traffic through the region. The proposal to seal the wool track north from Balranald would also facilitate long distance traffic, particularly livestock, across the region in response to market opportunities and climatic opportunities in different states.

Fourthly, there is a strong interface between the economies of Balranald and Wakool Shires, and those of the adjoining Victorian communities and road and bridge links, heavy vehicle routes and public transport connections need to support those links better.

These examples of transport through the region illustrate the extent to which the region is already a transport cross-road, and the potential for this role to develop further in the future.

[21] Bemax Resources Ltd, Eastern Australia Murray Basin Operations.

4. Existing Transport in the Region

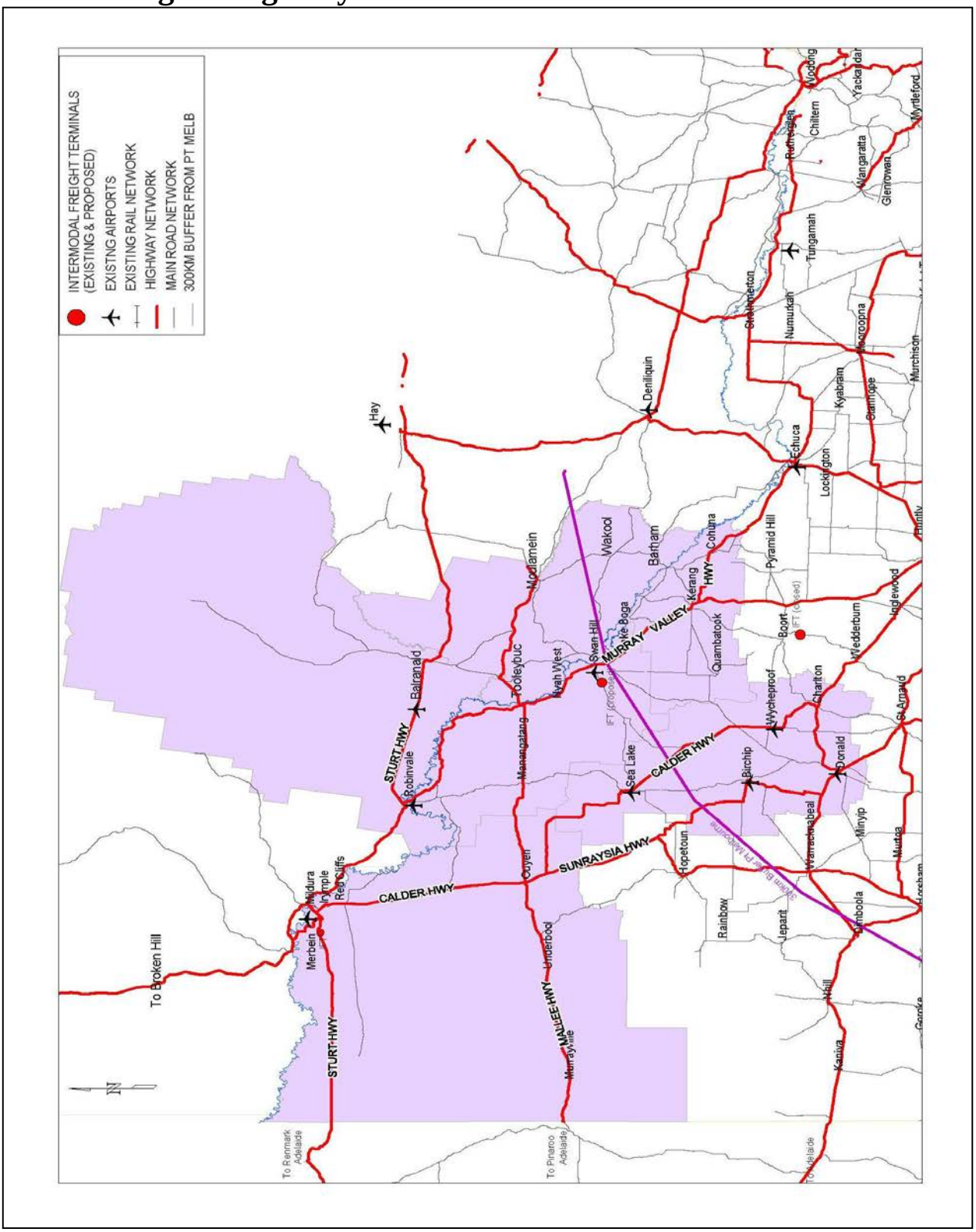
4.1 Road Transport:

Highway Spines – Calder, Mallee, Murray Valley and Sturt

Four key highways, the Calder, Mallee, Murray Valley and Sturt Highways, are the transport spines by which the majority of freight and passengers reach centres in the North West transport region. The Sturt and Calder Highways are identified as part of Victoria's Principal Freight Network under Direction 1 of Freight Futures[22], The Calder and Sturt Highways are both within Auslink corridors, were the subject of Auslink corridor strategies in 2007 and eligible for Auslink funding[23].

[22] Victoria, (2008) *Freight Futures*, p.25
[23] Australia, Auslink Corridor Strategies, (2007) *Sydney to Adelaide Corridor; Melbourne to Mildura Corridor,*

NW Region Highway Network



4.1.1 Calder Highway

Calder Highway from Bendigo to Mildura, 416 km in length, is the region's most important single transport link with Melbourne. It has been the subject of VicRoads Calder Highway Strategy in 1995 and Auslink's Melbourne-Mildura Corridor Strategy in 2007.
The Auslink study reported that "once north of Bendigo traffic on the Calder is typically light...and "travel times...are generally reliable with occasional disruptions caused by bad weather, crashes and other incidents"
The current level of traffic of 1000 VPD in the Inglewood to Red Cliffs section of the highway was expected by VicRoads in 2005 to grow by 0.5% to 1.5% per year, and although this growth has not been realised due to drought and economic slowdown in the intervening years, Mildura has continued its urban growth and this should support traffic growth at the level predicted by VicRoads as the economy recovers. The 2007 Auslink study estimated growth over the period to 2025 on the northern section of the Calder Highway at 1.4% per annum for light vehicles and 1.2% per annum for heavy vehicles.

The following table sum arises and compares the key improvements identified in the VicRoads and Auslink studies of this corridor:

VicRoads 1995	Auslink 2007
Duplication Irymple-Mildura (completed in 1997	Need to cater for population growth at the edge of Mildura
Shoulder sealing, rehabilitation and local improvements.(completed)	Need to provide safety improvements to accommodate mix of heavy vehicles and cars, including passing lanes, reset areas and safety signage
Level crossing improvements at Wycheproof and Merbein seen as of low priority.	Need to address safety of level crossings on Calder Highway "a major concern".
	Consider scope for reducing mixing of freight vehicles and cars in towns such as Mildura

These issues are consistent with the following current priorities of Councils raised during the present study:

- Improve highway spines (Calder and MVH) – Buloke Shire Council
- Freight Bypass of CBD – Mildura Rural City Council
- Mitigate flood impact on major road routes – Swan Hill Rural City Council and Gannawarra Shire Council

4.1.2 Murray Valley Highway

Murray Valley Highway provides the riverine road transport spine for the North West Transport region, connecting Albury Cobram, Echuca and Yarrawonga in the east with Kerang, Swan Hill, Robinvale (and Mildura via the Sturt Highway) as well as other population centres in the region. Murray Valley Highway is an important current and potential tourist route offering many leisure, ecotourism and heritage attractions to visitors.

Through its connection southwards via the Loddon Valley Highway to Bendigo, this route provides a second north south path for cars and heavy vehicles travelling between the region and ports and markets in Melbourne.

Both the Murray Valley Highway and the Loddon Valley Highway are classified as "B" roads in *Victoria's rural arterial road strategy*. B-roads under this strategy should have two 3.5 metre wide sealed traffic lanes (where traffic volumes exceed 1500 vpd), sealed shoulders, edge lines, (where warranted by accident history) overtaking lanes and safety signage. These two highways conform to these performance standards, although there are currently few overtaking lanes, and edge sealing has generally not been completed in the northern section of the Murray Valley Highway between Nyah and the outskirts of Robinvale.

The 2010 level of traffic on this highway between Kerang and Swan Hill was 1005 VPD, very similar to that on the parallel Calder Highway between Wycheproof and Sea Lake at 1003 VPD.

The Loddon Valley Highway was the subject of a VicRoads *Management Study* in 2004. It is not covered in the Auslink *Melbourne-Mildura Corridor Study* of 2007, although in practice it is as important a part of the road system for Melbourne-Mildura traffic as the Calder Highway in terms of VPD. The Calder route carries a slightly higher proportion of trucks and the Highway has an A route classification. This is an issue relevant to the capacity of this route to attract national funding priority.

VicRoads in 2004 predicted a growth in traffic of 1.5% for the Loddon Valley Highway north of Bendigo.

The key improvements identified in the VicRoads 2004 Management Study of this corridor were pavement widening and shoulder sealing south of Kerang, better rest stops on the Loddon Valley Highway and the upgrading of bridge and end

post protection on the Loddon valley Highway. VicRoads has advised that this work is complete.

The following are current priorities of Councils raised during the present study:

- Improve highway spines (Calder and MVH) – Buloke Shire Council
- Upgrade MVH to better support tourism – Mildura Rural City Council, Swan Hill Rural City Council

4.1.3 Sturt Highway

The Sturt Highway is the major east-west road link serving the region. It serves to connect Sydney and Adelaide/Perth, passing through Balranald, Euston and Mildura within the study region. The Sturt Highway provides a key port link for fruit growers in Sunraysia and the Riverland area of South Australia with the Port of Adelaide, and it is also an alternative road route for export grain and livestock from western New South Wales and north west Victoria to Port Adelaide, where ABB operate an important grain handling facility. As the distance from Mildura to Adelaide is shorter than that from Mildura to Melbourne, this route is also utilised by some persons from Sunraysia needing specialist medical treatment, and for commercial purposes.

The Sturt Highway west of Mildura is currently carrying 1736 VPD, and to the east of Euston, 2181 VPD. In both cases, the proportion of trucks is high. These traffic levels are broadly double those on either the Calder or Murray Valley Highways. They show the importance of east-west road traffic, including through general freight, livestock, fuel, grain and bulk wine. Livestock movements on this route reported to the study included some very long distance movements such as cattle from Western Australia to Victoria following low rainfall in WA, and live sheep from Queensland and western NSW to Portland for export. These very long distance livestock movements illustrate national highway system functions of this part of the highway network, well beyond serving local industry needs. In recent years, there has been a marked change in the relative competitiveness of rail to road on this corridor, with a movement from approximate cost equality in 2003-2004 to a 15% cost advantage for rail in 2008-09 on the Sydney to Adelaide route and 40% on the Adelaide to Perth leg.

These changes in relative cost competitiveness may partly explain relatively limited growth in truck numbers (an average of 25 extra two way trips per day) on the Sturt Highway west of Mildura between 2004 and 2009:

Truck Numbers per day, Sturt Highway both Directions at Cullulleraine

2004	623
2005	631
2006	641
2007	659
2008	651
2009	674

Source: VicRoads Telemetry

The Sturt Highway is the subject of the Auslink *Sydney to Adelaide Corridor Strategy* of 2007.

The Auslink study predicted a growth of traffic on this corridor of 1% per year, with a modest growth in the proportion of truck traffic from 26% to 30%. On the Sydney to Adelaide corridor, Auslink predicted rail freight growth to be double that of road freight growth, at around 1.9% growth per annum to 2025. This illustrates the modal consequences of extending rail corridors to facilitate longer movements (as in Mildura Rural City Council's Menindee link proposal). Shorter intrastate rail lines generally do not allow for longer distance consignments, and road is more likely to dominate the modal split on shorter journeys– whereas on longer integrated corridors such as Sydney to Adelaide or Sydney to Perth, more competitive conditions between modes prevail.

The Sturt Highway within the study area is generally of a good standard, with wide lanes, audible edge markings, excellent rest areas and comprehensive safety signage. However there are few overtaking lanes (as they are not justified by traffic volumes) although there have been some serious accidents within the study area on this highway.

During summer school holidays, average daily traffic in 2009 on this route increased from the annual average of 1736 vpd to 2026 vpd, while trucks reduced in the same period to 589 per day compared to an annual average of 674 per day.

The Calder, Murray Valley and Sturt Highways are all sealed roads of adequate pavement width to carry the volumes of traffic serving the region. These roads carry an average of 1000, 1000, and 2000 vehicles per day, of which 20-30% is freight vehicles and 10-20% is articulated vehicles or B-doubles. In the Mildura area, the traffic is increased by the urban movements associated with a multi-centred settlement of 57,000 people, and in that area added investment has been made in duplication, traffic signals and other measures consistent with the extra traffic. Similar issues arise in Swan Hill.

4.1.4 Mallee Highway and connections via Tooleybuc to Riverina and Sydney

The Mallee Highway from Pinnaroo on the South Australian border eastwards to Tooleybuc Bridge on the Murray River provides a useful additional east-west link in addition to that provided by the Sturt Highway. In New South Wales, most traffic east of Tooleybuc is to Balranald, and then east to Hay.

This Highway passes through Buloke and Swan Hill municipalities and is part of the Principal Freight Network under *Freight Futures*[24]. This route (though not known as the Mallee Highway in NSW) continues via Moulamein in Wakool Shire to Deniliquin and ultimately Sydney. It is already an alternative Adelaide to Sydney freight route and has further development potential in this role.

The Tooleybuc Bridge is a one-lane timber and steel bridge constructed in 1925 that is heritage listed and load limited. It is subject to severe height and width restrictions and is not suitable for Higher Mass Limit Freight Vehicles.

These limitations together with the need for considerable upgrading of roads between Tooleybuc and Deniliquin prevent this route from contributing its full potential as an alternative for Sydney to Adelaide traffic, although in the medium term it will be capable of playing that role should Tooleybuc Bridge be upgraded. However such an upgrade would need to compete for priority with the proposed Swan Hill crossing and the second Mildura crossing suggested by Mildura Rural City Council. In both the latter cases, higher traffic numbers are experienced.

Within Victoria, the Mallee Highway is important for grain movements from the region to grain receival points, as well as to ports; it is an important route for mineral sands traffic from ore bodies near Kulwin and Ouyen, destined for processing at Hamilton, and it is a V/Line coach route for scheduled services to Adelaide and Albury, and for some services between Mildura and Swan Hill/Bendigo.

[24] ibid

The Mallee Highway is classified as a B-class road. It has a section of sub-standard seal width between Piangil and Kulwin, and does not have edge strips or overtaking lanes. There are few rest areas. Heavy vehicles often require the unsealed shoulder for passing or overtaking, and there is evident damage at several locations.

4.1.5 Sunraysia Highway

The Sunraysia Highway is a B class road that provides an important north south connection between the Mallee and Ballarat, Geelong and Melbourne. Part of the Sunraysia Highway is identified as part of the Principal Freight Network under Freight Futures[25].

Although not as heavily used as the Calder or MVH/LVH routes for north south traffic, it provides a key port connection for grain, a key connection for mineral sands, and a key connection for livestock traffic both to sale yards in Ouyen and Ballarat and for live sheep export from Portland. Sunraysia Highway at Donald is currently carrying 770 VPD.

The northern part of the route will carry trucks conveying mineral sands to and from the railhead at Hopetoun for carriage to the Iluka processing plant at Hamilton. However the Highway has pavement and shoulder damage between Ouyen and Lascelles (where it forms part of the mineral sands trucking route) and is in need of repair. Between St Arnaud and Lexton the Sunraysia Highway is relatively narrow and lacks overtaking opportunities, which may be a deterrent to the fuller usage of this route by freight and tourist traffic. VicRoads have advised that shoulder sealing is not mandatory under Linking Victoria for this class of road, but is undertaken where justified by traffic volume or accident history.

Shire of Buloke has included Sunraysia Highway upgrading among its strategic priorities.

4.1.6 Silver City Highway

The **Silver City Highway,** from Mildura north to Broken Hill is an important freight and tourist route. It now also supports road trains from BeMax Resources Gingko mine; a second BeMax mineral sands operation on this route is close to production.

[25] ibid

4.1.7 Murray River Crossings

Between Mildura and Echuca, there are seven principal Murray River crossings suitable for heavy freight vehicles. Two of these (Robinvale/Euston and Mildura/Buronga) are modern elevated concrete structures, constructed within the last 25 years and capable of carrying Higher Mass Limit Freight Vehicles and all normal classes of road traffic.

Between Robinvale and Echuca, the crossings at Tooleybuc, Echuca, Swan Hill and Barham are all heritage listed timber and steel truss bridges that impose severe width and load restrictions. The bridge at Nyah is a steel girder bridge with a concrete deck. These bridges are not suitable for Higher Mass Limit Freight Vehicles, and are classified as T44, meaning that they are limited to a 42.5 tonne semi-trailer or a 62.5 tonne 9 axle B-double[26]. Swan Hill, Echuca, Tooleybuc and Barham are on B-double routes but Nyah is not an approved B-double route.

B-triples that are permitted to operate in New South Wales must be broken down when approaching Victoria at these locations. These bridges are also unsuitable for over-dimensional loads that are important to the region, such as large agricultural machinery, as well as portable buildings and other Over Dimensional loads. Vehicles conveying such loads must make extremely lengthy detours via Barmah or Robinvale/Euston. The following width limitations apply to these bridges[27]:

Width Restrictions on Murray River Crossings

Tooleybuc	4.26 metres
Nyah	6.09 metres
Barham	4.87 metres
Swan Hill	4.27 metres

In the case of Swan Hill and Koondrook, the towns of Murray Downs and Barham exist on the New South Wales side of the border, and these towns and their hinterlands are constrained by these limits. As well, their residents must contend with articulated freight vehicles that occupy all available space on the bridges as they slowly cross them.

[26] See Diagram at Appendix 2. T44 Loading Limits
[27] VicRoads, "Murray River Bridges and Punts", paper supplied to consultants.

On population and traffic grounds, the Swan Hill Bridge would (after Echuca) serve the greatest number of current passenger and freight journeys, and planning for it is well advanced, with traffic modelling and other studies completed. As discussed in an earlier section, Tooleybuc bridge also has medium term strategic significance. Echuca bridge, although two lanes, is also a nineteenth century structure now carrying heavy traffic for which it was not designed. (Rail traffic at Echuca was formerly carried in the centre of this bridge but is now provided with a modern concrete structure separate from the road bridge).

As well, the Rural City of Mildura has advocated a second Mildura Murray crossing, possibly in the Karadoc region. This would reflect the growing urban population of the Mildura region needing to cross the Murray and the conflict between this urban passenger traffic and long distance freight movements on the Sturt Highway.

4.1.8 Other Important Bridges – Gee Gee and Coonamit in Wakool Shire

Apart from the Murray crossings, freight movement within Wakool Shire, and potential Sydney to Adelaide traffic using the Tooleybuc crossing and Mallee Highway, is impeded by two further heritage listed wooden truss bridges, the Gee Gee and Coonamit bridges on the Tooleybuc to Balranald Road in Wakool Shire. A recent RTA report has investigated the heritage status of these bridges and recommends their removal from the state heritage list.

It will be necessary in the medium term to consider an alternative crossing to bypass these heritage bridges. Such a crossing would form part of consideration of an alternative Sydney to Adelaide route additional to the current Auslink Corridor, which is the Sturt Highway.

4.1.9 Conflict between Freight and Passenger Vehicles

Most highways and main roads in the North West region carry relatively light traffic volumes, permitting accommodation between the needs of passenger and freight vehicles. However there are several circumstances in the region where conflict occurs:

- *Overtaking Opportunities*

On the busiest road in the region, the Sturt Highway, there is a high proportion of freight vehicles, and especially articulated freight vehicles, relative to passenger vehicles. However there are also significant numbers of slower passenger vehicles, notably "grey nomads" or retired persons towing caravans. Such traffic is not always disposed to maintaining the maximum permitted speed. There are few overtaking opportunities when traffic is heavy. As the use of higher mass vehicles increases, and with the capacity of these vehicles to maintain the speed limit on this highway, conflict between fast and long HPVs and slower passenger vehicles is likely to contribute to added safety concerns, and the provision of appropriate overtaking opportunities needs consideration. Other routes in the region used by significant numbers of caravans, such as the Murray Valley Highway, have similar problems.

In Victoria, under *Freight Futures*, Direction 1, it is stated that "VicRoads will encourage the use of roads on the Principal Freight Network for freight movement and discourage the use of roads off the Principal Freight Network for freight use[28]. As well, the VicRoads *Rural Arterial Road Strategy* prescribes the provision of overtaking opportunities every fifteen kilometres on A class roads. This standard has yet to be implemented on the Calder Highway within the North West region. Although these lengths of the Highway do not have accident histories or traffic volumes that warrant overtaking lanes under Australian Design Guidelines, there may be merit in considering whether extra actions are needed to encourage truck operators to use PFN routes where choices are available.

- *Urban Areas*

In Mildura and Swan Hill freight routes pass through the centre of the city in each case. In Mildura, through freight vehicles predominantly pass through Deakin Avenue despite the availability of an alternative along Benetook Avenue.

[28] *Freight Futures*, p.25

In the case of Mildura short term and medium term opportunities exist to lessen conflict. In the short term, the duplication of Deakin Avenue/Sturt Highway to the Airport entrance would provide overtaking opportunities now lacking between 15th street and the airport. In the longer term the proposed freight bypass via Thurla, and the potential connection to a new Murray River crossing at Karadoc, could provide the basis for significantly reducing conflict.

- *Location of Intermodal Terminals*

Location of Intermodal terminals is a key lever to reducing conflict between freight vehicles and passenger vehicles. The Merbein terminal serving Mildura was a preferable alternative to the former Freightgate in the station precinct, and the proposed Thurla intermodal terminal, near Red Cliffs, could be designed to greatly reduce conflict.

In Swan Hill, the site suggested for a proposed inter-modal terminal can also be provided with truck access that minimises conflict. Alternatively, an inter-modal terminal at Piangil could provide connection to a potential east west route for high performance road freight vehicles should the Tooleybuc bridge be replaced. Replacement of this bridge is dependent on the outcome of a current state-wide study in New South Wales of policy on heritage timber truss bridges[29].

4.1.10 The views of Road Freight Operators

Key transport operators are located in all the main population centres in the North West region, specifically, Mildura (including Irymple, Merbein and Red Cliffs), Robinvale, Swan Hill, Donald, Balranald, Moulamein and Kerang, with operators in other smaller towns. There are transport operators of all sizes, with a broad range of infrastructure and geographic and industry segments that are serviced.

Many operators are headquartered in the region, with decentralised operations in the main towns to accommodate the delivery and receipt of goods. The larger of these organisations also maintain depots outside the region, particularly in Melbourne, Bendigo and Shepparton, but also in Adelaide, Sydney and Brisbane, depending upon the range of their operations. Some of these depots are shared or operated by other entities. A number of very large national operators also maintain facilities, specifically in Mildura and / or Swan Hill to support east-west operations.

Several operators maintain depots and work sites on the New South Wales side of the Murray, but regard themselves as Victorian firms servicing a largely

[29] ibid

Victorian market. The reason for the location appears to be based on the imposition of road tax, as companies operating across the border make the journey to Melbourne or to other Victorian locations, free of road tax charges. Further, the availability of larger, cheaper sites, together with lower rates and charges, are additional incentives. Consequently, Buronga, Murray Downs and Euston, all in New South Wales, are locations for freight operations, drawing a workforce from the Victorian side of the river.

A number of key operators were interviewed to ascertain their views on transport infrastructure and operations in the Region.

Most of the larger operators regard Mildura as the main hub of activity, as the range of industries to be serviced are more diverse and extend across the whole year. Other areas are more industry specific, such as firms servicing:

- the dairy industry in Gannawarra;
- stone fruit growers, grape growers and the wine industry along the Murray from Mildura to Swan Hill;
- the almond industry in Boundary Bend; and
- the mineral sands east of Ouyen and in southern New South Wales.

These special transport segments are generally geographically cohesive. Other operators range more broadly, not only providing general freight services, but carrying specific loads for longer distances, including fuel, livestock, grain, horticultural produce, retail products, construction materials, processed food goods and fertiliser.

There are flows both into and out from the North West region, as well as within the region, with raw products needing to be processed before their shipment elsewhere. Consequently, there are both north-south and east-west routes across which transport operators drive, to deliver their loads.

Containers are widely used, particularly for export produce and bulk and packaged wine.

The main routes supported are from the region to Melbourne and Adelaide, including:

- east west routes
  - to Adelaide, via the Sturt and Mallee Highways (via Renmark or via Pinnaroo), and
  - to Sydney via Balranald and Hay or via Deniliquin and Wagga Wagga; and
- north-south routes
  - to Melbourne via the Calder Highway, bypassing Bendigo or via the Loddon Valley Highway through Bendigo, and
  - to Hamilton and Portland via Horsham.

There is a strong economic incentive to utilise B doubles for long haul road freight with a lesser use of single articulated vehicles. Rigid vehicles are used for short deliveries within the region.

Issues for effective road transport operations identified by operators included:

- Differences in the State regulatory regimes, whereby
  - the NSW mass load limits do not match those in Victoria and South Australia, leading to operational complexity
  - different procedures and accreditation requirements on load weights, routes to be taken, etc requires vehicles to carry a 'bag of documentation' across State borders, and
  - different requirements for the monitoring of driver activity despite attempts to harmonise procedures, including Workcover and the provision of payments to injured workers.
- Local access restrictions, with differences between municipalities, such as
  - doubling up on deliveries and /or pickups where there is a requirement to unhitch a trailer to access farms where B doubles are restricted from using local roads,

  - double handling of goods, with transfers from B doubles to rigid vehicles, for local deliveries to premises, such as supermarkets, that are located on restricted routes, and
  - an inability to cross local government boundaries except on designated roads that are common to each municipality;
- The need for flood protection for key transport routes to avoid ongoing damage to the road surface and to guarantee access into and out of North West Victoria;
- The need for adequate parking and rest areas for transport vehicles in towns and on major transport routes;
- The need for improved river crossings, with recognition that
  - Mildura and Robinvale crossings are effective;
  - the Swan Hill crossing is 'terrible' and inefficient, with a need to be high and meet the railway line, and
  - the Tooleybuc crossing is important for through traffic between Adelaide and Sydney;
- Opportunities to use larger vehicles – B double and triples – to carry two 40 foot containers from the North West to freight interchanges near Melbourne, in recognition of the growing container freight demands in the region, with a need to
  - match height and weight restrictions on container transport with the more realistic limits that apply to livestock transport, and
  - provide permits to carry greater weights for export loads being transported directly to the wharf, as are available in South Australia;
- Seasonal shifts in demand, with a need to maintain infrastructure for peak period utilisation and the burden of standing costs of idle infrastructure during down times; and
- Staffing of driver and servicing positions, with a reliance on short term employment – including working visas - and competition from the mining industry for scarce staff.

4.2 The Rail Network

An extensive rail network serves the North West region. The most significant routes are the Swan Hill line (from Piangil north of Swan Hill) to Bendigo and Melbourne; the Kulwin and Robinvale lines, which proceed south to Bendigo, but from which the main traffic in grain diverges south at Inglewood to Dunolly, Maryborough and export grain terminals at Geelong and Melbourne, and the Mildura line, which proceeds via Maryborough to Ballarat, allowing grain trains to proceed to Geelong and Melbourne. In addition, a branch line from Ouyen to Pinnaroo was reopened in 2010 for grain traffic via the Mildura line.

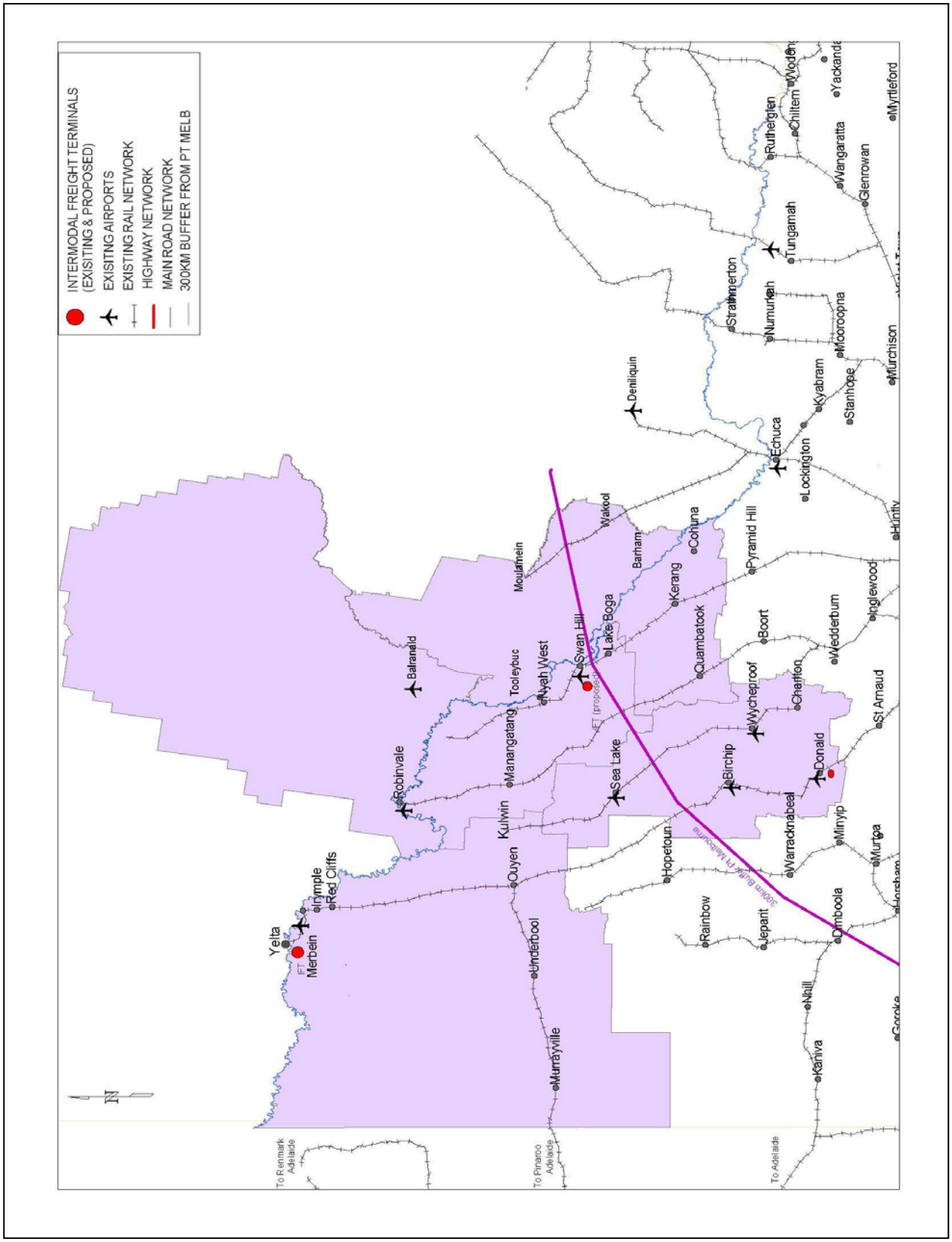
Wakool is located on a Victorian branch line from Echuca that once extended to Balranald. Principal traffic in recent years on this line was rice to a mill in Echuca, however with the closure of this mill, rice now proceeds from Wakool eastwards by truck mainly to Deniliquin, but also to Coleambally.

Issues critical to the effective use of the rail network in the North West region include gauge standardization level crossing issues, grain receival arrangements, intermodal terminals and overall governance/marketing.

Rail Standardization

Among these issues, rail standardization is particularly important. The five key freight lines serving the region are all broad gauge, and the broad gauge network suffers from aged rolling stock, a lack of competition among rail service providers, and poor connectivity on some major potential freight routes. For example, the Kulwin mineral sands mine adjoins Kulwin station, but the line is broad gauge and in poor condition, while the Hamilton mineral processing plant is on a standard gauge line. As a result many thousands of extra truck miles will be needed on the Mallee and Sunraysia Highways. Had the line been standardized in 1996 when standardization reached Dunolly, a door to door rail movement would have been possible. These problems will not abate in the future, and it is very important for the region that rail standardization be progressed.

NW Region Rail Network



4.2.1 The Mildura Line

The Mildura line is a broad gauge railway 609 rail kilometres in length (from Mildura to Melbourne via Ballarat and North Geelong). Rail kilometres on this route are measured via North Geelong as this is the route normally taken by freight trains[30]. The northern terminus of the line is 21 kilometres beyond Mildura at Yelta, and the inter-modal terminal is 11 kilometres beyond Mildura at Merbein.

At present beyond Maryborough it is a freight only railway, conveying container freight trains from Merbein inter-modal terminal to the Port of Melbourne and return. Grain trains on this line can service silos at its northern terminal at Yelta and at key locations south including Carwarp, Ouyen, Bealiba, and Donald. Grain trains from the recently re-opened branch line from Ouyen to Pinnaroo on the South Australian border join the Mildura line at Ouyen. Container wagons of pulses for export are loaded at Donald.

The Mildura line lies within the Melbourne to Mildura Auslink Corridor, and is eligible for Auslink funding. It was rehabilitated in 2009 at a cost of $73 million. The project involved replacing every second sleeper. A small additional project extended the rehabilitation to the line between Mildura and Yelta, on which the Merbein inter-modal terminal is located as well as grain receival facilities at Yelta.

The journey time for freight trains on the Mildura line has not been reduced to the extent expected as a result of this investment, primarily due to government policy on level crossings. This has involved, since a Coroner's finding on the Kerang level crossing accident, the imposition of TSRs (Temporary Speed Restrictions) requiring trains to slow at each level crossing. It is critical to the competitiveness of this railway that journey times are lowered, and a comprehensive improvement of level crossings policy is central to this.

In 2010, following sustained advocacy by the Mildura community, the Victorian Government commissioned a consultancy report on the feasibility of reintroducing passenger train services to Mildura. The consultants' report on this study identified nine options for consideration, and following a period of public comment, these are now under consideration by Government. Currently a daily passenger train service extends as far as Maryborough on the Mildura line, with other V/line services in the study area (with the exception of the Swan Hill line) being provided by V/Line contracted road coach services.

[30] The route to Mildura via Bacchus Marsh and Ballarat is 36.5 kilometres shorter but is heavily used by V/Line passenger trains and involves steep grades.

4.2.2 The Swan Hill Line

The Swan Hill line is a broad gauge railway 345 rail kilometres in length from Melbourne to Swan Hill via Bendigo. Its terminus is 44 kilometres beyond Swan Hill at Piangil (near Tooleybuc).

Unlike the Mildura, Kulwin and Robinvale lines it does not connect to the standard gauge network at Dunolly but to the broad gauge Regional Fast Rail network at Bendigo. Therefore the standardization likely to occur on the other three lines may be delayed as far as the Swan Hill line is concerned. Should government accept the recommendation of the Mildura Rail Feasibility Study to construct a high speed passenger railway from Swan Hill to Mildura, it would be likely that the line would remain broad gauge as part of the V/line network.

The Swan Hill line is serviced by two daily passenger trains. The trains are air-conditioned, provide first and second class accommodation, and have on-train catering. The present service pattern involves the last train to Melbourne leaving Swan Hill at 12.53pm. There is no late afternoon or early evening return train or bus service, so day trips from Melbourne or Bendigo for business or tourist purposes are not possible. This is a deficiency compared with the service provided to other Victorian regional cities. A return train at about 5.00pm (as is provided for example from Ararat), would enable visitors from Melbourne or Bendigo to have several hours' useful work time in Swan Hill, or provide tourists with the opportunity to visit the Pioneer Settlement as a day trip..

The Swan Hill line also supports grain trains that can clear silos at Piangil, Woorinen, Nyah, Swan Hill and other points south. There is currently no inter-modal terminal on the line, although Swan Hill Rural City Council has identified a potential site. This issue is further discussed in section 4.3 below.

4.2.3 The Robinvale Line

The Robinvale line is a broad gauge railway 548 rail kilometres in length from Melbourne to Robinvale via Ballarat and North Geelong.[31] It is a freight only railway branching from the Mildura line at Dunolly.

Regular grain trains operate as far as Annuello, 10 kilometres south of Robinvale, where Graincorp Operations has a receival site. There is also a large grain terminal a further22 kilometres south at Manangatang. Manangatang is the limit

[31] The route from Robinvale to Melbourne via Bendigo is 37 kilometres shorter but is heavily used by V/line passenger trains between Bendigo and Melbourne.

of operation for Pacific National's XR class locomotives which are typically used on grain shuttles to Geelong[32].
Two hundred kilometres south of Robinvale, and three hundred and ten kilometres north of Melbourne is Boort, where the Horsham based Wimmera Container Line until 2008 operated a small intermodal terminal, where lucerne hay for export was loaded as well as some containers. As noted elsewhere in this report, three hundred kilometres is regarded as a "rule of thumb" minimum distance for inter modal container services.

Currently, rail standardization extends as far as Dunolly, with dual gauge between Maryborough and Dunolly, and a standard gauge link from Maryborough to the national standard gauge network (and thence Portland, Geelong and Adelaide) at Ararat. The Maryborough to Ararat link is currently disused but would provide a key link to Portland should the Mildura, Kulwin and Robinvale lines be standardized. The standardization of the Mildura line would be expected to trigger standardization of the Kulwin and Robinvale lines.

4.2.4 The Kulwin line

The Kulwin line is a broad gauge railway 200 rail kilometres in length that branches from the Robinvale line at Korong Vale. Kulwin is 446 rail kilometres from Melbourne via Ballarat and North Geelong[33]. It serves important grain receival sites at Wycheproof, Charlton and Sea Lake. The terminus at Kulwin adjoins an important Iluka mineral sands mine. Since 2008 the line beyond Sea Lake has been booked out of service in two stages due to poor track condition and sand drifts.

After standardization, the Kulwin line could provide a direct rail connection from mineral sands areas around Kulwin to the Iluka mineral separation plant at Hamilton, via the Maryborough to Ararat standard gauge line. This may be a consideration in the timing of its standardization, depending on the sequence of sand mining operations. Alternatively, the standardization of the Kulwin line could stop at Sea Lake, with mineral sands being conveyed by road to Manangatang (after the standardization of the Robinvale line)

4.2.5 The Ouyen to Pinnaroo line

The Ouyen to Pinnaroo is a broad gauge railway that stretches 134km westwards from Ouyen to Pinnaroo just over the South Australian border. The terminus is 602 rail kilometres from Melbourne.

[32] Grain train hauled by two XR locomotives was operating at Manangatang on 28 April 2011
[33] It is 409 rail km from Melbourne via Bendigo

The line was re-opened in February 2010 following rehabilitation that resulted from community advocacy. It is suitable for the heaviest types of locomotives used on Victorian grain trains (XR and G classes), which are permitted to haul loads of 2950 tonnes per train on the line[34].

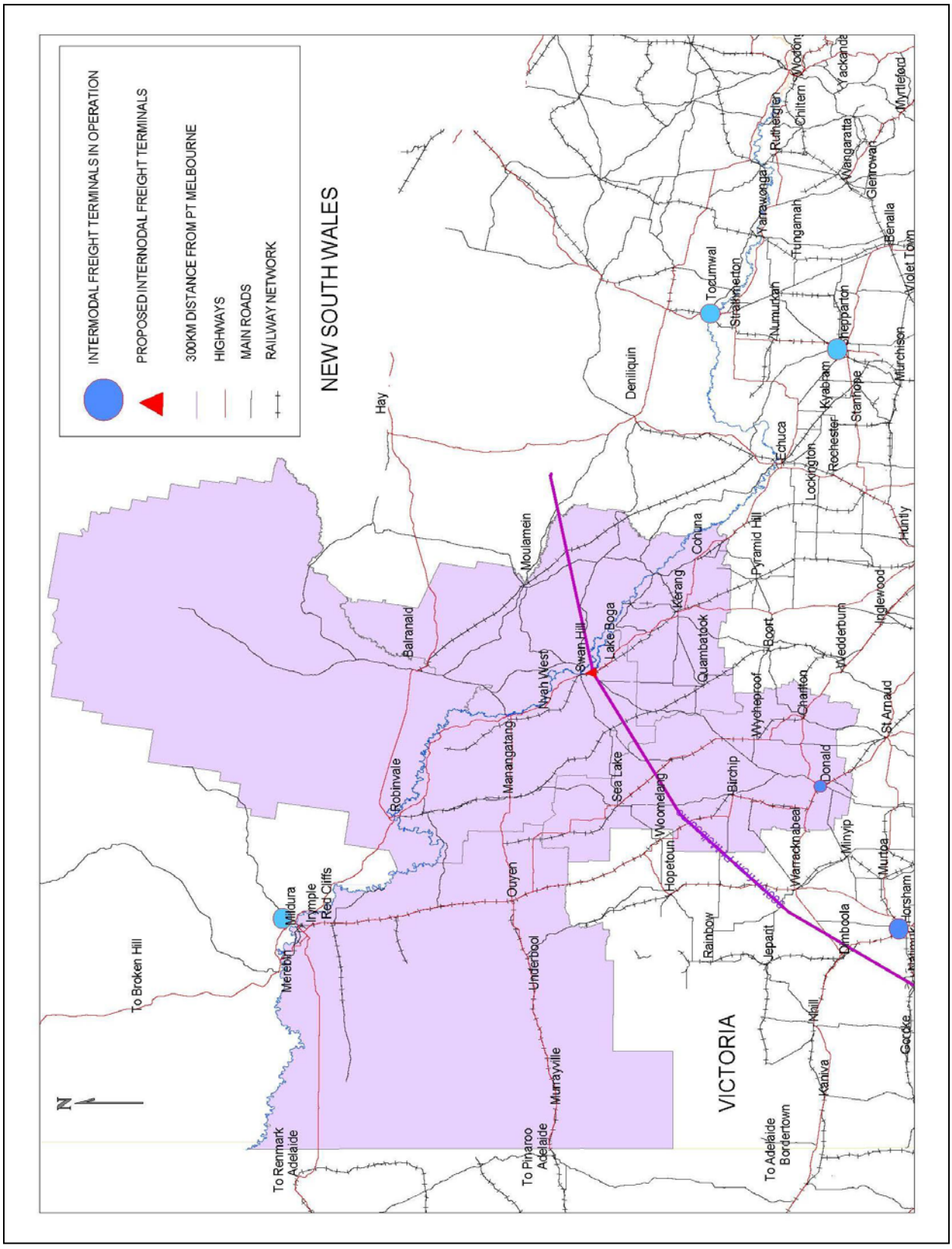
There is a large Grainflow terminal 3 km east of Pinnaroo where Victorian grain trains can load, as well as at Underbool and Panitya. There is a break of gauge at Pinnaroo. Standard gauge South Australian trains load grain at Pinnaroo for the Port of Adelaide.

4.3 Intermodal Terminals

The North West Transport Region is well served by rail infrastructure, however access to the rail freight system today (unlike the position prior to the end of LCL less-than-carload rail freight some 20 years ago) requires specialised terminals – such as grain receival terminals, terminals for minerals such as mineral sands, or intermodal terminals for receiving and/or loading containers.

[34] V/Line ,(2009) Regional Network and Access Division, Network Service Plan, Ouyen to Panitya and Pinnaroo Grain Receival Site

4.3 Intermodal Terminals Serving the NW Region



4.3.1 Intermodal Container Terminals

The underlying economics of current transport systems is that road transport is generally more efficient for handling containers on a door to door basis for distances under 300km. On the other hand, for distances over 500 km, it is more efficient, and is reflected in significant price differences, for an inter-modal transport chain to operate, where containers are trucked to a rail hub, conveyed in a long train over a long distance, and then trucked for the final shorter journey to delivery. Over the Sydney to Perth route, for example, rail has a cost advantage of some 40% over road and currently enjoys a market share of around 80-90%.

On many Australian routes, particularly interstate routes where the track is managed by ARTC, the length of the journey for which an intermodal supply chain presents efficiency advantages has been reducing over recent years, reflecting such factors as the greater fuel efficiency of rail transport and improvements in the efficiency of rail operations caused by a variety of factors (including investments in infrastructure, simplified regulatory and operational arrangements, reductions in journey time, etc.).

Within Victoria, some but not all of these critical factors have been addressed, following the Rail Freight Network Review (the Fischer Report)[35] and the buy back and rehabilitation of the regional rail freight network by the state government. However the Victorian intrastate freight network remains in transition. Journey times are excessive, some equipment is old and some freight operators rely on leasing vintage locomotives from heritage groups. Break of gauge issues constrain competition and rolling stock availability Following the Coroner's report on the Kerang level crossing accident, Temporary Speed Restrictions on the speed of trains passing level crossings have been imposed that are unknown elsewhere, and which severely restrict rail competitiveness in journey times. Therefore within Victoria the reduction in rail freight journey times and increase in rail market share experienced elsewhere in Australia have yet to be realised.

As a result in the short term, container trains in Victoria have been subsidized by the state government[36], and new generation inter-modal terminals are being developed in the expectation that the underlying economics will come to resemble those elsewhere. In particular, new intermodal terminals have been developed at Horsham, Merbein and Shepparton. Those at Horsham and Merbein

[35] Victoria (2006), Rail Freight Network Review (The Fischer Report)

[36] The $5m Rail Freight Support Package was extended to 2011-12 on 31 May 2011. It supports intermodal container traffic on the Mildura, Tocumwal, Warrnambool and Horsham lines. 35,000 containers are shifted annually.

(as well as a potential inter-modal terminal in the Swan Hill area) are beyond the 300km line of distance from the Port of Melbourne.

Horsham has the advantage of being located on the national standard gauge network and is therefore able to receive and dispatch containers to and from any state capital or container port. Shepparton, although relatively close to Melbourne, can service food processing industries and has significant potential if the currently proposed inland rail route between Melbourne and Brisbane is implemented. Mildura is currently viable as an intermodal terminal in view of its distance from the port of Melbourne but its viability as an inter-modal location could be enhanced if the proposed transcontinental link from Mildura to Menindee were constructed. Swan Hill as a potential intermodal terminal is 336 km from the Port and hence on the cusp of viability given present market factors. As rail becomes more efficient, fuel becomes more expensive and if carbon pricing were to apply to transport, an inter-modal facility at Swan Hill would become more viable.

For the reasons discussed, there are currently few intermodal terminals in the North West region capable of efficiently handling and or transferring containers from rail to road and vice versa. The principal intermodal facility serving the region is operated by Iron Horse Intermodal (associated with Wakefield Transport) located at Merbein. This facility has received substantial private and some government investment in recent years. Donald is also identified as an intermodal terminal in *Freight Futures*, although its scope of operations is very limited, being focused on the specific activity of the export of containers of pulses.

Beyond the region, the nearest substantial intermodal terminals are at Horsham to the west and Shepparton (Mooroopna) to the east. The Shepparton terminal, known as the Goulburn Valley Freight and Logistics Centre, is currently in Stage 1 of a 6-stage development, and has received $2m in Commonwealth funding under Auslink and $3m from Regional Development Victoria[37].

In terms of population size, Swan Hill is second to Mildura in the region, and provides a realistic location for a new intermodal terminal serving the area from Robinvale to Kerang, and from Charlton to Balranald and Wakool. Consideration should also be given to the merits of locating a new intermodal terminal for the region at Piangil or Manangatang. Both of these locations could potentially serve High Productivity Freight Vehicles originating in New South Wales, if the Tooleybuc Bridge were replaced and the Mallee Highway designated for such use.

[37] Regional Development Victoria (2 March 2011), *Goulburn Valley Freight and Logistics Centre Stage 1*

A terminal at this location would also serve Victorian producers such as the Boundary Bend olive plantations. The case for an intermodal terminal location on the Mallee Highway is that the intrusion of very large vehicles from New South Wales could be limited to a single designated route away from urban settlement, while appropriate rail yards exist at both Piangil and Manangatang. Piangil is served by the broad gauge Swan Hill line and significant rail freight originating from there would need to compete for train paths on the busy broad gauge network between Bendigo and Melbourne.

Manangatang, already a busy grain receival terminal location, is on the Robinvale line, which is likely to be standardized sooner than the Swan Hill line. Freight on a future standard gauge line from Manangatang could proceed to port or the proposed metropolitan intermodal freight terminals[38] (such as Somerton or Altona), over freight only lines not compromised by busy passenger train services.

The possibility of identifying a site such as the Swan Hill airport for an inter-modal terminal was raised in consultations in Swan Hill in February 2010 as part of the Swan Hill Planning Scheme Review[39], and the consultants recommended that a transport hub should be created there and the railway redirected to that location. However the consultants, while noting that "no pre-planning has been done for this", did not themselves provide analysis as to why the airport would be a suitable location, and did not comment on the effect that their recommendation would have in drawing heavy freight vehicles from the north and NSW through the centre of Swan Hill.

A further potential site for an inter-modal terminal near Swan Hill exists on VicTrack owned land at Lake Boga. However this location would also draw freight traffic through Swan Hill, and has the disadvantage of being located on a line likely to remain broad gauge, and compromised by busy passenger train traffic between Bendigo and Melbourne.

The design of freight movements around central Swan Hill should take in to account the role of the proposed new Murray crossing, the optimum location of the intermodal terminal, and its relationship to the Murray Valley Highway as well as to east west traffic on the Mallee Highway route.

The relative advantage of rail freight with regard to fuel use and its lower emissions, and lower external costs in relation to congestion, road accidents and pollution, provide sound arguments for intermodal freight chains to emerge in coming years. For them to survive, a variety of problems in the rail industry in relation to gauge standardization, port access, uniform safety regulations and working arrangements, road pricing and governance will need to be progressed.

[38] The metropolitan intermodal freight hubs were a central recommendation of *Freight Futures.*
[39] Isis Consultants (2010), Swan Hill Planning Scheme Review, p. 29

In addition, recent experience has shown that successful inter-modal operations require entrepreneurial flair and capacity. It cannot always be guaranteed that an inter-modal operation with theoretical potential will be successful commercially.

4.3.2 Bulk Terminals for Grain or Mineral Sands

Grain receival terminals and mineral loading and unloading facilities on rail lines are in reality a form of inter-modal terminal. Bulk goods are received by truck, loaded on to rail, and consolidated into long trains for dispatch to port or remote processing centres. At port or at the processing centre, materials are conveyed by efficient materials handling to ship or to the production process.

Grain Transport

Export grain in the past was delivered by farmers to several hundred terminals distributed on rail lines across the region. The rail network was a fully integrated operation, operated by a single government enterprise. Trucks used to deliver grain to silos were relatively small, and there was very limited on-farm storage. Grain elevators were operated by a single government enterprise, while a separate single desk grain marketing enterprise managed export sales.

Today a very different supply chain operates. There is significant on-farm storage and farmers operate much larger trucks. Farmers can deliver to a variety of more distant grain receival terminals, or deliver stock feed quality grain directly to stock feed enterprises or farmers in other districts. There are several grain marketing companies with diverse receival points (usually but not always on the rail network), and although three companies dominate the market, there is greater fluidity in supply chains. Many smaller rail based silos are now unused, and as a result the rail traffic on some grain lines has ceased or is intermittent.

Victoria's main grain exporters are Graincorp, AWB Ltd and Australian Bulk Alliance. Following deregulation of the grains market new multinational grain exporters, such as Cargill Australia Ltd, Glencoe Ltd and Louis Dreyfus Ltd, have also become exporters.
Graincorp, originally a NSW government agency, is today also the largest handler of Victorian Grain, and receives 65% of Victoria's grain harvest. Graincorp Operations has contracts with Pacific National to deliver export grain from its receival sites to terminals at Portland, Geelong and (in the case of its NSW operations), Port Kembla and Newcastle.

For January 2011, Graincorp had bookings for 110,000 tonnes of wheat and 22,000 tonnes of barley to be shipped from Geelong and 25,000 tonnes of wheat and 30,000 tonnes of barley to be shipped from Portland. (The much larger Port Kembla terminal was scheduled to ship 244,000 tonnes of wheat for Graincorp in the same period)[40].
AWB also reported record receivals at its Grainflow storages. It had received by the start of 2011, 400,000 tons of grain into its storages in Victoria. AWB has constructed rapid-loading output grain terminals on the rail system, at Dimboola, Sea Lake (on the Kulwin line) and Birchip (on the Mildura line). At the AWB bunkers in Charlton, the twin bin "jumbo" elevator can fill a 50 tonne rail wagon in two minutes.[41] In January 2011, AWB was receiving 7000 tonnes per day into its Sea Lake facility with a record of 9000 tonnes on one day against a seasonal expectation of 145,000 tonnes[42].

AWB owns four grain trains, of which two are operated by El Zorro in Victoria, using two train sets, one broad gauge (for Sea Lake, Donald and Birchip) and one standard gauge (for Dimboola and Oaklands). The other two AWB grain trains operate exclusively in New South Wales[43].

Australian Bulk Alliance is 100% owned by Summit Grain Investments Australia Pty Ltd (SGIA), a subsidiary of the Sumitomo Corporation of Japan.
ABA operates a 48000 mT grain terminal at Appleton Dock, Melbourne, opened in 2000 at a cost of $40 million.

ABA has ten grain receival sites in NSW and Victoria at The Rock, Goolgowi, Tocumwal and Coolamon in New South Wales, as well as, Donald, Nhill, Tattyoon, Woorinen and Nullawill in Victoria. All its receival points except Donald and Edenhope are located on the rail network.

Some grain lines that closed during the drought and during rationalisation have re-opened or are under consideration for re-opening. In the region, in relation to wheat, this applies to the Ouyen to Pinnaroo line, re-opened in 2010, and in relation to rice, the Echuca to Deniliquin broad gauge line is scheduled to re-open shortly. On the other hand, there are some parts of the grain rail network that have been orphaned by the changes in recent years. For example, GrainCorp Operations has established its northern-most receival point on the Robinvale line at Annuello, so that the 20km of the Robinvale line north of Annuello, though still trafficable, has been unused. Similarly, rice movements from Moulamein now go by truck to Deniliquin so that the Echuca to Moulamein line (part of the Victorian broad gauge network) is now unused.

[40] Graincorp Shipping Stem, January 2011
[41] Information from Cr David Pollard, Shire of Buloke
[42] Weekly Times 13 January 2011
[43] Company Report, El Zorro Transport

Mineral Sands

Mineral sands deposits in the North West region are very extensive. It is estimated that the mineral sands in the Murray Basin include reserves of from 80 to 150 million tonnes, and will be mined for 50 years into the future[44]. To date two supply chains have developed. Within Victoria, the key processing plant for Iluka Resources is at Hamilton, and the inter-modal supply chain involves trucking the resource from ore-bodies in the Mallee at locations such as Kulwin to Hopetoun for rail to Hamilton on the standard gauge network. Astron Resources also has proposals for sand mining in Buloke Shire. In New South Wales, BeMax Resources mines mineral sands at Pooncarie and other locations, from which they are conveyed by road train to Broken Hill for processing[45].

Regional Development Victoria has provided a grant of $3.97 million to allow the construction of rail loading facilities for mineral sands at Hopetoun and a rail siding and unloading facility at the Iluka Mineral Separation Plant at Hamilton. It is expected that this investment alone will give rise to an increase of rail freight on the network as a whole by 25%, indicating the significance of targeted investment in new rail infrastructure[46].

As mining moves westward, with an impending $100 million re-location of the mine processing plant to a new location adjacent to the Mallee Highway, the rail component of the supply chain will remain but truck movements will be shortened. Over fifteen years it is likely that mineral sands truck movements in the Mallee will cover movement from a variety of ore bodies to rail at Hopetoun. A substantial traffic in mineral sands tailings by rail in containers from the Merbein inter-modal terminal has also developed.

4.4 Air Transport

Within the study region, there is a major regional airport at Mildura, and local aerodromes at Swan Hill, Kerang, Robinvale and Donald.

4.4.1 Mildura Airport

Mildura Airport is (after Avalon) the busiest regional airport in Victoria, providing regular airline services to Melbourne by Qantaslink, Virgin and Rex Airlines. Mildura Airport is also a base for air freight, helicopter services, general aviation,

[44] Meyrick and Associates (2006),*Rail Freight Task Victoria*, p. 28
[45] NSW Department of Planning (2006) , *Assessment Report, Proposed BeMax Gingko Mineral Sands Project*
[46] Regional Development Victoria (2 Mar 2011), *Iluka Mine Rail Infrastructure*

pilot training and medical evacuation. Air travel offers significant time savings for travellers compared to land transport alternatives.

The airport carries from 150,000 to 215,000 passengers per year, and is capable of handling aircraft up to the size of a Boeing 737. Virgin Airlines provides a daily jet service using a 78 seat Embraer 170, while Qantaslink operates Dash-8 (up to 74 seats) and Regional Express operates 34 seat Saab 340 equipment. Mildura Airport Pty Ltd considers that 144-seat Boeing 737 services may become viable in 2015. At about this time, the Main Runway at the airport (constructed in 1996) will require rehabilitation at a cost of some $25 million[47]. This will enable it to accommodate 79-tonne aircraft.

In 2005, Mildura Airport Board commissioned GHD to undertake the Mildura Transport Plan. The plan identified opportunities for Mildura Airport to play an increased role in freight, particularly in relation to high value and time sensitive goods[48]. GHD also identified the need for better road access to the airport through a proposed realignment of Calder and Sturt Highway truck routes via Thurla, as well as the potential for rail connection to the airport also as part of the proposed Thurla freight zone development and rail line relocation. Amendment C28 to the Mildura Planning Scheme, incorporating the proposed Thurla industrial zone, was adopted following Planning Panels Victoria consideration in 2004.

In July 2008, Mildura Airport Pty Ltd was formed for the better governance of the Mildura Airport, and an independent Board of Directors was appointed. The company has prepared a Master Plan for the period 2010-2015 and a strategy for the period 2015-2030, as it is required to do by its agreement with Mildura Rural City Council. The Master Plan presents a detailed investment program for the development of the airport. This includes required expenditure of $7m for further terminal development and approximately $25 million for runway rehabilitation, extension and strengthening

Passenger numbers through the airport have been growing strongly, from a base of around 100,000 per year in 2000 to an estimated 215,000 at present with an expectation of 320,000 per year by 2020, based on expected average growth of 5%. The airport Master Plan notes that in the past, business travellers dominated usage, but that tourism and leisure now accounted for 50% of travellers[49].

[47] Mildura Airport Pty Ltd (2010), Mildura Airport Master Plan 2010-2015, p.47
[48] Mildura Airport Board, Mildura Transport Plan, (2005), p. 15
[49] Mildura Airport Pty Ltd (2010). Mildura Airport Master Plan 2010-2015,p. 10

4.4.2 Swan Hill Aerodrome

Swan Hill Rural City Council operates airports at Swan Hill and Robinvale. At Swan Hill, the aerodrome comprises one sealed and two grass runways, and is equipped with PAL (Pilot Activated Lighting) landing equipment on the sealed runway. There is a terminal building and public toilets.

Swan Hill Rural City Council has held discussions with airline operators with a view to obtaining scheduled flights to Swan Hill.
There are a number of centres with populations smaller or similar to that of Swan Hill that receive regular flights from airlines using small aircraft, such as those used by King Island Airlines.

In view of the distance from Swan Hill to Mildura or Tullamarine airports, and given the size of Swan Hill and its catchments, it should be feasible to provide such services. This is supported by a survey of business users by Swan Hill Rural City Council.

4.4.3 Regional Airline Viability

Mildura Airport has a clearly articulated strategic plan and the airlines serving it have experienced sustained passenger growth. However many other regional air services in Australia have operated under strain, and smaller airlines in particular have often struggled. A study of this issue in New South Wales identified the following as key problems impacting the profitability of small regional airlines: rising fuel prices, pilot shortages, dependence on travel by public servants, (whose travel is sometimes restricted during cutbacks), and the fact that regional air travel has a high elasticity of demand[50]. The pricing of carbon emissions is also impacting cost structures and fares.

Resulting high fare levels would be prohibitive for some categories of travel, such as students, pensioners and those requiring regular medical visits to city clinics[51].

[50] Western Research Institute (2001), Regional Airlines: Cost Structure of Regional NSW Air Services. Prepared for NSW Air Transport Summit Working Party

[51] Current regional airline fares are typically in the $200-$400 bracket for one way journeys, although some cheaper tickets are available at non preferred times. The following table sets out examples of the range of one way fares applicable on Monday 23 May 2011 on various regional airline journeys in South East Australia:

Melbourne-King Island	King Island Airlines	$210
Melbourne-Mildura	Airline 1	$145-339
Melbourne-Mildura	Airline 2	$239-400
Melbourne-Mildura	Airline 3	$260-389
Melbourne-Albury	Rex	$159-360

From a strategic point of view these factors suggest that real reductions in regional airline fares are unlikely; indeed the reverse could be the case. Higher real fares would tend to refocus air travel around traditional business and public service markets with increased pressure for other travellers to seek cheaper options, such as road or rail travel. Both of these currently involve long journey times for North West travellers.

5. Emerging Futures

In preparing a Strategy for Future Transport provision in the region over a 5-15 year time horizon, it is essential to take into account key social, economic, environmental, and technological and transport developments. It cannot be assumed that the next phase of transport development will be an extrapolation of past practices only. Accordingly this Section of the report seeks to succinctly identify key emerging trends and to highlight where they are likely to influence transport planning, investment and provision.

This Chapter focuses specifically on transport relevant futures in relation to:

- Social Trends in the Region
- Economic Trends in the Region
- Environmental Trends in the Region
- Emerging Technologies – Road and Rail
- Governance Developments

5.1 Social Trends in the Region[52]

The area covered in this Study covers some of the most important food producing areas in Australia, including the fruit producing areas of Sunraysia and south-western New South Wales, and extensive Dryland cropping and grazing areas producing wheat barley and rice, as well as wool and meat.

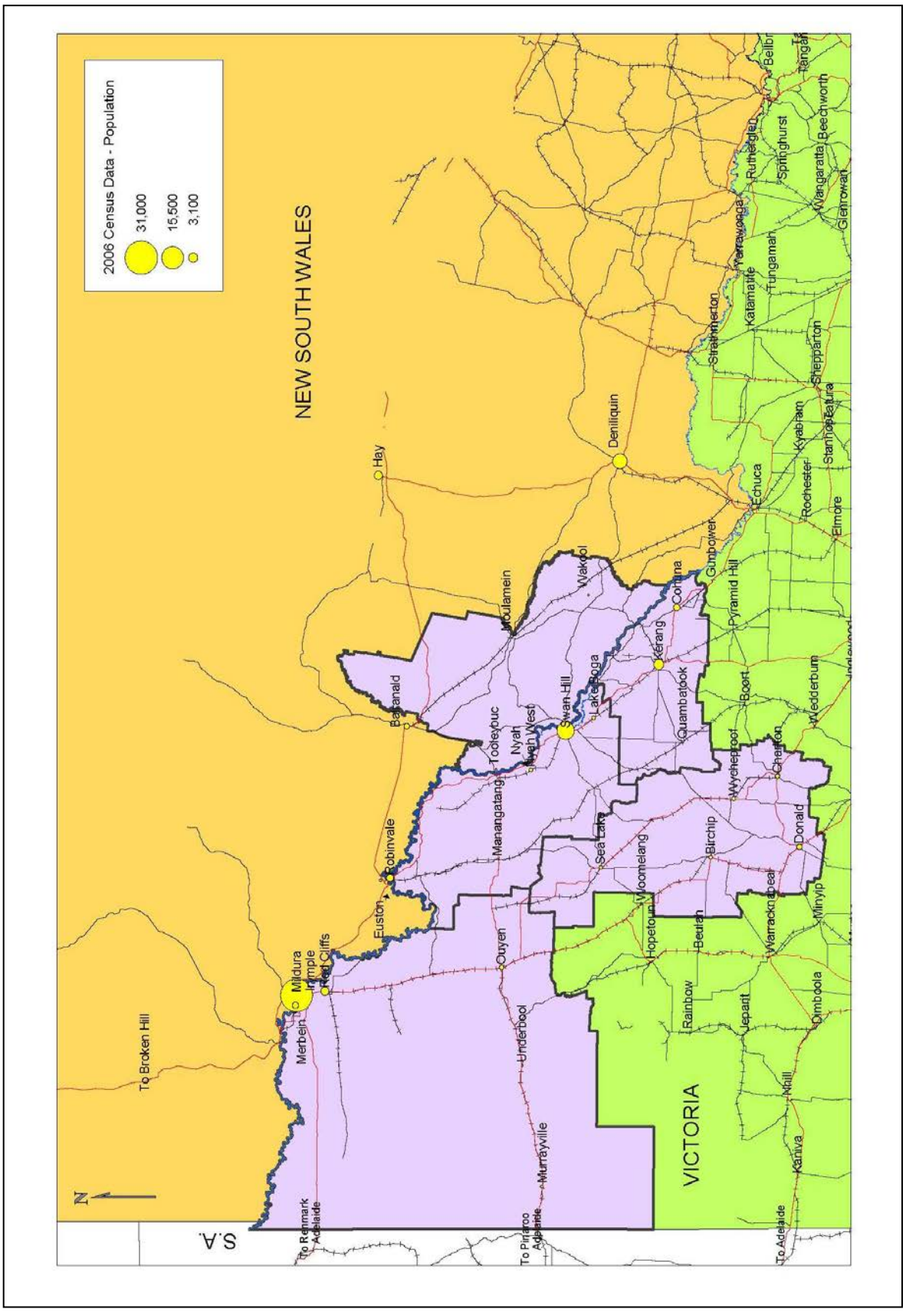
The population in the region is supported by agriculture, horticulture and tourism, and is generally stable (or slightly declining) in smaller communities, while growing in the rural cities of Swan Hill and Mildura.

Tourism is well established in the region, particularly centred on the Murray River, around regional drawcards such as the Swan Hill Pioneer Settlement and important national parks such as Hattah-Kulkyne and Lake Mungo, and around regular regional sporting and cultural events.

The area has seen a number of emerging new industries in recent years, including solar energy, olive oil production, sand mining, and pulse production. The emergence of new industries has been accompanied by a growth in locally based training and educational opportunities, particularly in Mildura and Swan Hill.

[52] Information on both the social and economic trends is drawn from the **Loddon Mallee Regional Strategic Plan – Northern Region**, 2010

Population Centres in the NW Region



The larger regional cities provide diverse opportunities for retail and commercial, health, light engineering, tourism and logistics industries, and providing significant employment opportunities for local residents and newcomers.

The following table sets out population expectations for the region:

Regional population trends and projections

Population (% of region)				
LGA	2001	2006	2009	2026
Buloke	7,331 (8.1 %)	7,080 (7.7%)	7,078 (7.6%)	6.008 (6.4%)
Gannawarra	12,055 (13.3%)	11,665 (12.7%)	11,665 (12.4%)	10,810 (11.4%)
Mildura	49,616 (54.7%)	51,824 (56.4%)	53,877 (57.5%)	55,523 (58.8%)
Swan Hill	21,349 (23.6%)	21,285 (23.2%)	21,116 (22.5%)	22,091 (23.4%)
TOTAL	90,651	91,854	93,736	94,432

Source: ABS Census, 2006; VIF, 2008; ABS Regional population growth, 2010.

The region has a strong Aboriginal and Torres Strait Islander heritage. Almost 3,100 people identified themselves as Aboriginal and Torres Strait Islander at the 2006 Census, approximately two and a half per cent of the total regional population, including Campaspe.

The Aboriginal and Torres Strait Islander population in some Murray River communities (e.g. Robinvale) is significantly greater than the regional proportion. Anecdotal information suggests that these populations are significantly understated along the Murray River communities.

Almost eight per cent of the population reported being born overseas (2006 Census), which is lower than the average for regional Victoria (10 per cent). However, rates of international and humanitarian migration into the region have increased in recent years.

While agricultural communities in the region have been enormously resilient in the face of drought and difficult economic conditions, many communities are experiencing significant socio-economic disadvantage. All Local Government Areas (LGAs) rank under Victoria's average socio-economic status on the ABS SEIFA Index of Relative Disadvantage. Swan Hill and Mildura are ranked amongst the twenty most disadvantaged LGAs in Victoria.

These issues support the need for effective transport connections to allow the region's population to access required health, education, leisure and work opportunities. The highway network is important to this, as is the development

of comprehensive public transport. A number of activities undertaken under the Transport Connections Program in the region have allowed better access by public transport for family and leisure visits, shopping and health needs. These include a number of new local bus connections between towns, as well as to larger centres such as Mildura, Swan Hill, Horsham and Bendigo.

5.2 Economic Trends in the Region

The region is a key part of Australia's food bowl as a major producer of fruit, wine, nuts, vegetables, dairy products, cereals, meat and wool. It produces over thirty per cent of Victoria's grains, over forty per cent of its fruit and more than eighty per cent of its wine grape production. Growing world and Asian demand for quality food in coming decades will support this role and make efficient transport links to markets a continuing imperative.

Agriculture is the main industry sector, employing over fifty per cent more people than the next largest industry sector (retail). Several other important industry sectors, including manufacturing (food processing), wholesale and transport are strongly linked to the agricultural sector and are significant sources of employment.

Horticulture and viticulture are the predominant uses of irrigated land in the Sunraysia Irrigation districts (the area from Nyah westwards to the South Australian border). Dairy production is the predominant use in Goulburn-Murray Irrigation District, which includes all of the irrigated land south and east of Swan Hill. Grain cropping and livestock grazing for wool and sheep meat are the major dry land agricultural land uses.

Gross value of agricultural production for the Mallee Statistical Division[1] (2006)

Type of production	Gross value of production	Percentage of state total
Agriculture – total value	$1,372.15	14.92
Pasture & crops cut for hay	$74.74	10.73
Grains – cereals, oilseeds & legumes	$192.43	37.07
Nurseries	$24.54	4.78
Vegetables for food and seed	$39.89	5.38
Fruit (including wine grapes)	$522.54	45.04
Livestock for meat	$172.87	7.86
Intensive animal production	$22.90	3.60
Dairy production	$301.64	13.30
Wool growing	$18.70	3.80
Dryland agriculture[2]	$418.31	12.34
Irrigated agriculture[2]	$929.14	21.75

1. Includes all northern Loddon Mallee municipalities including Campaspe
2. Total for dry land and irrigated agriculture is estimated, based on typical form of production for various types of produce. *Source: ABS 2008*

Sectors dependent on tourism and population including accommodation, retail, health, education and construction, all contribute significantly to the regional economy and grew rapidly over the decade to 2006. The region has relatively low but growing levels of employment in arts and recreation, and professional and technical services, but low and declining levels of employment in finance and information technology.

Projections of change in employment to 2026, suggest that improvements in technology and efficiency combined with growth in other sectors will reduce the proportion of people employed in agriculture in the future. The growth currently evident in retail, health, education, manufacturing and construction is projected to continue.

Mineral Sands, as previously noted, is a major developing industry in the region, with a 50 year resource horizon and annual production expected to be in the region of 850,000 tonnes. Iluka Resource's projects at Kulwin (450,000 tonnes per annum) and Ouyen are current centres of this mining, which can be expected to involve periodic relocation of mining locations, with production next to move to Euston.

5.3 Environmental Trends in the Region

Three overwhelming environmental trends have significant implications for transport in the region: climate change and policy responses to it; Murray Darling Basin water policies including water trading; and environmental pressures on certain primary production industries. Each of these will be discussed briefly and its implications noted.

5.3.1 Climate Change

Whether through carbon taxes in the short term, or a carbon trading scheme in the medium term, climate change policies will operate to encourage industries that improve the nation's carbon footprint, and discourage those that use old technology that is high in emissions. The two most significant sectors in contributing to Australia's carbon emissions are energy production and transport.

In relation to energy production, likely tendencies are to reduce investment in coal fired power stations and to encourage solar and gas powered generation, and to discourage energy intensive industries such as aluminium processing while encouraging high value added activities such as specialist horticulture.

Current Commonwealth government carbon tax proposals provide for carbon tax exemptions until 2014 for diesel used in heavy road trucks and for petrol, while imposing tax on diesel used in the less polluting modes of sea and rail transport. The road transport exemption is proposed to end in 2014. These proposals have yet to be enacted by the Commonwealth Parliament. However in relation to transport fuel use over the study period, it is likely that:

- Rail's emission advantage over road will translate to price advantages over time (particularly after 2014 and to the extent that a mode-neutral carbon pricing scheme is produced), and
- Road freight will move to CNG or other gas based energy rather than diesel.

Rail freight requires a third of the fuel and gives rise to half the greenhouse emissions associated with the movement of a similar amount of freight by road. A single freight train from Melbourne to Sydney can replace 150 semi-trailers, use 45,000 litres less fuel and give rise to half the emissions produced by the road transport required for the same task.

The following table shows the relative emissions cost per container for a journey from Swan Hill to Melbourne by small truck, B-double and freight train:

Small Truck (1 container)	$69.00
B-Double – emissions per container	$54.00
Freight Train – emissions per container	$21.00

Source: Victorian Freight and Logistics Council (2010), *Growth and Revival of Rail Freight in Victoria,* p22-3.

Over the life of this strategy, the combination of these trends will likely result in a continued flattening of long distance road freight growth, with rail's market share increasing in those corridors where it is effective, such as the Sydney to Adelaide corridor that passes through the region.

These trends will also strengthen the case for the construction of the Mildura to Menindee transcontinental link, as that would enable double stacked containers to reach Melbourne by rail, again resulting in significant efficiency gains and emission reductions.

In practical terms this is likely to mean that inter-modal transport will become commercially viable over somewhat shorter distances, and make the establishment of an inter-modal terminal at Swan Hill a more commercially feasible proposition.

As for road freight, these developments will heighten the commercial importance of using high productivity road freight vehicles, and in turn accelerate pressure for road pavement, culvert and bridge strengthening and for the provision of new Murray crossings suitable for heavier, more efficient vehicles.

The use of these larger vehicles will raise amenity issues, and community concerns around conflict between freight and passenger vehicles. Key aspects may include:

- Actions by VicRoads to highlight its stated policy of encouraging heavy vehicles to use the Principal Freight Network and discouraging them from using other highways;
- Possible support for developing integrated High Productivity Freight Vehicles routes such as the Mallee Highway, connecting to a new inter-modal terminal at Piangil and a new Murray crossing at Tooleybuc. Such a solution might see road trains originating in New South Wales having the capacity to pass through north west Victoria from east to west on a designated route, which would include the capacity to transfer containers at an inter-modal terminal at Piangil or grain at grain terminals at Piangil or Manangatang. Such a route could be to some extent "quarantined" from conflict with passenger vehicles and from urban settlements such as Swan Hill/Murray Downs, Robinvale/Euston and Mildura/Buronga.

On the other hand, it is difficult to see more widespread adoption of B-triples in Victoria other than for specific applications. Victoria is more densely settled than the states and territories in which road trains are used, and Victoria has a dense rail network (lacking in road train states), physically capable of moving bulk and inter-modal freight over distances at more competitive costs at present, with a cost differential moving in favour of rail over coming years.

5.3.2 Impact of Water Policies

Two specific trends in water policy that are likely to affect agricultural output are noted. These are:

- Pressures toward high value low water use crops and against crops that are extremely water intensive; and
- Relocation and restructuring of some agricultural or horticultural industries through water trading.

These trends are being reflected in a range of transport and freight changes in the region:

- Reduced dairy output in the Gannawarra region, reducing the need to provide for milk tanker transport access to farm dairies to the extent previously necessary
- Growth of some very substantial crop concentrations such as olive plantations that will generate large future freight flows

- Some pressure to reduce the extent of water-intensive crops such as rice and cotton in southern New South Wales.

The effects of these water-driven changes on transport requirements needs to be kept under review but currently do not require specific strategic transport actions.

5.4 Emerging Technologies – Road and Rail

5.4.1 High Productivity Freight Vehicles

Improvements in truck design offer significant benefits in terms of environment, safety and economic efficiency, and in recent years such improvements have focused on producing larger vehicles offering lower unit costs of operation.

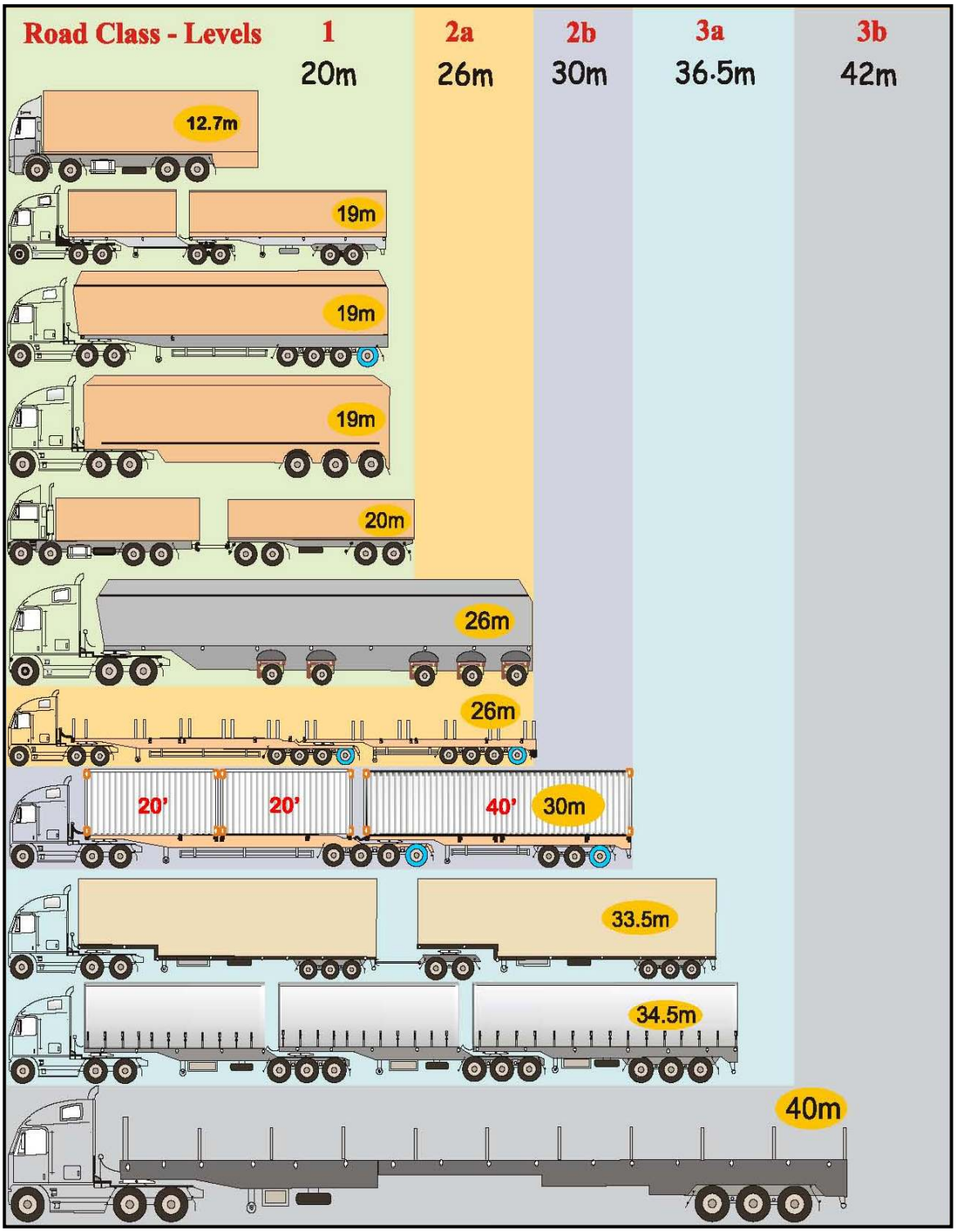
In Victoria, progressive road improvements and bridge monitoring and strengthening have meant that 99% of the arterial road network is suitable for B-doubles[53].

B-doubles are well-established in Victoria, however B-triples are limited to the specific Ford application between its Geelong and Broadmeadows plant. 30-metre B doubles are also under assessment in the western suburbs of Melbourne and in the Green Triangle region in the state's south west. In New South Wales, B-triples are more widely permitted but "road trains" need to be broken down at the Victorian border and facilities are provided at Murray Downs, Buronga and other border locations for this to be done. The bridge load limitations on the older bridges are one reason for this, but a second reason is that Victorian regulations currently do not provide for B-triples or larger configurations to be used on roads in the North West region.

The use of heavier vehicles is imposing loads on local roads and bridges for which they were not designed. Local councils have difficulty in funding the necessary upgrades. Therefore there would be merit in the creation of a North West local roads fund, to assist in financing the local roads upgrades needed to provide access by high performance freight vehicles. This would be a matter for budget consideration in Victoria and NSW. Respective state authorities could give consideration to formalizing a role for the proposed North West Transport Forum in advising as to mechanisms, priorities and the "infrastructure gap" relevant to this category of road investment.

[53] Victoria, (2008) Freight Futures: Victorian Freight Network Strategy, p.48

The following diagram shows the range of High Productivity Road Freight Vehicles used in Australia:



In *Freight Futures*, the Victorian Government confirmed general access to the Victorian Freight Network for PBS Level 1 vehicles[54] (semi-trailers and rigid trucks that are similar to existing general access vehicles but have additional productivity and safety benefits), confirmed access to the great majority of Victorian arterial roads for PBS level 2a vehicles; and committed to facilitating access by PBS Level 2b vehicles for port oriented container transfers and "many other applications including some regional communities"[55].

Improvements in truck technology are also to be expected. B-doubles were introduced in 1986, and after twenty years' implementation accounted for 12,800 of the 70,000 articulated trucks in use. By 2020, the Truck Industry Council anticipates that there will need to be 100,000 trucks in use unless further improvements in truck design are achieved.

Access to the Victorian road network is regulated through a Schedule to the Road Safety (Vehicles) Regulations 2009. VicRoads publishes access arrangements for ten categories of trucks up to 62.5 tonnes in its Bulletins, B-doubles and Higher Mass Limit Vehicles[56] and Local Roads approved for B-doubles and Higher Mass Limit Trucks[57]. B-doubles up to 50 tonnes can travel on all roads in Victoria, while the four classes of vehicles above that capacity require permits and are not permitted to use certain roads, especially those in mountainous and suburban areas. The larger vehicles can use local roads only if the roads are listed in the Vicroads publication or if a permit is issued by VicRoads and has Council "support".

All local roads in the Shire of Buloke are available to B-doubles and Higher Mass Limit Vehicles with road friendly suspensions; in the Rural City of Mildura, all local roads are available to B-doubles but Higher Mass Limit vehicles are not automatically permitted. In the Rural City of Swan Hill, local roads open to B-doubles are individually listed in the Local Roads bulletin. These include the Culgoa to Ultima Rd and the Haysdale to Kooloonong Road, Quin Drive and Quarry Rd Lake Boga and Richards Rd, Shepherds Rd and Sale yards Rd in Swan Hill, Station St Woorinen, Station St Lake Boga, and the Vinifera to Woorinen Rd. There do not appear to be listings for local roads in Gannawarra Shire, though a special map within the B-doubles and Higher Mass Limits Bulletin covers Kerang and prohibits use of B-doubles on Wellington St between Murrabit Rd and the Murray Valley Highway.

[54] PBS refers to Performance Based Standards by which heavy freight vehicles are classified in terms of measured performance rather than arbitrary measurements such as length or weight alone.
[55] Ibid, p. 49
[56] VicRoads (2004), Information Bulletin, B Doubles and Higher Mass Limit Vehicles
[57] VicRoads (2008), Local Roads Approved for B Doubles and Higher Mass Limit trucks

Trials of Next Generation High Productivity Freight Vehicles

In September 2009, the Victorian Government approved trials of the next generation of High Productivity Freight Vehicles in two areas of the state – the Green Triangle in the southwest of the state, and routes in the western suburbs of Melbourne[58]. The trial applies to vehicles 30 metres in length, 2.5 metres wide, and up to a maximum of 77.5 tonnes mass. In the Western suburbs of Melbourne, the trial is focused on the Western Ring Road, West Gate Freeway and Hume Freeway, together with access roads in the Dynon, Footscray/Yarraville, Laverton and Somerton areas.

5.4.2 High Performance Rail Developments

Rail Freight

The North West region is served by a reasonably dense network of broad gauge freight railways, designed for north south transport of agricultural products to Victorian ports. There is no significant east west rail network, though the Adelaide-Sydney ARTC rail corridor is a competitor for freight market share with the Auslink Sturt Highway. For several decades, this network was poorly managed and received little investment, with neglect maximised during the period between 1999 and 2007 when the network was privatised and the owners effectively ceased investment, removed staff and disposed of equipment interstate or for scrap.

A significant turnaround began when the Victorian Government bought back the tracks (though not the business or rolling stock) from its private owners in 2007, and appointed the Rail Freight Network Review, led by Tim Fischer. Following the RFNR Review, and the classification of lines into priority levels for rehabilitation according to the Platinum, Gold, Silver and Bronze priority levels, most freight lines servicing the region were rehabilitated. Among the freight line rehabilitations, the most significant was the Mildura line, in which $73 million was invested in 2009 ($20 million of Commonwealth and $53 million of state funds).

[58] VicRoads (2009), Guidelines for Next Generation High Productivity Freight Vehicle Trial in Victoria

However, the progressive standardization of the region's freight lines was not advanced at the same time. In 1996, standardization was extended as far as Dunolly, at the south end of the region, as a prelude to the standardization of the Mildura, Kulwin and Robinvale lines. Dual gauge level crossings were installed. The next stage will be to implement standardization of these three lines.

The following table indicates the order of cost of this gauge conversion:

Yelta-Mildura-Geelong	$73.9m
Ouyen-Pinnaroo	$17.7m
Dunolly-Sea Lake	$27.3m
Korong Vale-Manangatang	$23.4m

Source: Victoria Freight and Logistics Council (2010), *Freight Forward: Victorian Rail Gauge Standardization Rapid Appraisal*, p.56

In addition, to allow standard gauge freight trains to reach Hamilton and Portland, there will be a need to rehabilitate and re-open the standard gauge link from Maryborough to Ararat, and provide a direct connection at Ararat from this line to the Ararat-Hamilton line, to avoid the need for trains to shunt and reverse direction at Ararat. Vic Track owns the land needed for such a connection. The estimated cost of providing this connection and rehabilitating the Maryborough to Ararat line is $23m.[59] Added to the above figures this suggests a cost of standardizing the three lines and the Ararat connection at $165 million.[60]

The chief transformative factors in the effectiveness of rail freight within the region will be:

- Standardization of the Mildura, Pinnaroo, Kulwin (Sea Lake) and Robinvale (Manangatang) lines
- Reduced Rail Transit times as a result of standardization and other necessary measures including level crossings policies, better portside turnaround and management measures. During the last five years, rail transit times on ARTC corridors have reduced by approximately 25% - similar transit time reductions should be actively targeted within Victoria[61]
- Improvements in the marketing and competitiveness of rail businesses serving the area;
- Alleviating the increasing shortage of broad gauge locomotives and rolling stock by enabling equipment from many operators and many locations in Australia to be operate in the area;

[59] $15m for rehabilitation and $8m for the new link.
[60] There may be flow on costs at other locations around ports and junctions; these have not been estimated here.
[61] ARTC, *Submission to Infrastructure Australia*, p.4

- The alteration in the relative cost competitiveness of rail versus road transport, driven by factors such as increases in fuel costs, shortages of truck drivers, and chain of responsibility legislation imposing responsibilities for truck operations, driver fatigue and accident liability across the full chain of responsibility including corporate owners as well as drivers and sub-contractors
- Potential impact of road pricing on competitive corridors being introduced as recommended by the Henry Report on Taxation[62].

  Recommendation 64 of the Henry Review was: *On routes where road freight is in direct competition with rail that is required to recover its capital costs, heavy vehicles should face an additional charge on a comparable basis, where this improves the efficient allocation of freight between transport modes.*

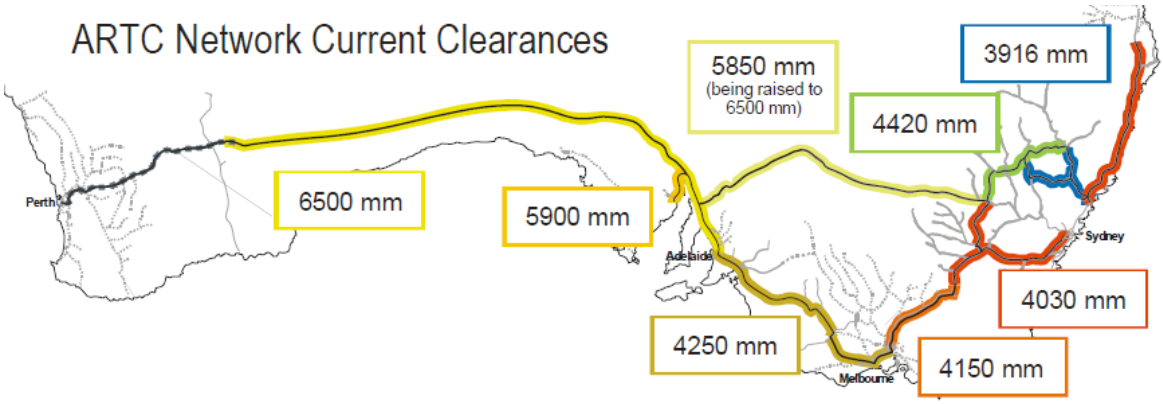
  (The Commonwealth Government has yet to accept or reject this recommendation.)

- Potential impact of carbon pricing being applied to transport which would greatly advantage rail because of its higher fuel efficiency and

- The impact of the completion of the Mildura to Menindee standard gauge link which would permit standard gauge trains of double stacked containers to and from the North West region to reach Melbourne, Geelong, Portland, Adelaide, Perth, or Darwin.

[62] Australia's Future Tax System (The Henry Review), Final Report, Overview: Recommendations

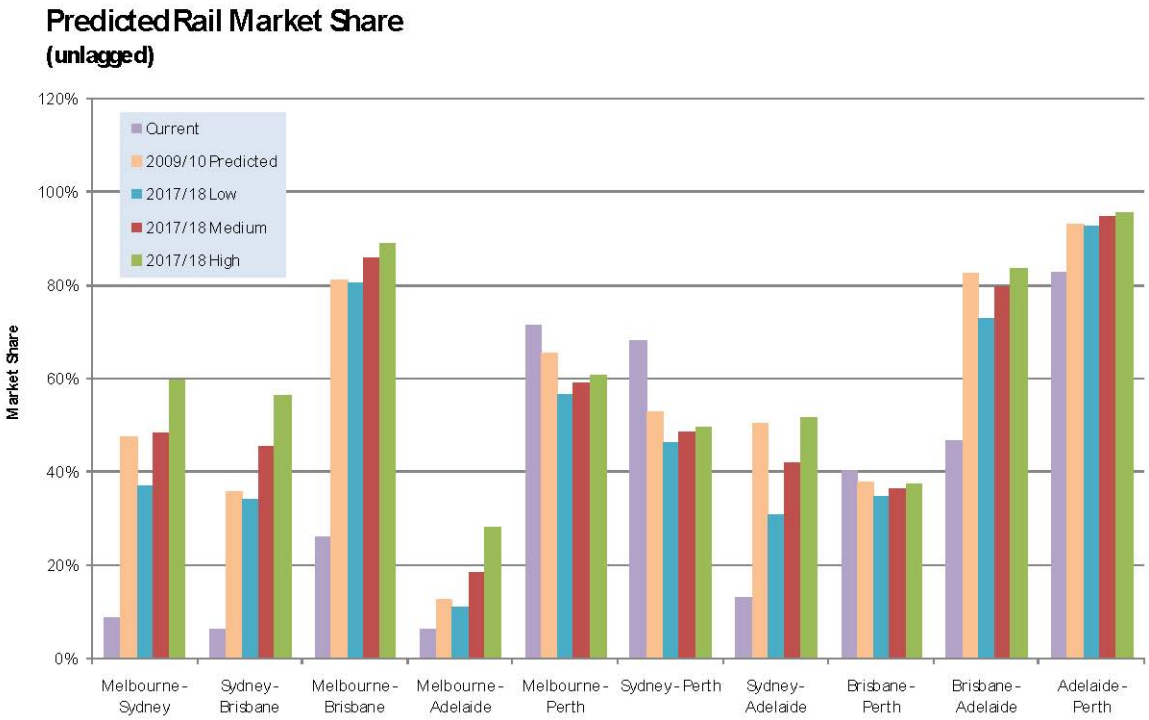
The following diagram shows that double stacked container trains (approx. 5.7 metres in height) can travel from Perth to Parkes, but they cannot reach Melbourne as a result of four old tunnels in the Adelaide Hills, and one in Footscray. The Mildura to Menindee link would allow double stacked container trains to travel to and from Melbourne and other Victorian ports via the national standard gauge network. (To achieve this, there would also be a need for provision of a standard gauge rail freight bypass of the Footscray (Bunbury St) tunnel):



Source: ARTC Submission to Infrastructure Australia

The following table shows the developing position in relation to the relative competitive position of rail versus road in the corridors managed by the Australian Rail Track Corporation. Similar trend can be expected in the corridors serving the North West region if standardization, the Mildura-Menindee corridor and governance improvements can be accomplished:

Rail versus Road Competitiveness: the Emerging Picture:



Passenger Rail

Just as freight rail services and facilities serving the North West region were run down over the past three decades, the same was the case with passenger rail services. A critical decision was taken by the Victorian Government in 1993 to withdraw passenger rail services from Mildura, leaving the Swan Hill V/line passenger train as the only passenger train service in the region. The train service operates twice daily and is well connected to V/line coach services to Barham, Mildura, Manangatang, Robinvale etc., but journey times in coaches are excessive (e.g. 3 hours from Mildura to Swan Hill), and access to coaches by disabled and elderly people is an issue. Wakool and Balranald Shires are served by east-west Countrylink coach services originating at Mildura and Balranald and connecting to the NSW Southern Line rail services at Cootamundra, where passengers change to the XPT for evening arrival in Sydney. The journey time for these services is long and departure times are in the early hours of the morning. These services are inconvenient for users and lightly patronised.

The Mildura community has strongly advocated reintroduction of passenger services to Mildura and communities on the Mildura line and in 2010 the Victorian government commissioned the Mildura Passenger Train Feasibility Study. The Feasibility Study identified nine options for reintroduction of passenger services. One of the options was to construct a new high speed passenger railway between Swan Hill and Mildura designed to operate at 220 kph. This was the first time a government commissioned report had identified the feasibility of modern high speed rail services to the North West region. Notably, the projected cost of the project was given as $497 million. Such a project would mean very significant improvements in rail journey time between the North West and Melbourne, since the Bendigo to Melbourne section is part of the Regional Fast Rail project and already is designed to 160 kph. Construction of the Swan Hill to Mildura section at 220 kph would raise the prospect of 200kph through trains from Mildura to Melbourne being feasible within the life of this strategy.

Australia has been a slow adopter of high speed rail technology, which now exists in over 40 countries. Current Commonwealth funding for investigations is focused on densely populated corridors such as Sydney to Newcastle and Sydney to Canberra. However, the Mildura corridor proposals in the recent study involve construction of straight railways on flat land, with minimal engineering difficulties or land acquisition costs.

Currently, airline travel is the only rapid means of transport available to the North West region. However regional airlines face difficulties with viability worldwide, especially caused by fuel price hikes. Likely fare increases will reduce the proportion of the community that can afford to regularly access regional airline journeys needed for health, education or leisure purposes. In this context, the fast passenger rail option will become increasingly attractive over the next decade.

5.5 Governance Developments

Being located at the junction of three states, the Murray-Mallee region faces governance complexity. Regional transport issues involve seven local governments, three state governments and the Commonwealth government. As shown earlier in this report, a multiplicity of transport and economic strategies applies to the region.

It is important to achieve coherent strategic direction, and a variety of co-operative strategic and governance arrangements exist in the region. The Loddon-Mallee Northern Strategic Plan, the North West Association of Councils', and the consortium supporting the present study, are examples of the necessary collaboration.

Similar issues have been faced in the south west of Victoria, where the Green Triangle Freight Action project has drawn together relevant players to provide a regionally agreed strategy and governance arrangement. There are lessons to be learned from the Green Triangle experience.

In this section, two issues are highlighted:

- Cross Border Anomalies Issues
- Green Triangle model and its governance lessons

5.5.1 Removing Cross Border Anomalies

Transport efficiency in the North West region requires the maximum feasible alignment of state regulations affecting freight and logistics, while recognising that there are legitimate differences in the needs and policies of the various states.

In July 2009 the Council of Australian Governments took the decision to establish a National Heavy Vehicle Regulator, and a Project Office has been established in Brisbane to develop this entity. In March 2011, an Industry Advisory Group was established, with representatives from trucking companies, ports, unions and freight originators. The Advisory Group will provide advice to the new entity on road access, heavy vehicle safety, vehicles and transport chain compliance, enforcement and registration[63]. A draft Heavy Vehicle National Law has been produced and national forums are currently being held.

There is also an annual Victoria-NSW Cross border issues meeting aimed at removing cross border anomalies to the maximum extent possible. Issues include the movement of heavy machinery, load limits, and the transportation of hay and livestock.

These processes have substantial momentum. For the purpose of this study, it is sufficient to note that they amount to a resolute national effort to remove national cross border anomalies in freight and logistics. The annual Victoria-NSW meeting will continue to function to resolve practical issues.

[63] National Heavy Vehicle Regulator Project Office Press Release 1 November 2010

5.5.2 Emerging Governance Arrangements – the Green Triangle Model

The Green Triangle provides a useful example of strategic and governance co-operation and planning and the Green Triangle Freight Action Plan illustrates a well-regarded approach to these issues.

The Green Triangle project involves the Victorian and South Australian Governments and the local governments of Portland, Hamilton, Warrnambool, Edenhope, Mount Gambier, Naracoorte and Penola, as well as critical industries, especially the timber industry. The scope of the Action Plan included both road and rail strategies.
In 2008, the Green Triangle Freight Action Plan was released, prioritising $340 million of investment. The document outlines actions in six areas:

- road network enhancements
- rail network enhancements
- regulatory reform
- job opportunities skills and training
- socio-economic
- community development.

The Governance arrangements involve the establishment of an Implementation Monitoring Group comprising representatives of the Victorian and South Australian Governments, local government and industry. The role of the group is to monitor the rollout, implementation and prioritisation of projects in the strategy[64]. A Freight Summit for the region is to be convened every two years by the Victorian and South Australian Governments to involve a wider range of stakeholders[65].

These arrangements provide a model for consideration in the North West region.

[64] Green Triangle Region Freight Action Plan, p.67
[65] ibid

6. Strategic Directions and Priority Actions

This Transport Plan for the North West Transport region of Victoria and neighbouring councils in New South Wales has been developed on the basis of interviews and discussions with councilors, council staff, the staff of state departments and authorities including transport agencies, transport operators, users and residents.

A clear picture has emerged of the required strategic directions, and in this chapter, these Strategic Directions are identified. The 32 priority actions initially identified by Councils are here distilled into 16 specific actions for short, medium and long term attention.

Strategic Directions

The seven key strategic directions for transport in the region are:

- DIRECTION 1: *Shared Strategy; Shared Governance*

Shared goals are needed among Commonwealth, state and local governments, the community and transport operators as to the transport requirements of the North West Region. An ongoing regular forum –The North West Transport Forum[66] - needs to be set up to regularly review the directions required and the actions needing to be taken.

- DIRECTION 2: *Upgrade the Regions Highways to Required Standards*

The highways in the region need to be upgraded on a priority basis to the standards and policies applicable to them for A and B class highways, (and their NSW RTA equivalents) by shoulder sealing, pavement improvement, and the provision of overtaking lanes; and in the case of the Calder Highway between Irymple and Red Cliffs, by duplication. The role of the Mallee and Sunraysia Highways in future Mineral Sands traffic and of the Mallee Highway in east west heavy vehicle traffic may require their classification to be upgraded during the study period.

[66] As previously mentioned, a descriptor for the Forum that better represents the participation of NSW Councils could be considered, such as “Murray-Mallee Regional Transport Forum”.

- DIRECTION 3: *Reactivate Rail Transport in the Region*

Rail Transport has a critical role to play in the region in view of future fuel prices, its low carbon emissions, and its contribution to reduced road wear and congestion, and the North West can share in the current worldwide growth in rail services by the reintroduction of passenger trains to Mildura, standardization of the Mildura, Robinvale, Pinnaroo and Sea Lake lines, feasibility studies for an inter-continental rail link from Mildura to Menindee, the establishment of a new inter-modal terminal in the Swan Hill area, and improving V/line service levels to cities and towns in the region. The role of rail in grain, mineral sands and container traffic needs to be supported by clear investment priorities, journey time reduction, terminal development and level crossing policies.

- DIRECTION 4: *Plan New Murray crossings*

Three new Murray River crossings need to be developed on a priority basis – at Swan Hill, at Tooleybuc and at Karadoc, to better connect agriculture and mining in New South Wales with southern markets and processing plants, to cater for growing urban populations in Buronga, Gol Gol and Murray Downs, and in the case of Tooleybuc, to provide for access by High Performance Freight vehicles to a new inter-modal terminal at Swan Hill, Piangil or Manangatang without excessive conflict with passenger vehicles.

- DIRECTION 5 *Develop Roads for Tourism*

Recognising the economic potential of tourism in the region, new tourist routes need to be planned and implemented over time, such as a sealed road loop from Balranald and Mildura to Lake Mungo associated with the proposed First Australians Centre at Mildura; progressive development of the Wool Track from Balranald to Cobar for tourists and long-distance livestock traffic, and the packaging and promotion of Murray River Tourism by developing the Murray Valley Highway as a major tourist experience similar to the Great Ocean Road.

- DIRECTION 6 *Improve Air Access and Services*

Air access and services to the region should continue to be improved, reflecting their importance to the business community, to those requiring medical attention, and to the attraction of international tourists, by seeking scheduled airline services to Swan Hill and by continued investment in terminal improvements and navigation systems at Mildura airport and Swan Hill aerodrome.

- DIRECTION 7 *Enhance Public Transport for Towns in the Region*

Since many towns in the region have no public transport, or public transport that is highly inconvenient in terms of timetables, journey times and modes of transport, continued effort needs to be applied to achieving more effective bus use, local train opportunities, and the recognition that those who cannot drive are entitled to be able to access jobs, education, medical services and leisure opportunities without car dependence.

LINKING STRATEGIC DIRECTIONS AND PRIORITY ACTIONS

To make progress towards these agreed Strategic Directions, actions, investments and decisions will be needed each year during the period of this Plan, and the North West Transport Forum, proposed in this Plan, will take responsibility for the oversight and updating of regional priorities. As of now, the following 16 Priority Actions, grouped into Short Term (Immediate); Medium Term (3-8 years) and Longer Term (8 or more years) have been agreed.
A variety of institutional responsibilities and funding sources will need to be engaged. A summary of these is at the end of the Chapter.

6.1 Projects for Immediate Consideration

Project	Brief Description	Where Recommended	Sponsor Municipality	Order of Cost	Benefits	Problems/Issues
Reintroduce Mildura Passenger Train	Reintroduce daily Mildura to Melbourne passenger train	Mildura Passenger Train Feasibility Study 2010 Option 2; Discussions with Mildura Rural City Council, Mildura Passenger Train Action Group and MLA for Mildura	Rural City of Mildura	$300 million	Much improved passenger access to the region; Easy tourist access; Affordable access as airline prices increase	State budget funding required Rolling stock availability Journey time excessive due to speed restrictions and level crossing conditions
Increased role for rail in moving grain harvest	Improve capacity of rail system to deal with peaks in grain harvest	Discussions Buloke Shire Council and Alliance of Councils for Rail Freight Development	Buloke Shire Council	Diverse range of issues involved; cost would reflect detailed strategy adopted; engagement of government, rail network owners and operators; grain handlers and grain producers required	More efficient movement of export grain to port; Reduction of damage to shire roads; increased safety on highways by reduced truck numbers	Lack of competition; Rolling stock locked up; Contract structure; Line speeds; dispersal of grain receival sites
Calder Highway upgrade	Extension of duplication of Calder Highway from Irymple to Red Cliffs; provision of overtaking lanes	Discussions with Rural City of Mildura and Red Cliffs Chamber of Commerce	Rural City of Mildura	Duplication: 5 km @ $2m per km = $10m Overtaking lanes: 5 km @ $2m per km = $10m Total $20 million	Overcome significant congestion and safety issues in heavy trafficked section of highway at Red Cliffs; Increased safety and better management of car/truck conflict by overtaking lanes	Vicroads and State budget funding priority
Swan Hill bridge over Murray River	New bridge suited to traffic levels and heavy vehicles	Discussions with Councils and VicRoads; several studies	Rural City of Swan Hill; Wakool Shire Council, Balranald Shire Council	$50 million	Better access for Murray Downs residents and regional agriculture	Commonwealth funding priority
Introduce commercial flights to Swan Hill airport	Negotiate with airlines; upgrade navigation and terminal		Rural City of Swan Hill	Terminal and navigation upgrades	Better commercial, medical, tourist and freight access to region	Commercial viability; funding

6.2 Medium Term Strategic Projects

Project	Brief Description	Where Recommended	Sponsor Municipality	Order of Cost	Benefits	Problems/Issues
Mildura Road and Rail Freight bypass; Thurla intermodal terminal and Caradoc Murray River crossing	Package would provide through freight routes bypassing central Mildura and purpose built intermodal terminal on freight route' focus for industrial activity at Thurla. Rail connection Red Cliffs to Merbein and Yelta	Discussions Mildura Rural City Council; 2006 MRCC Submission to Auslink Corridor Strategy Study	Rural City of Mildura	New road alignment for Sturt Highway via Thurla (i)30km Red Cliffs to Sturt Hwy @ $3m/km=$45m;(ii)15 km east from Red Cliffs to Sturt Hwy via Caradoc $45 m;(iii) 7km new road Sturt Hwy to Yelta $21m;45km new rail line Red Cliffs to Merbein via Thurla intermodal terminal @$12m/km =$108m Caradoc Murray crossing $50 million; Land acquisition $20m; Design $5m; Contingencies @10% Total: $324 million	Segregate heavy road freight and rail traffic from central Mildura commercial and residential areas; specialized freight zone and new purpose built inter modal terminal. Partly utilizes disused Morkalla rail corridor lowering land acquisition costs.	Commonwealth, NSW Victorian and local government co-operation needed; substantial funding; freight and inter-modal terminal operator agreement; progressive implementation Land acquisition; Planning approval. Implementation could be staged.
Swan Hill Intermodal terminal	New inter modal freight terminal at Swan Hill, Lake Boga, Piangil or Manangatang	Discussions Swan Hill, Buloke Shire Councils	Swan Hill Rural City Council and Buloke Shire Council	Pacific intermodal estimates based on 20,000TEU/pa capacity: Rail infrastructure$2.6 million; terminal infrastructure: $1M Total say $5 million.	Would serve general and agricultural freight and containers over a very wide area that currently has no inter-modal access. Located near a potentially important east-west and north south transport junction (Mallee Hwy/MVH) Could be a terminal for very large road freight vehicles from NSW.	Operating model and business case needed. Pacific Intermodal advises that rail/intermodal has advantage over road freight for distances of 300km or more from port. It is 336.5 km from the Port of Melbourne to Swan Hill.

Project	Brief Description	Where Recommended	Sponsor Municipality	Order of Cost	Benefits	Problems/Issues
Standardization of the Gheringhap to Mildura, Korong Vale to Robinvale and Dunolly to Sea Lake railways and the Ouyen to Pinnaroo branch line; rehabilitation of Maryborough to Ararat line.	Rail standardization has currently reached Dunolly.	Discussions Buloke Shire Council, Mildura City Council, Alliance of Councils for Rail Freight Development. Victorian Freight and Logistics Council Report 2010	Buloke Shire Council; Mildura Rural City Council	$165 million.	Standardization of these 3 branches will enhance competition, increase train availability, reduce double handling, and complement the Mildura to Menindie trans-continental connection.	Agreement as to long term location of grain receival sites need to resolve whether all route needed in future, eg Annuello to Robinvale.
Reconstruction of Mildura Airport Runway and further terminal development	Runway will need to be reconstructed due to planned maintenance requirements and advent of heavier (79-tonne aircraft); further terminal development is required	Mildura Airport Pty Ltd Master Plan 2010	Mildura Rural City Council	Runway upgrade $25 million Terminal Upgrade $7m	Mildura airport is the region's main aviation gateway for passengers and air freight.	No significant obstacles to this investment
Murray Valley Highway upgrade	Upgrade Murray Valley Highway to B Class road standard, and promote as tourist product	Discussions Swan Hill Rural City Council; Gannawarra Shire Council	Swan Hill Rural City Council; Gannawarra Shire Council	Shoulder sealing Nyah to Robinvale, passing lanes	Extra capacity to attract tourists to Murray Valley; road safety on MVH	Measures can be implemented progressively
All weather tourist loop road to Lake Mungo	Provide sealed road Mildura-Mungo-Balranald	Discussions Mildura Rural City Council and Balranald Shire Council	Balranald Shire Council, Mildura Rural City Council	i. Construct 103km of new road from Mildura to Lake Mungo @ $220K/km=$22.7 million; ii Construct 108 km of new road from Balranald to Lake Mungo=$23.8 m Total cost: $46.5 million	Would link First Australians Centre in Mildura (proposed #2 tourist project in Victoria with Lake Mungo. Significant local and international tourist potential.	Funding limitations may require project to be staged

Project	Brief Description	Where Recommended	Sponsor Municipality	Order of Cost	Benefits	Problems/Issues
Implement safe network for use by High Performance Freight Vehicles	Progressive implementation of adequate roads, turning and overtaking opportunities, culverts and bridges for HPFVs	Freight Futures; VFLC Reports, Discussions Balranald Shire Council, Victorian Freight and Logistics Council	Balranald Shire Council Wakool Shire Council	Bridge upgrades at Swan Hill, Barham and Tooleybuc @ $50m per bridge=$150m plus Gee Gee and Coonamit @ $60m plus other bridge, culvert and safety measures. Total cost >$300 million		Must be co-ordinated with Murray crossing upgrade strategy. HPV routes may concentrate heavy freight traffic and require measures
Local inter-town bus and rail service improvements	Better local public transport; evening train Swan Hill-Bendigo	Discussions Buloke Shire Council; Swan	Buloke Shire Council and Gannawarra Shire Council			Local studies of better bus utilization required; possible need to authorize travel by adults on school buses

6.3 Longer Term Projects

Project	Brief Description	Where recommended	Affected municipalities	Order of Capital Cost*	Benefits	Problems/Issues
Construct high speed passenger railway from Swan Hill to Mildura	A 200kph high speed railway from Mildura to Swan Hill (as part of high speed services from Mildura to Melbourne	Mildura Rail Feasibility Study 2010; Option 5	Entire North west regional would benefit	$497 million	Much improved passenger access to the region; Easy tourist access; Affordable access as airline prices increase. Outcome would be that the majority of the Mildura to Melbourne rail journey could be at speeds over 160kph	Cost Planning approvals Interstate and Commonwealth consent Land acquisition Need for grade separation of entire route
Construct new transcontinental railway, principally for freight, from Mildura to Menindee	A standard gauge railway from Mildura to Menindee would allow direct access by rail to Darwin Perth and Sydney from the region	GHD Report "Mildura Derailed" to Mildura and Ballarat Councils 2010	All North Western Councils and Ballarat City Council	$318 million	Better access to markets in Asia, Perth and the east coast for regional produce. Provides route for high productivity double stacked containers from between Melbourne, Darwin and Perth by increasing height clearance for containers from present 4.1 metres to 6.8 metres.	Cost Planning approvals Interstate and Commonwealth consent Land acquisition costs
Seal and upgrade 457 km of the "Wool Track" north from Balranald to Cobar to create a new connection to the Queensland border via Kidman Way and Mitchell Highway	Provides a new north south highway link from the region to southern Queensland for freight and tourists	Discussions with Balranald Shire Council	Balranald Shire Council	$100.54 million based on $220,000 per km (Cost of sealing and upgrading Noorong Rd in Wakool Shire 2009)	Permits movement of livestock from Queensland to southern markets that is more direct than Newell Highway. Significant tourist potential. Better road access for wine and produce from the region to growing Queensland markets.	Would require NSW and Commonwealth support. Not an Auslink corridor
Seal and upgrade 188km of road from Kyalite to Deniliquin via Moulamein and construct a new Murray crossing at Tooleybuc to provide an alternative Sydney to Adelaide road freight route.	Provides a shorter road freight link Sydney to Adelaide. Provides a better road for movement of rice from Wakool Shire to mills in Deniliquin and Coleambally. Potential for reduced freight/passenger conflict on Sydney to Adelaide roads. Provides extra capacity Sydney-Adelaide. Open up Wakool Shire.	Discussions with Wakool Shire Council	Wakool Shire Council Swan Hill Rural City Council	Road construction $42 million Bridge construction $51 million (based on cost of Robinvale-Euston bridge) Total cost $93m	Provice shorter Sydney to Adelaide freight route. Improved access for rice traffic to mills at Deniliquin and Coleambally. Relieve traffic on Sturt Highway.	Would require NSW and Commonwealth support. Not an Auslink corridor Governments may be reluctant to duplicate role of Auslink corridor and prefer to focus on Sturt Highway. Tooleybuc bridge may be a lower replacement priority if Swan Hill bridge is constructed first.

*All projects also involve ongoing maintenance or operating costs that are not covered in this table.

7. Funding Sources

The following table identified appropriate funding sources for initiatives recommended in this Strategy:

Recommendation	Type	Category of Significance	Private	Local Government	State Government	Federal Government
Regional Freight Forum	Governance	Regional	Private sector involved	All levels of government involved	All levels of government involved	All levels of government involved
Calder Highway upgrades	Road	Arterial			VicRoads	Auslink Corridor
Mildura Freight Terminal at Thurla	Road, Rail, Intermodal and Commercial	Regional significance	Transport operators & logistics businesses	Planning: Mildura Rural City Council	VicRoads Department of Transport	
Level Crossing grade separations	Road/rail	State			State budget/Department of Transport	
Murray Valley Highway shoulder sealing	Road	Arterial			VicRoads	
Sturt Highway upgrades	Road	National highway			VicRoads, RTA	Auslink Corridor
Mallee Highway upgrades	Road	Arterial			VicRoads	
Sunraysia Highway upgrades	Road	Arterial			VicRoads	
Tourist road to Lake Mungo	Road	Tourist Route			RTA/ NSW Department of Tourism	
Development of Murray Valley Highway as a tourist route	Road	Arterial and Tourist Route			Regional Development Victoria/VicRoads	
Sealing and upgrading of Wool Track from Balranald to Cobar	Road	Strategic/Tourist				Building Australia Fund
Murray River bridge at Swan Hill	Bridge	Regional			VicRoads/RTA	
Murray River bridge at Tooleybuc	Bridge	Regional			VicRoads/RTA	
Alternatives to Gee Gee and Coonamit bridges in Wakool Shire	Bridge	Regional			RTA	
Additional Murray River bridge near Mildura, e.g. at Karadoc	Road	Regional			VicRoads/ RTA	
B-double routes	Road	State			VicRoads/RTA	
Designated east west route for large HPFVs	Road	State/national			VicRoads/RTA	
Fund to support local road and bridge strengthening for HPFVs	Road	State			NSW and Victorian state governments	
Standardization of Mildura, Pinnaroo, Robinvale and Sea Lake railways and rehabilitation of Maryborough to Ararat link.	Rail	State			Department of Transport	

Provision of two extra grain hopper rakes to cope with peak seasons	Rail	Grain industry	Pacific National		Department of Transport	
Reintroduction of Mildura Passenger Train	Rail	Regional			Minister of Transport following his consideration of feasibility and consultation reports; V/line	
Further feasibility investigation of possible standard gauge railway from Mildura to Menindee	Rail	National/strategic			Mildura RCC/Infrastructure Australia	Building Australia Fund
Afternoon passenger train from Swan Hill to Bendigo	Rail	Regional			V/line and Department of Transport	
Planning of freight terminal at Thurla, near Mildura	Inter-modal	Regional		Mildura Rural City Council		
Investigation of possible inter-modal terminal at Piangil or Manangatang	Inter-modal	Regional		Swan Hill Rural City Council		
Establishment of mineral sands transport route within Victoria involving rail	Rail	Regional	Iluka Resources Ltd		Regional Development Victoria Department of Transport	
Reconstruction of Mildura Airport Runway	Aviation	Regional		Mildura Airport	Regional Development Victoria	
Negotiations with airlines to provide commercial air services to Swan Hill	Aviation			Swan Hill Rural City Council		
Swan Hill airport upgrading	Aviation			Swan Hill Rural City Council		

8. Recommendations

Inter-governmental responsibilities for Freight in the Region

1. The Commonwealth, Victorian and NSW Governments and councils should accept shared responsibility for upgrading transport infrastructure in the North West Region. This shared responsibility would help ensure the freight task for grain, mineral sands and other key commodities is successfully managed and opportunities are captured for export growth, regional prosperity, employment growth and improved community amenity.

Highway Upgrades:

2. The Calder Highway should be upgraded by extending duplication southwards from Irymple to Red Cliffs reflecting the need to respond to heavy traffic, congestion, urban growth and winery traffic; and by progressively implementing passing lanes as prescribed by the VicRoads standards for A class roads.

3. Planning should continue for a heavy truck bypass of central Mildura via Thurla for Sturt and Calder Highway traffic, including the ultimate construction of an additional Murray crossing for Mildura at Karadoc;

4. Within the 15-year horizon of this Strategy, at least one Calder Highway level crossing should be grade separated, with priority being given to the crossing that presents the greatest risk to transport safety.

5. Full performance standards for a B-Class Highway should be implemented on the Murray Valley Highway, including shoulder sealing between Nyah and Robinvale;

6. Within the 15-year horizon of this Strategy, at least one Murray Valley Highway level crossing should be grade separated, with priority being given to the crossing that presents the greatest risk to transport safety.

7. In accordance with performance standards for A class highways, and in response to traffic levels, high truck volumes, and safety requirements, overtaking opportunities should progressively be provided on the Sturt Highway between the South Australian border and Mildura, and the RTA should be requested to consider providing overtaking lanes between Gol Gol and Balranald in accordance with it policies and priorities.

8. Maintenance should be undertaken to upgrade the Mallee Highway to B class performance standards

9. The Sunraysia Highway should be upgraded to B class performance standards.

Tourist Roads

10. An all-weather tourist loop road to Lake Mungo connecting Mildura and Balranald to Lake Mungo, and associated with the proposed First Australians Centre tourist project at Mildura, should be planned and progressively constructed.

11. The development and promotion of the Murray Valley Highway as a tourist oriented road similar to the Great Ocean Road be actively considered by relevant councils and tourist/economic development bodies

New Through Routes

12. Studies should be undertaken of the costs and benefits of sealing and upgrading the 457 km "Wool Track" road north from Balranald to Cobar to create a new connection to the Queensland border via Kidman Way and Mitchell Highway, as recommended by the 2009 "Wool Track Final Report".

13. Studies should be undertaken of the costs and benefits of sealing and upgrading 188km of road from Kyalite to Deniliquin via Moulamein to provide an alternative Sydney to Adelaide road freight route once Tooleybuc bridge has been reconstructed

Murray River Crossings

14. The proposed Murray crossing at Swan Hill should be constructed as soon as funding approval can be obtained, and within the first 5-year period of this strategy.

15. Subject to the findings of the current NSW government review of heritage timber truss bridges, the Tooleybuc Bridge should be replaced with a modern structure.

16. Subject to the findings of the current NSW government review of heritage timber truss bridges, consideration be given in the medium term to alternative crossings to the Gee Gee and Coonamit bridges in Wakool Shire.

17. Planning for a second Murray crossing at Mildura, such as at Karadoc, be progressed with a view to the facilitation of a freight bypass of central Mildura being incorporated into the planning process.

Routes for B-doubles, High Productivity Freight Vehicles and Higher Mass Limits vehicles

18. Clear and adequate routes for B-doubles, High Productivity Freight Vehicles and Higher Mass Limits vehicles should continue to be implemented by state road authorities, in close collaboration with local governments, but with regard to resident amenity, safety, and the VicRoads policy of encouraging freight vehicles to use the Principal Freight Network in preference to roads not on that network.

19. Consideration should be given to the identification of a designated east west route for large HPFVs (including B-triples) from New South Wales via a new Tooleybuc bridge (when constructed) via the Mallee Highway to a new inter-modal terminal at Piangil or Manangatang.

Rail Services and Infrastructure

20. Planning for the standardization of the Mildura (Yelta), Robinvale, Kulwin and Murrayville (Pinnaroo) lines, and the rehabilitation and re-opening of the Maryborough to Ararat link, should be progressed with a view to implementation within the next 5 years

21. The capacity of the rail system to deal with peaks in the grain harvest through measures such as increased competition, gauge standardization and government maintaining two rakes of reserve grain hoppers for leasing to operators under a competitive tender process during peak grain seasons.

22. Subject to the Minister for Transport's decision on current reports and submissions, a daily Mildura to Melbourne passenger train should be reintroduced in accordance with Recommendation 2 of the Mildura Passenger Train Feasibility Study 2010

23. The possibility of constructing a standard gauge railway from Mildura to Menindee, which would allow direct access by rail to Darwin Perth and Sydney from the region, as delineated by GHD consultants, should be the subject of a full scale feasibility study.

24. V/line be requested to provide a late afternoon train service from Swan Hill to Bendigo to enable business and tourist visitors to visit Swan Hill and return to Bendigo or Melbourne in one day.

Intermodal Terminals

25. Subject to satisfactory discussions with transport operators and the operator of the Merbein intermodal terminal, Mildura Rural City Council should continue to plan for a new purpose built intermodal terminal and focus for industrial activity at Thurla, and associated highway and road realignments from Red Cliffs to Merbein and Yelta by rail and the Sturt Highway east and west by new connections.

26. Piangil, at the junction of the Swan Hill railway and the Mallee Highway east west route, or Manangatang, at the junction of the Mallee Highway and the Robinvale railway, or a site in Lake Boga or Swan Hill should be identified as the location for a new intermodal facility to serve the region, and planning of freight routes around central Swan Hill should take into account the location of the proposed intermodal terminal.

Mineral Sands Movements

27. The Victorian Government should establish and maintain appropriate timing and funding arrangements with mineral sands companies to provide for the use of the rail system for the efficient and cost effective movement of mineral sands from Hopetoun to Hamilton in the short term and from other standard gauge locations in the North West as rail lines are standardized and mining sites progressively relocate.

Aviation

28. Planning for the reconstruction of the Mildura airport runway around 2015 should continue, to maintain the standard of infrastructure and to provide for access by heavier aircraft.

29. Swan Hill Rural City Council should continue negotiations with airlines for the introduction of regular commercial flights

30. Swan Hill Rural City Council should plan the upgrading of the terminal and other infrastructure at Swan Hill aerodrome consistent with the needs of regular commercial flights

Bus Services and Local Public Transport

31. Improved local public transport and inter-town bus services should be implemented, and maximum co-ordination should be used to gain full utilisation of buses subsidized by state or local government to this end

Fund for Upgrading of Local Roads for HPFVs

32. NSW and Victorian Governments give consideration to creating a local roads fund, on which advice would be sought from Regional Transport Forum as to specific priorities, focused on the investments needed to allow local roads upgrades needed to provide access by high performance freight vehicles.

9. Appendices

9.1 Comparison of Transport Recommendations of North West Transport Study and the Northern Loddon Mallee Strategic Plan

Northern Loddon Mallee Strategic Plan	North West Transport Study
4.3 Drive resolution of cross border issues and regulatory anomalies affecting regional road freight transport	19
4.4 Develop the Mildura truck bypass	3, 27
4.5 Audit of regional public transport to identify gaps, overlaps and opportunities	…
4.6 Resource Transport Connections program to improve transport solutions for small towns	32
4.7 Review bus connections at transport hubs to identify opportunities to improve transport connections	32
4.8 facilitate investment in rail freight rolling stock, allowing leaseback to operators, to assist grain and other industry development	22
4.9 Create regional network of HPV routes	19, 33
4.10 [energy related]	n.a.
4.11 [energy related]	n.a.
4.12 [NBN related]	n.a.
4.13 Support feasibility study for Mildura to Menindee rail link	25
4.14 Support improved public transport connections between Mildura and Melbourne	23

Observations:-

- There is consistency between the Northern Loddon-Mallee Strategic Plan and this strategy
- The Northern Loddon Mallee Strategic Plan provides additional emphasis on public transport audit and transport connections improvements
- This report examines transport issues in more detail than the Northern Loddon Mallee strategic plan, which is appropriate.

9.2 References

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Abbreviations

ABA – Australian Bulk Alliance – Wheat Marketer

ARTC – Australian Rail Track Corporation

AWB – AWB Ltd – Wheat Marketer

CNG – Compressed Natural Gas

HPFV – High Performance Freight Vehicle

LCL – Less than Carload (old rail freight system transporting non-bulk goods)

LVH – Loddon Valley Highway

MVH – Murray Valley Highway

PBS – Performance Based Standards

PFN – Principal Freight Network

RFNR – Rail Freight Network Review

RTA – Roads and Traffic Authority of New South Wales

VFLC – Victorian Freight and Logistics Council

Vpd – Vehicles per day