GRAMPIANS AND BARWON SOUTH WEST REGION PASSENGER SERVICES COST & FEASIBILITY STUDY

FINAL REPORT

March 2017

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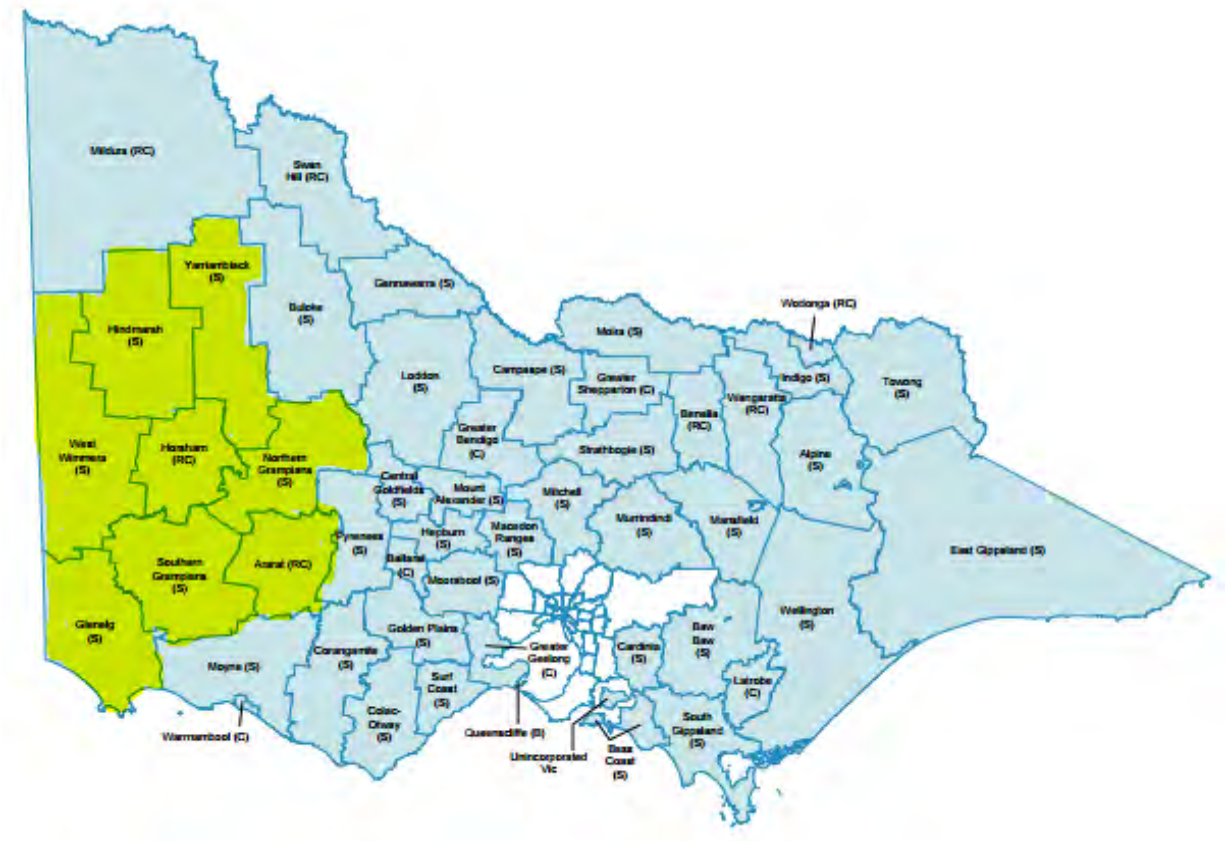

Participating Councils

Ararat Rural City Council

Glenelg Shire

Hindmarsh Shire

Horsham Rural City Council

Northern Grampians Shire

Southern Grampian Shire

West Wimmera Shire

Yarriambiack Shire

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Grampians and Barwon South West Region Passenger Services Study – March 2017

Executive Summary

This Study of the passenger service needs of the Grampians and Barwon South West regions was commissioned by eight local government councils in western Victoria, and covers the area from Ararat to the South Australian border and from Yarriambiack in the north to Glenelg Shire in the south.

Councils asked the Study Team to investigate the extent to which existing passenger services – both train and coach – supported the social and economic requirements of this large and productive region, and whether the services currently provided and the infrastructure used could be improved. Councils wanted passenger services and infrastructure that would improve social and economic access and connectivity, reduce isolation, and enable the present and future residents of the region to easily connect with regional centres and Melbourne to meet social, economic, medical, educational and business needs through safe, efficient, frequent and reliable public transport. Central to this issue was whether train services could be reinstated to Horsham, Hamilton and other centres.

The Report is based on extensive investigation, and many meetings with councillors, council officers, business leaders, educational and health services and residents in the region. The Study Team also reviewed social and economic statistics for the region in detail. It investigated rail and coach operational questions in fine detail.

The work undertaken by the Study Team identified significant unmet needs for better public transport in the region. The Study found that residents, businesses, government agencies and local governments in the region were not being provided with fast public transport access to Ballarat and Melbourne. It found that regional residents, including young people, the aged, those in need of medical specialities and those in need of access to choices in work and education, often had inadequate public transport access to regional centres like Horsham, Ararat or Hamilton, let alone Ballarat, Geelong or Melbourne. And it found that the public passenger services that are being provided beyond Ararat are sub-standard, being little improved from 30 years ago, and offering limited access to regional centres and inadequate connectivity.

In response to these deficiencies, the Study Team looked at rail and coach services in the region from the passengers' point of view. It then developed and costed staged proposals for public transport improvement in the region.

The proposals made in the Report range from improvements capable of immediate implementation to those requiring substantial investment, particularly needed as Victoria's western rail network moves toward standardisation of gauge.

The most immediate **Stage 1** recommendation is to increase the Ararat to Melbourne train service from 3 to 4 daily return services, including a new early morning train to Melbourne and a return afternoon train from Melbourne. This will greatly assist business travellers. By 2019, Ballarat line upgrades will allow a further improvement to 5 daily return trains between Melbourne and Ararat.

The central conclusions of the Study are that rail passenger services can and should be reinstated to Horsham and Hamilton, and that the railway between Ballarat and Ararat should be converted from broad to standard gauge, in **Stage 2** of the recommended process, between 2021 and 2026. By 2026, or sooner if possible, there should be 4 daily trains, with comfort and performance at least comparable with the popular VLocity trains, in each direction from Horsham, 3 from Hamilton and 6 from Ararat, with passengers changing at Ballarat for rapid and frequent Melbourne services. There are currently 22 daily trains to choose from at Ballarat and more are likely to be added after the $518 million Ballarat line upgrades approved in the 2016 state budget are completed.

Safety upgrades are recommended including signalling improvements such as automated train protection warning systems and the upgrading to active protection (booms and barriers) of 77 level crossings between Ararat, Horsham and Hamilton.

The Study also looked at coach connections servicing the region and identified important improvements in coach services, including additional services between Hamilton and Ballarat and new weekend services to Casterton and Mount Gambier. Coach service improvements are also proposed for a number of towns to provide better regional connectivity, including Balmoral, Cavendish, Coleraine, Dunkeld and Lake Bolac.

Other improvements are recommended to better overcome isolation in smaller communities and to provide tourist friendly coach schedules that would enable more public transport-based holidaymakers to visit the region's many attractions, including the northern and southern Grampians, the Pyrenees, the Wartook Valley, Little Desert, West Wimmera and Glenelg shire attractions. Such access is currently very limited; better access will help accommodation and hospitality industries in these areas.

The Report also highlights the need to upgrade facilities for disabled and elderly travellers, as most coach stops and stations in the region don't currently comply with the *Disability Discrimination Act*. As well as upgrading these to compliance, the Report also recommends improved disabled toilet facilities, such as "Changing Places" adult disabled facilities at several stations and staff to assist passengers with luggage at major interchanges. All stations in the regions - including Stawell, Murtoa, Horsham, Glenthompson, Willaura, Dunkeld and Hamilton - will need to be restored and upgraded as part of the process, improving local infrastructure and providing local employment.

Longer term possibilities for Hamilton and Horsham trains to also travel to Geelong or via Geelong to Melbourne are also outlined and costed for consideration.

The cost of proposals in the Report has been estimated in a peer-reviewed process. Stage 1 of the proposals (those for early implementation) - are costed at $1.6m; Stage 2, including new trains and standardisation of the Ballarat to Ararat railway and associated train stabling, maintenance and signalling, has an estimated capital cost of $369m and an additional annual operating cost of $6.1 million. Although the required investment is substantial, all major transport investments involve large spending to provide the access and connectivity communities need. The investments are spread over several years and will be reflected in employment opportunities as well as wider economic and social benefits.

Grampians and Barwon South West Region Passenger Services Study –March 2017

Findings and Recommendations

Findings

1. **Towns and catchments in the Grampians and Barwon South West regions of Victoria are home to over 110,000 Victorians and are provided with reasonably extensive public passenger services through Public Transport Victoria and V/Line, but these services can and should be improved.**

2. **Such enhancements will support the social and economic development of the regions by providing better access by residents to employment opportunities, health services, education and training and social connections.**

3. **Benefits of these improved services will be very significant to many population groups in the regions, including the aged and the aging, young people such as students, apprentices and job-seekers, members of ethnic communities working in the regions, as well as visitors to the region.**

4. **Improved and in some instances new or re-scheduled coach services can help support small towns as well as aging in place in the regions by allowing residents to more readily access regional centres for medical appointments, education and training as well as shopping needs not met in smaller towns and visits to friends and family, supporting social inclusion.**

5. **Many important tourist destinations in the region are not currently accessible by public transport, and improvements should be made to better serve tourists and holiday makers, whose expenditure in turn will contribute to the growth of the hospitality, accommodation, ecotourism and viticulture industries in the regions.**

6. **Reintroduction of passenger trains to Hamilton and Horsham will provide widespread benefits to communities throughout the regions and beyond and be the centrepiece of revised public passenger services through faster, more reliable and more comfortable links with Ballarat and Melbourne. Coach connections to regional centres, inter-town coaches, and coach services to tourist destinations also require improvement.**

7. **Upgrading of these services is considerably more complex than elsewhere in Victoria due to differences in rail gauge, fragmented control of rail corridors, the need to procure suitable standard gauge passenger rolling stock and related maintenance facilities, and the need to upgrade many level crossings, signalling, safe working and stations in the regions.**

8. **Despite these challenges, reintroduction of passenger train services to Hamilton and Horsham is feasible and is recommended, together with a strengthening of connecting coach services. Implementation and improvement of services will take some years to complete and will involve substantial costs in infrastructure, rolling stock and support for coach and rail services.**

9. **Future public transport in the study regions could be strongly complemented using non-scheduled types of services such as taxis, Uber, greater use of school and community buses and of demand responsive services.**

10. **Greater use of marketing, promotion and communication channels between operators and the public could significantly raise public awareness and use of public transport services.**

11. **Although the estimated additional annual operating cost of over $6 million and capital investment of $369 million is substantial, the investments are spread over several years. They will provide the access and connectivity the community needs and will be reflected in wider economic and social benefits.**

Recommendations

1. Rail Service Improvements-Stage 1 - (2017-2019):

1.1 Increase Ararat train services from 3 to 4 weekday trains in each direction with the addition of an earlier morning train to Melbourne and a faster mid to late afternoon service from Melbourne, and an increase from 2 to 3 return services on weekends.

1.2 After currently funded Ballarat line improvements are completed, increase Ararat train service to 5 weekday services, accelerated by Ararat trains omitting stops on the Ballarat line served by other trains, i.e. Ardeer, Deer Park, Caroline Springs, Rockbank and Melton, and increase to 4 return services on weekends.

2. Rail Service Improvements-Stage 2 - (2021 to 2026):

The second package of improvements to the rail service to the region should be the reinstatement of passenger train services to Hamilton and Horsham, commencing from about 2023 but with a prior lead time of approximately 5 years:

2.1 Provide 6 return daily train services to Ararat, 4 to Horsham and 3 to Hamilton. These services would all connect at Ballarat with direct trains to/from Melbourne via Ballan.

2.2 Horsham trains would also serve Stawell and Murtoa and Hamilton trains would also serve Willaura, Glenthompson and Dunkeld.

2.3 Stage 2 requires provision of supporting infrastructure including:

- **2.3.1 Standardization of 88 km of railway from Ballarat to Ararat**
- **2.3.2 Provision of a new crossing loop at Trawalla**
- **2.3.3 Improvement to ARTC track infrastructure between Ararat and Horsham and between Ararat and Hamilton for increased speed and compatibility with V/Line rolling stock**
- **2.3.4 Upgrading of 49 level crossings between Ararat and Horsham and 28 level crossings between Ararat and Hamilton to current passenger train standards**
- **2.3.5 Provision of standard gauge access to both main platforms and to train maintenance facilities at Ballarat**
- **2.3.6 Upgrading of rail/rail and rail/coach interchange facilities at Ballarat station to meet DDA standards and to provide a seamless passenger experience**
- **2.3.7 Upgrading of all other stations that are served to DDA standards and to meet contemporary passenger expectations**
- **2.3.8 Upgrading of signalling and safe working**
- **2.3.9 Provision of overnight train stabling and servicing facilities at Hamilton and Horsham**

2.4 Acquisition of suitable standard gauge rolling stock, with comfort and performance (Including 160km/h capability) at least comparable with the VLocity trains, to operate the proposed services.

2.5 In the longer term, the option that some trains could be extended from Ballarat to Geelong or to Melbourne travelling via North Shore (near Geelong) should be evaluated.

3. Coach Service Improvements

3.1 **Ararat should become the focal point for western road coach services that operate along the Western Highway, including services to Nhill and Warracknabeal/Ouyen that currently terminate at Ballarat.**

3.2 **A new daily road coach service using an appropriately sized vehicle should be introduced between Horsham and Hamilton via Balmoral and Cavendish and co-ordinated with Hamilton to Portland services.**

3.3 **An additional mid-morning service should be introduced on weekdays from Hamilton to Ballarat and corresponding return mid-afternoon service, with suitable train connections at Ballarat.**

3.4 **Existing weekday services between Ballarat and Mt Gambier and between Casterton and Warrnambool should be extended to operate seven days per week, with adjustment as necessary to optimise train connections at Ballarat and Warrnambool.**

3.5 **Road coach connections from the study area to South Australian destinations, particularly Adelaide, should be improved including good connections via Ararat, Horsham and Mount Gambier.**

3.6 **In cooperation with local communities, a review should be undertaken of local bus services that provide intra-town services and access to regional centres (including services to Edenhope, Goroke, Natimuk, Warracknabeal, Ouyen, Donald, Rupanyup and, Minyip). The review is to assess the suitability of scheduled routing and timings and consider options for use of demand responsive type services and greater use of school buses.**

3.7 **V/Line and PTV should permit the conveyance of bikes on regional road coaches.**

3.8 **Horsham and Hamilton road coach hubs should be upgraded, to provide better waiting, boarding, alighting and transferring conditions.**

3.9 **Transport agencies should work with councils to improve coach stops in smaller towns to maximise safety and comfort, ensure good lighting, seating and passenger information and provide real time information. Opportunities to combine bus stops with local facilities such as shops, tourist information or community centres should be investigated.**

3.10 **Councils should provide advice to Government that unsatisfactory road conditions are contributing to poor ride quality and increased safety risks for road coach travellers on the services in the study area, particularly on the Glenelg and Henty Highways.**

3.11 **Explicit service standards should be adopted for coach services to towns of various sizes and tourist destinations.**

4. Tourism

4.1 **Coach connections, including weekend and public holiday services, should be provided to serve key destinations in the region and permit weekend visits to them, including the Grampians Peak Trail at Mount Zero and Dunkeld, the Little Desert, the Wartook Valley, northern and southern Grampians and the Pyrenees wine region.**

4.2 **V/Line should include more destinations in the region in its Escape with V/Line promotions and other marketing.**

4.3 **Tourist agencies and councils in the region should consider adopting, in conjunction with V/Line and coach operators, a pro-active approach to rail based cycle tourism as is applied in Wangaratta.**

4.4 **The arrangement for on-demand access to Mount Arapiles provided by Wimmera Roadways should be considered for application to other tourist destinations.**

4.5 **The Halls Gap coach service should be extended as recommended by Sandlant Coaches to provide improved access for walkers and to accommodation houses in Halls Gap.**

5. Services for persons with disability and/or aged persons

5.1 **All operating rail stations in or serving the region, should be made DDA compliant as soon as possible; this includes Ballarat, Beaufort, Ararat, Stawell, Horsham, Dimboola and Nhill.**

5.2 **Station upgrading, including DDA compliance where not already in place, should be planned as part of the reintroduction of rail passenger services to stations on the Hamilton and Horsham lines at stations to which passenger trains are reintroduced: these include Hamilton, Horsham, Dunkeld, Glenthompson, Willaura, Stawell and Murtoa.**

5.3 **All coach stations and coach stops in or serving the region should be made DDA compliant, including weather protection, hard stand for coach ramps, and smooth sealed connections from coach ramps to footpaths.**

5.4 **Signage and wayfinding at stations and coach stops serving and in the region should be reviewed as to adequacy and legibility, including legibility to persons with reduced vision: this needs to include fixed signage and visual displays including those at Southern Cross Station as well as other stations serving the region.**

5.5 **Internal layouts of stations should be reviewed to ensure they facilitate easy movement for people with special needs. Ease of transfer is particularly important at interchanges.**

5.6 **Consideration should be given to providing a "Changing Places" adult disabled toilet at Ballarat, Ararat and at Southern Cross as, under the NDIS, greater independent travel by persons with disability is expected.**

5.7 **V/Line should highlight, in the roles of station and on-board train staff, the importance of customer service in luggage handling and assistance to elderly and disabled travellers, particularly at interchanges.**

5.8 **Consideration should be given to providing, or funding a community group to provide, a designated and highly visible traveller assistance officer at Southern Cross, Ararat and Ballarat to assist elderly and/or disabled passengers to transfer themselves and their luggage between coach and train and/or between trains, and/or to and from taxis and where appropriate, to arrange onward transport on arrival (such as through taxi booking or links with other service providers).**

5.9 **New rolling stock for longer distance services should form the centrepiece of the Government's announced intention to acquire "New Generation Regional Trains". Their design needs to pay significant attention to facilitating easy movement for people with special needs – the elderly, people with children (and strollers),- as well as adequate stowage for luggage, bikes, bulky items, wheel chairs and electric mobility scooters. Spaces need to be uncluttered, easy to navigate, with clear aesthetics to help customers feel at ease.**

6. Recommendations in relation to Passenger Experience

6.1 **Maps and timetables covering the region should be upgraded. Regional maps should be produced that show all route and town services, irrespective of whether designated as PTV, V/Line or Great Southern Railway, with cross-references to timetables and other relevant travel information, in type sufficiently large for elderly and vision impaired people to read them**

6.2 **Static and dynamic passenger information providing clear directions regarding current services and connections should be provided and displayed at all stations and major coach stops in the region.**

6.3 **All V/Line trains, coaches and major stations should be Wi-Fi enabled as soon as possible, to enable passengers to use phones, tablets, computers and other devices – and to enhance the advantage rail travel offers for the productive use of travel time.**

6.4 **Transport operators need to work with councils and PTV in locating regional coach terminals and local stops where access is easiest for most potential travellers, with attention being given to convenient, well-lit and safe access pathways.**

6.5 **The myki ticketing system should be extended as soon as possible to all train and coach services in the regions.**

6.6 **In the short term, PTV should work with GSR to improve *The Overland* service, particularly to reduce the excessively long travel times between Melbourne and western Victoria and to improve publicity concerning the availability of the service at V/Line prices for travel to Ararat, Stawell, Horsham, Dimboola and Nhill. Purchasing arrangements for tickets for *The Overland* should be streamlined, including the requirement for 48 hours advance booking.**

7. Transport Governance in the Grampians and Barwon South West Regions

Local governments in the region should consider establishing an ongoing Public Transport Forum to articulate the region's needs. The Forum would:

- **include representatives of participating councils, PTV or other appropriate government agencies, coach operators and public transport users;**
- **be a conduit for wider community consultation and feedback to State Government agencies on specific issues, e.g. proposed major changes to rail services or timetables;**
- **help ensure that coach and local bus service reviews conducted by PTV fully reflect local needs;**
- **provide an opportunity to confer and co-ordinate council public transport approaches and strategies within the region;**
- **if practicable, fund a full or part time Transport Connections Officer to support local public transport development in the region;**
- **explore opportunities for local transport innovation, including innovation to assist elderly and disabled persons, and mobility.**

Additional notes regarding Reintroduction of Train Services

Rail Service Improvements-Stage 2: Reinstatement of Passenger Train Services to Hamilton and Horsham

Underlying reasons for recommending return of rail services to Horsham and Hamilton are that:

- **It responds to many of the identified needs**
- **It provides better inter-city connections**
- **It is strongly supported by the region's communities**
- **It provides equity with other cities and towns throughout Victoria**
- **It is operationally and financially feasible**

Restoration of rail service beyond Hamilton to Portland or west of Horsham is not recommended because:

- **Portland is better served via Warrnambool rail**
- **Population west of Horsham is generally insufficient to support a rail passenger service, however the region will still benefit from rail to Horsham**
- **Daily rail services west of Horsham would require additional rolling stock**
- **Dimboola and Nhill still have a limited train service provided by the twice weekly *The Overland* train to Adelaide but its future beyond late 2018 is undecided.**

1. Introduction

1.1 Aim of this Report

This Passenger Services Cost & Feasibility Study has been commissioned by the eight local governments served by the Ararat railway, all of which would be potential beneficiaries of the restoration of rail services to Horsham and Hamilton. These eight municipalities are: Ararat Rural City, Glenelg Shire, Hindmarsh Shire, Horsham Rural City, Southern Grampians Shire, Northern Grampians Shire, West Wimmera Shire and Yarriambiack Shire. The Study is designed to look comprehensively at passenger services in the area and identify improvements including new passenger links and services within and beyond the Shire, both by rail and by coach, as well as improvements for wheelchair and scooter users. Detailed Terms of Reference follow.

1.2 Terms of Reference

The Study was tasked to:

- Assess the existing passenger service provision in the study area
- Identify new passenger services that would improve connections between Melbourne and the study area and related costs
- Identify new passenger services that would improve connections between key towns in the study area and related costs
- Identify accessibility improvements to existing passenger service infrastructure with a focus on wheelchair and mobility scooter users
- Examine implications for passenger services in relation to the impending introduction of the NDIS to the study area
- Consider utilization of existing rail infrastructure to deliver new rail services Ararat to Kaniva and Ararat to Portland via Hamilton
- Identify possible improvements to the combination of rail and road passenger services available within the study area
- Identify new bus services within the study area

1.3 State and National Context

After many years of relative neglect compared with financial support for road projects, State and Federal Governments over recent years have begun to revitalise the nation's railways, recognising the unique contribution that passenger rail and freight rail can contribute to economic efficiency and social wellbeing.

Federal Governments have made further investments in rail gauge standardization and long distance freight infrastructure upgrading, such as:

- the gauge conversion and upgrade of the Oaklands and Albury lines in Victoria
- the federal commitment to 50% of cost of the Murray Basin Rail project in Victoria
- limited commitment to support urban rail developments in Queensland, NSW, Victoria, SA and WA.
- funding commitment for planning the Melbourne-Brisbane inland freight rail link

The Victorian Government has a strong record in regional rail investment and modernization, with notable milestones in recent years being:

- the Regional Fast Rail project

- the continuing investment in locally constructed VLocity railcars
- the $4bn Regional Rail Link project
- state commitment to 50% of the cost of the $440m Murray Basin Rail project
- commitment of $518 million in the 2016 State Budget to improvements on the Ballarat line
- commitment to the $10.5 billion Melbourne Metro project

These investments mirror strong investment and modernization of passenger and freight rail systems worldwide. Investments in new rail technologies and systems are providing economic transformation in many countries. Examples are:

- China has constructed over 10,000 km of high speed passenger rail in the past decade, including the completion of exceptionally challenging engineering tasks such as the new railway to Tibet, previously considered impossible
- The HS2 project in Britain, to commence construction in 2019, which will unify the British economy, connecting areas in the north and northwest with high unemployment to those in the southeast where jobs are available
- Rapid developments in rail freight technology in northwest Australia, where driverless train technology is being introduced, and the longest and heaviest freight trains in the world are operated (up to 4 km in length with loads of up to 35,000 tonnes).

1.4 Rail Revitalisation Worldwide

Similar reasons exist worldwide for the revitalisation of rail systems and the development of completely new rail facilities: These include:

For rail passenger services, recognition of:

- The capacity of fast rail to connect people to jobs, education, health and leisure opportunities by "shrinking distance"
- The capacity of well-designed rail systems to overcome some of the chronic problems of road based transport systems, viz. traffic congestion that increases with some major road investments; road trauma that increases with road use, fuel inefficiency and continuing issues with pollution (exemplified by the recent Volkswagen scandal that revealed some diesel vehicles were emitting 40 times the stated and permitted level of toxic pollutants)
- The capacity of rail systems to contribute to balanced development among regions by enabling long range commuting from areas with excessive unemployment to areas with well paid jobs, resulting in a more equitable sharing of prosperity, and a capacity to absorb population growth more widely through regional areas; and
- A recognition that excessive "car dependence" can be a serious threat to community health via obesity, road trauma, social exclusion and the pressure of car operating costs on the budgets of lower income families.

1.5 The benefits to the regions of investments in Regional Rail

When the Kennett Government abandoned passenger rail services beyond Ballarat on 27 May 1994, residents and businesses in the region were left with no long-distance passenger options for travel to Ballarat and Melbourne other than long coach or coach/rail journeys. In May 1995, with the completion of the standard gauge line from Melbourne to Adelaide via Geelong and Cressy, it became possible to reintroduce a version of the historic *The Overland* train from Melbourne to Adelaide, but on a limited schedule with long journey times. This service was reduced from a daily service pre-privatisation to 5 services a week in 1998; from 2013 it has run only twice a week in each direction. Since 2008 it has had several seats reserved for passengers to Ararat,

Stawell, Horsham, Dimboola and Nhill at V/Line fares, however the booking arrangement is not user-friendly and these seats are little used.

Since then, residents of the region have benefited from improvements from time to time in their passenger services, of which the most significant was the restoration of the Ballarat to Ararat line, which had been disused for 10 years, in 2004 and the reinstatement of daily passenger train services.

The region has since received "flow on benefits" from other major state rail investments as follows-

- Under the Regional Fast Rail project in 2005, much of the railway between Sunshine and Ballarat East was rebuilt, with improved alignments, increased level crossing protection, a new advanced train safe working system and a new more direct section on one line between Gordon and Dunnstown (bypassing Bungaree), permitting 160 km/h operation on many parts of the line.
- VLocity DMU railcars, which are capable of fast acceleration and of maximum speeds of 160 km/h on sections of the Melbourne to Ballarat line and 130 km/h between Ballarat and Ararat, were introduced.
- Completion in 2014 of the Regional Rail Link project which fully separates Geelong and Ballarat line trains from Metro services and substantially does so for Bendigo line services.
- The $4 billion Regional Rail Link project provided two extra tracks for regional trains between Sunshine and Southern Cross, new platform space at Southern Cross, Footscray and Sunshine, and faster and more reliable journeys for regional trains through the suburban area.
- $518 million was provided in the 2016 State Budget for further improvements on the Ballarat line including new long crossing loops and infrastructure improvements including track duplication between Deer Park and Melton and a second line at the Bungaree deviation referred to above. The benefits of these investments will flow through to the Grampians and Barwon South West regions in the form of more reliable services and increased capacity, including the likely replacement of coach services that are currently required between Melbourne and Ballarat during peak periods when available rail capacity is completely absorbed by frequent trains on the single line in the peak direction of travel.

Although the region has received flow on benefits from these investments, there are still many limitations:

- Until the present Report, there has been no serious attempt to examine the feasibility of reintroducing regular passenger train services beyond Ararat.
- Railway station facilities other than at Ararat have received little maintenance since the withdrawal of daily V/line passenger services in 1994, so the stations at Stawell, Murtoa, Horsham, plus Willaura, Glenthompson, Dunkeld and Hamilton which last had regular passenger services in 1981, would require substantial refurbishment to comply with modern standards and with the Disability Discrimination Act.
- While most level crossings between Ballarat and Ararat have been provided with active level crossing protection, two unprotected crossings remain at Modesty Lane near Trawalla and Hillside Rd near Dobie where Ararat trains must slow to 50 km/h.
- The Staff and Ticket system of train safe working used between Ballarat and Ararat is antique in character, and although safe while only one train is on the line, is not suited to more frequent operations.
- *The Overland* service has been reduced to twice weekly in each direction and local stations provide no guidance on how to use it, resulting in it being little used by Victorian local passengers.
- *The Overland* service accesses Melbourne at very low speeds averaging 26 km/h on its final circuitous journey through Newport, Tottenham and Footscray, and no improvements have been made on this issue since completion of the standard gauge link to Adelaide in 1995.

- Most level crossings beyond Ararat on both the Horsham and Hamilton lines are not equipped with active level crossing protection of the type required to safely operate trains such as the VLocity railcars that do not have a separate locomotive.
- There has been no improvement to weekday service frequency to Ararat since completion of the Regional Fast Rail project in 2006.
- While journey times on current coach/train services from Horsham to Melbourne are comparable with those provided by the through train services at the time of their withdrawal in 1994, they have not seen the significant improvements in journey times and booming patronage that have been experienced on train only journeys closer to Melbourne following the RFR/RRL and VLocity investments, largely because of the retention of long, relatively slow coach sectors in the journey.

In recent years, there has also been a succession of reliability issues that have hit Ararat line rail users particularly hard, including:

- Unreliable services immediately following the introduction of the Regional Rail Link
- Curtailment of many services due to wheel wear involving VLocity units, leading to the temporary withdrawal of many Ballarat line services.
- Rolling stock shortages, resulting in insufficient VLocity railcars being available to meet demand on Ballarat line services and serious overcrowding on some trips

These reliability issues have now been substantially improved and should be largely resolved by the Ballarat line upgrade project currently being implemented, particularly longer crossing loops which reduce the extent to which late running of one train cascades to other services on the line.

2. Social and Economic Issues

2.1 Population Trends

The populations that are served by public transport services in the Grampians and Barwon South West regions can be divided into several main categories: -

- Urban populations on the Beaufort to Kaniva corridor, who could directly access train and/or road coach services on the corridor;
- Populations of towns and regions in the hinterland of this corridor who are connected to it by road coach or are capable of being connected to it by private transport;
- Urban populations on the Ararat to Portland corridor, who could directly access train and/or road coach services on the corridor;
- Populations of towns and regions in the hinterland of this corridor who are connected to it by road coach or are capable of being connected to it by private transport;
- Tourists and visitors to the region and its tourist destinations, which include the Grampians, (including Halls Gap, the Wartook Valley and the Dunkeld region), the Pyrenees and the Little Desert;
- Through travellers on the Melbourne to Adelaide corridor.

2.1.1 Population Overview

Population on the Kaniva and Portland corridors (including towns on the corridor and in catchments directly served by passenger services in the corridor), is estimated to be around 112,000 people, from Beaufort westwards, and excluding South Australian centres such as Mount Gambier and Naracoorte, which are also served by connecting coaches that feed into the V/Line network.

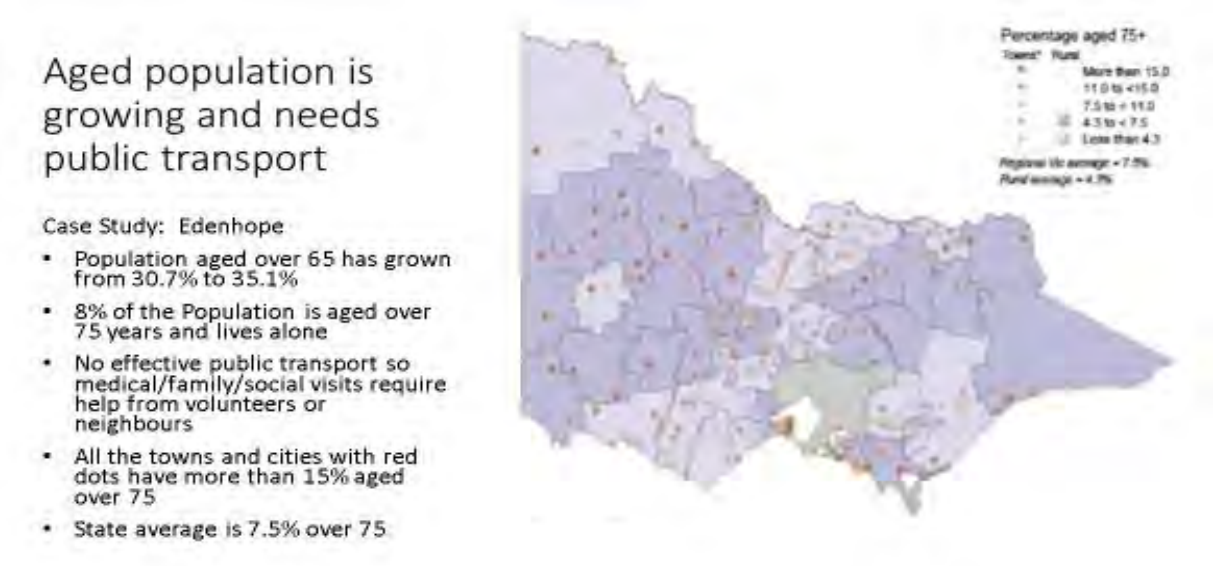
Within the region, the larger regional centres such as Ararat, Hamilton, Horsham, Portland and Stawell have comparable profiles that are distinct from that of many smaller centres such as Casterton, Coleraine, Edenhope, Willaura and Warracknabeal.

The larger centres typically have a stable or slightly growing population (around 1% annual growth); relatively low unemployment (around 4.5%); an aged cohort (over 65 years) in the range 17-25%, and a relatively small group (around 3%) of elderly (75 years +) people living alone. Although the larger centres can be markedly affected by the fortunes of employers closing, contracting or commencing, they are dynamic social and economic units that generate many travel needs along the corridors being studied. Public and private sector employers in the centre are connected to Ballarat and Melbourne and employees travel for meetings, professional development, sales and networking. These journeys often involve long car trips if the destination is Melbourne; sometimes employees drive through and back in a day but if they do the effective working time for them is reduced by time spent in traffic and by the very limited possibility of working in the car. A popular option for these people is to drive to a point where fast rail services are available – and this may be Ararat, Wendouree or Ballan. The greater frequency of trains makes Ballan a popular choice – and safety of car parking around these interchange stations is a consideration for this group. The younger age group means that families in these towns often have children travelling up and down the corridor to school, university, or offsite apprentice training.

In the smaller centres, there is a different population profile and different travel needs. Population of the smaller centres is more likely to be contracting, and services available in the smaller towns are often fewer than in past years. Some have lost local taxi services, in a few, very basic requirements such as access to fresh fruit and vegetables is a problem. Many of the centres have a reasonably new local hospital or medical clinic, but the aging populations still require access to higher level specialties, typically requiring transport to Ballarat or Melbourne. In these centres, unemployment is usually higher, in the range 6-12%.

The proportion of people aged over 65 in these communities is around 33-35%, and more than 5% may be over 75 and living alone. Public transport for these centres is primarily provided by road coach, with frequencies sometimes limited to one or two trips per day. For these communities, access to higher level medical treatment for older people often places a significant burden on family and friends, as well as volunteer

transport services. In one centre this amounted to 59 trips by volunteers in one month taking older people to Melbourne for treatment, but in other communities volunteers are unable to maintain the level of transport support needed. Health workers expressed concern to us that some older people may have refrained from needed medical attention because of the difficulty of obtaining convenient transport or reluctance to impose on friends and family. The worker also pointed out that younger people in some of these communities may also have held back from needed treatment in regional centres (such as contraceptive advice) because of the difficult of conveniently accessing the nearest regional centre by public transport.



2.1.2 Population: Beaufort to Kaniva Corridor

The last published census results, for the 2011 census, will shortly be superseded by 2016 census figures. However, more recent ERP (Estimated Resident Population) figures are available for many communities based on Social Profiles compiled by the Victorian DHHS.

The following is an overview of these figures for the Beaufort to Kaniva Corridor.

Table 1: Population of towns directly served by the Kaniva rail corridor

		DHHS	2012	
	2011 Census	Town	Catchment	Composite
Towns on the rail corridor				
Beaufort	1406	1023	2352	3375
Ararat	8076	7128	4446	11574
Stawell	6150	5765	2552	8317
Murtoa	991	795	991	1786
Horsham	15292	15568	3519	19087
Dimboola	1662	1385	626	2011
Nhill	2178	1887	2281	4168
Kaniva	1061	758		1061
Serviceton	270			270
Total on rail	**37086**			**51649**

These figures suggest that there are likely to be between 52,000 and 55,000 people directly served by the Beaufort to Serviceton rail corridor. Another 10,300 are in towns connected to the corridor, as shown in the following table.

Table 2: Population of towns connected to the Kaniva rail corridor

Towns	2011 Census	DHHS Town	DHHS Catchment	Composite
Halls Gap	613	307		613
Rupanyup	549			549
Natimuk	659			659
Jeparit	632			632
Rainbow	525	523	456	979
Warracknabeal	2745	2326	1746	4072
Hopetoun	555	554	1266	1820
Edenhope	976	705		976
Total Connected	**7254**			**10300**
Towns on Corridor	**As per Table 1**			**51649**
CORRIDOR TOTAL	**44340**			**61949**

Combining populations of towns on the corridor and those connected by coach to the corridor, provide an estimated resident catchment population of about 62,000. To this must be added visitors to the area for business or leisure purposes, tourists and travellers passing through the region. The figure is certainly enough to support a train service at least three times daily, as the following comparisons indicate.

Table 3: Comparison of population on the Kaniva rail corridor with other corridors that are currently provided with V/Line long distance train services

V/Line long distance route	Towns on the line	Population (Towns directly served)	Trains per day (weekdays)
Beaufort to Serviceton	As listed above	51,649	None beyond Ararat
Bendigo to Swan Hill	Pyramid (419) Kerang (2490) Lake Boga (719) Swan Hill (9894)	13,522	2 trains plus 3 coach/train services
Geelong to Warrnambool	Colac (8696) Terang (2348) Camperdown (3462) Warrnambool (28413)	42,919	4 per day plus 1 daily coach via Ballarat

2.1.3 Population: Ararat to Portland Corridor

The following is an overview of comparable figures for the Ararat to Portland Corridor.

Table 4: Population of towns directly served by the Portland rail corridor

Towns		DHHS	DHHS	
	2011 Census	Town	Catchment	Composite
Ararat	8076	7128	4446	11574
Willaura	585	273	0	585
Dunkeld	461	461	0	461
Hamilton	10104	9373	5748	15121
Branxholme	386	0	0	386
Heywood	1745	1267	2418	3685
Portland	9950	10149	2831	12980
***Total on Rail*:**	**31307**			**44480**

These figures suggest that there are likely to be some 44,500 people directly served by the Ararat to Portland rail corridor. Another 6,000 are in towns connected to the corridor, as shown in the following table.

Table 5: Population of towns connected to the Portland rail corridor

Towns	2011 Census	DHHS Town	DHHS Catchment	Composite
Casterton	1445	1434	1485	2919
Coleraine	1243	907	1430	2337
Dartmoor	263	262		263
Nelson	311			311
Total Connected				**5830**
Towns on corridor	**As per Table 4**			**44480**
CORRIDOR TOTAL				**50310**

Combining populations of towns on the corridor and those connected by coach to the corridor, provides an estimated resident catchment population of about 50,000. A further 24,000 people in Mount Gambier could be potential occasional users of the corridor, depending on the extent to which the service was superior to the existing rail/coach service from Mount Gambier via the Hamilton Highway and Ballarat station. To this must be added visitors to the area for business or leisure purposes, tourists and travellers passing through the region. The figure is certainly enough to support a train service at least three times daily, as the following comparisons indicate.

Table 6: Comparison of population on the Portland rail corridor with other corridors that are currently provided with V/Line long distance train services

V/Line long distance route	Towns on the line	Population (Towns directly served)	Trains per day (weekdays)
Ararat to Portland	As listed above	44,480	None beyond Ararat
Bendigo to Swan Hill	Pyramid (419) Kerang (2490) Lake Boga (719) Swan Hill (9894)	13,522	2 trains plus 3 coach/train services
Geelong to Warrnambool	Colac (8696) Terang (2348) Camperdown (3462) Warrnambool (28413)	42,919	4 per day plus 1 daily coach via Ballarat

This corridor, unlike the Ballarat to Serviceton corridor, does not lie on a direct radius from Melbourne, as the rail route diverts to the south-west from Ararat to Hamilton and Portland. Therefore, whether a time competitive rail service could be introduced south of Hamilton on the Portland line is very much a question of comparative travel times and attainable rail and road speeds.

At present, permitted train speeds between Ballarat and Ararat are 130 km/h compared with a maximum freeway speed of 110 km/h. Providing at least a 130 km/h operating speed can be provided between Ararat and Horsham, passenger train service on the Ballarat to Serviceton corridor could offer time savings compared with road transport. However, it would be much more difficult to provide a competitive journey from stations south of Hamilton, considering the more direct road route to Ballarat offered by the Hamilton Highway, and the alternative public transport route offered by the connecting coach from Portland to Warrnambool.

The following table provides comparisons of a journey from Hamilton to Melbourne using rail via Ararat, compared with direct road coach to Ballarat and rail from there to Melbourne:

Table 7: Comparative journey times Hamilton to Melbourne

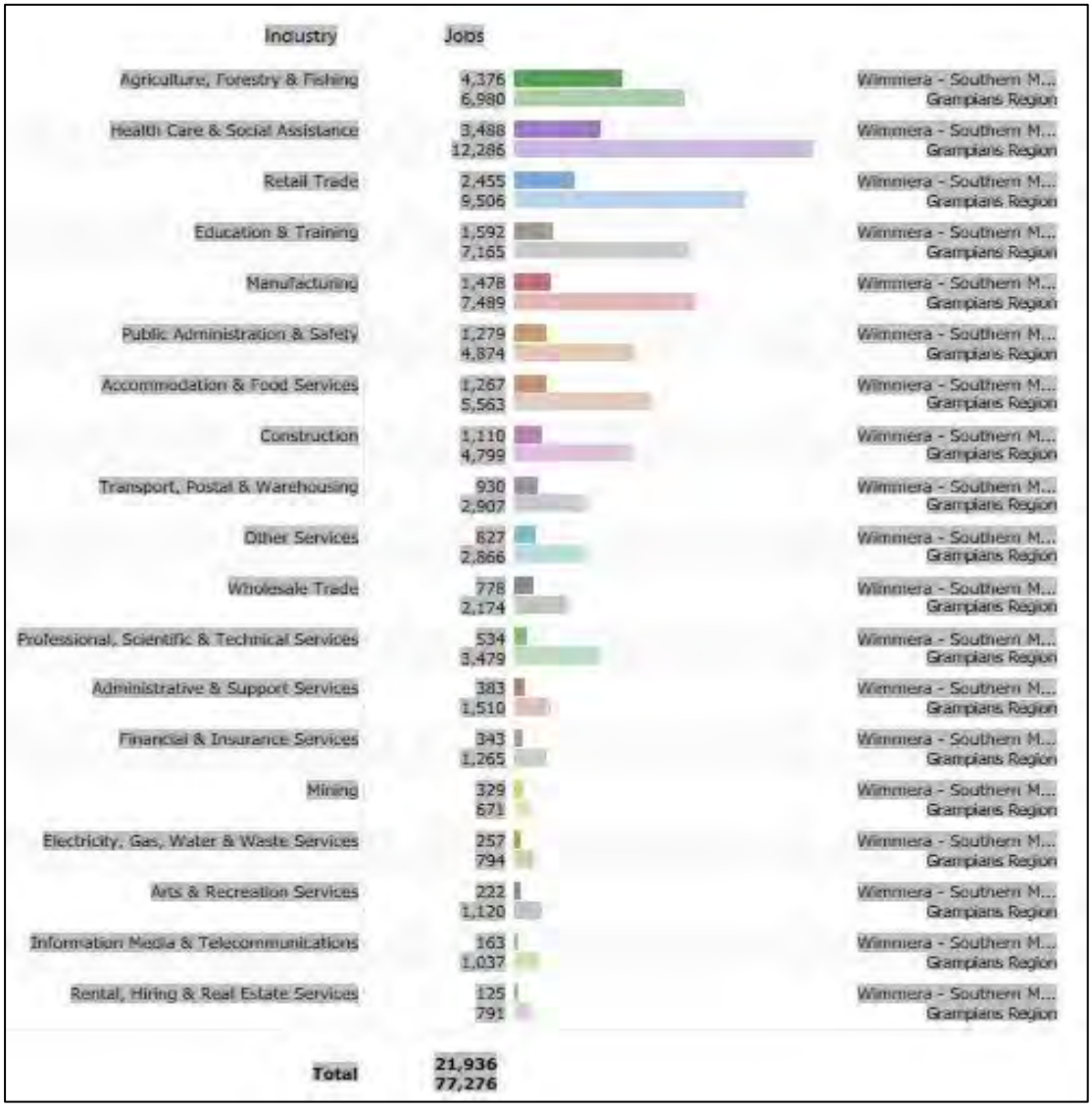
Journey	Travel Time (Minutes)
Hamilton to Melbourne via existing road coach to Ballarat	224 to 243 minutes
Hamilton to Ararat likely road coach running time	125 minutes
Ararat to Melbourne current train operating time	128 to 158 minutes
Current time for road/rail journey from Hamilton to Melbourne via Ararat	257minutes
Ararat to Melbourne running time after rail upgrades by 2026	144 minutes
Hamilton to Ararat rail running time if track upgraded	75 minutes
Possible rail journey Hamilton to Melbourne after upgrades by 2026	212 to 236 minutes
Improvement over current coach/rail service	8%

These figures indicate that there is potential for a useful time savings benefit in providing rail access via Ararat at least as far south as Hamilton.

2.2 Access to Jobs and other Employment Related Travel

Employment in the Region

The following table from the Remplan Wimmera Economic Profile sets out and compares the main employment categories within the Wimmera (top line) and Grampians (bottom line) regions.



From the above data, it will be noted that the following are the main employment categories in each sub-region:

Table 8: EMPLOYMENT IN THE REGION - Largest Employment areas and numbers of jobs

EMPLOYMENT CATEGORIES	WIMMERA-SOUTHERN MALLEE Rank	WIMMERA-SOUTHERN MALLEE No of Jobs	GRAMPIANS Rank	GRAMPIANS No of jobs
Agriculture, Forestry and Fishing	1	4376	5	6980
Health Care and Social Assistance	2	3488	1	12,286
Retail	3	2455	2	9506
Education and Training	4	1592	4	7165
Manufacturing	5	1478	3	7489
Public Administration	6	1279	6	4874

Although there are variations in the relative importance of employment sectors in the regions, the employment sectors of health care and social assistance, retail, education and training and manufacturing amount together to 67% of total employment in the Wimmera-Southern Mallee region and 62.5% of total employment in the Grampians region. These are all sectors that tend to be clustered around towns and cities in the region, and activities where both employees' and clients' travel can often be provided by the rail system. Employment in agriculture, fishing and forestry, construction and tourism tends to be more dispersed and is likely to be supported by road transport, although rail freight has a role to play when primary products are subject to transport for processing elsewhere, as is the case with wheat and barley, mineral sands, logs and processed food products.

The important role of employment in health and education is a reminder that there are large sectors of employment in the region where employees, customers and clients can access schools, hospitals and similar institutions by rail and other forms of public transport if services are provided when and where they are needed.

2.3 Access to Health Services

Access to health services is a critical public transport issue across the region. Residents with ill-health conditions need to be able to travel for diagnosis and treatment (according to the severity of their condition) to a district, regional or metropolitan hospital or specialist's rooms. The atrophy of public transport services in parts of the region means that this need is too often not served by the infrequent, non-existent or inconvenient public transport services that have survived, but by a variety of improvised substitutes. Many people in the older age groups and in socially or economically disadvantaged communities must rely on transport provided by such means as:

- Reliance on friends, family or neighbours
- Reliance on volunteer transport services that exist in some communities. In one town, such volunteer services are no longer able to transport residents beyond the town boundary; in another, no less than 59 volunteer return trips of 400km were undertaken in a month to get patients to treatment.
- Use of a community car or community bus – subject to competition with many other local needs and users

These trips, even when available, impose financial and practical difficulties on volunteer drivers, patients and patients' spouses or partners. After the long trip to Melbourne, it can be necessary to stay overnight before an appointment and overnight after the appointment – up to 6 days' accommodation for a trip that could in the past have be accomplished by a return train trip to Melbourne in one day.

In one instance, patients rely on a private bus provided by a specialist to transport them to Warrnambool as there is no other way they can access treatment. This is an example of widespread improvisation in the absence of effective public transport, whereby schools, medical facilities, local councils and community organisations find themselves in the long-distance transport business because the state has not fulfilled its public transport role, or provided a token service that is too slow or inconvenient to provide the access rural citizens' need.

In one community, the local supermarket provides only a small range of fruit and vegetables and residents must travel by coach to a regional centre some 34-km distant. However, the coach leaves town early in the morning and the return coach does not leave the regional centre until 17.40. As there is no longer a taxi service in the town in question, elderly citizens can face a long early morning and later night walk through hilly streets to access the coach -followed by a long day in the regional centre. Consultants were advised that the health of community members was being adversely affected by lack of access to medical treatment and to

fresh fruit and vegetables. Coach service standards are urgently needed that will provide residents in rural towns with workable access to regional centres – such standards are proposed later in this Report.

The frustration that the above circumstances produce can be seen in the following contribution, which was from one of the less distant local government areas:

"In looking at transport it is a bit of a conundrum locally due to:-

- *Disadvantaged community (I think we are number 8 and previously number X in the state as far as SEIFA Index) with low household incomes*
- *People living in cheap housing in small communities which don't have access to public transport*
- *Most have old cars and cannot afford to upgrade*
- *Poor telecommunications connectivity in many cases, and the ability for many to pay what telecommunications retailers charge for services in these small towns is more than larger population centres. More affordable and accessible telecommunications would be one way forward as developing financially viable public transport routes is going to be challenging*

We do provide a community car … for people requiring transport to Ballarat for medical appointments. Volunteer drivers are coordinated through our resource centre, who must set up vehicle arrangements in conjunction with their other duties (visitor information and library services + community hub activities)"

2.4 Access to Education Opportunities

Public transport services play an important role in transporting secondary and tertiary students to their schools, colleges, TAFEs and universities. Such students often do not own or have access to a motor vehicle. If they wish to remain living at home, (often a necessity in view of the high cost of renting alternatives) the quality of available public transport services will determine the extent of the educational opportunities open to them.

The following table shows examples of the journey time requirements for a student living in Ararat, Horsham or Hamilton, depending on whether the student studies at Federation University, Mount Helen, Longerenong, Horsham or South Western TAFE.

Table 9: EXAMPLES OF JOURNEY TIMES [each way] FOR A TERTIARY STUDENT FROM ARARAT, HORSHAM or HAMILTON

ORIGINATING AT… / HEADING TO…	ARARAT	STAWELL	HORSHAM	HAMILTON
Federation University, Ballarat (Mount Helen campus)	102 minutes	140 minutes	235 minutes	213 minutes
Longerenong College, (Skill invest), Henty Highway (Horsham)	116 minutes	79 minutes, but only bus leaves Stawell at 12.41 pm	10 minutes if service provided	420 minutes via Ballarat
South Western TAFE (Hamilton)	270 minutes via Ballarat. Would be 175 minutes direct but no direct morning coach	297 minutes (via Ballarat) Would be less if direct morning service provided via Ararat	349 minutes (via Ballarat) Would be less if direct morning service provided via Ararat	15 minutes

(Based on a journey on a weekday, aimed at an early morning arrival at destination, using PTV journey planner for Bus and Train journeys)

These times are unacceptably long, and render most of the possible journeys above impractical. The journey from Horsham to Federation University Mount Helen campus, for which 235 minutes is required, is 198 km and currently takes four hours, making study at this location impractical for a Horsham student. With existing VLocity railcars the journey instead would take about two hours if operated at similar average speeds to the Bendigo line. In Germany, the 151-km journey of comparable length from Hamburg to Hannover takes 70 minutes. Introducing German train speeds would allow students and workers from several towns in the region towns to study or work in Ballarat vicinity within reasonable travelling times, but even if the 106 km/h average speed on the Bendigo line were delivered, a great many more residents would have wider employment and study choices. Certainly, students from Ararat and Stawell should be able to reach Mount Helen in an hour and a half, making study at Ballarat practicable while still living at home.

Longerenong College at Dooen, operated by SkillInvest, is also an important education and training destination for the region. Dooen is a station that could be served by a reintroduced passenger train service between Ararat and Horsham, although it is reasonably close to Horsham so that a minibus or taxi from Horsham is a more likely option. Currently there is a bus service past the end of Longerenong Rd, about 5 km from the college. Longerenong advised us that it is accepting increasing numbers of international students who need to find their way to the college by public transport, as do their parents who attend for graduation and other occasions. As to local students, improvements in rail and coach services on the corridor will extend the radius from which it will be feasible for students to attend the college and live at home. Federation University offers a post-graduate course in nursing at Horsham, and has a facility, currently disused, at Stawell. At Hamilton, South West Institute of TAFE offers post-secondary and TAFE qualifications and draws students from Portland, Ararat and other regional locations. Current public transport arrangements to Hamilton from these locations need improvement.

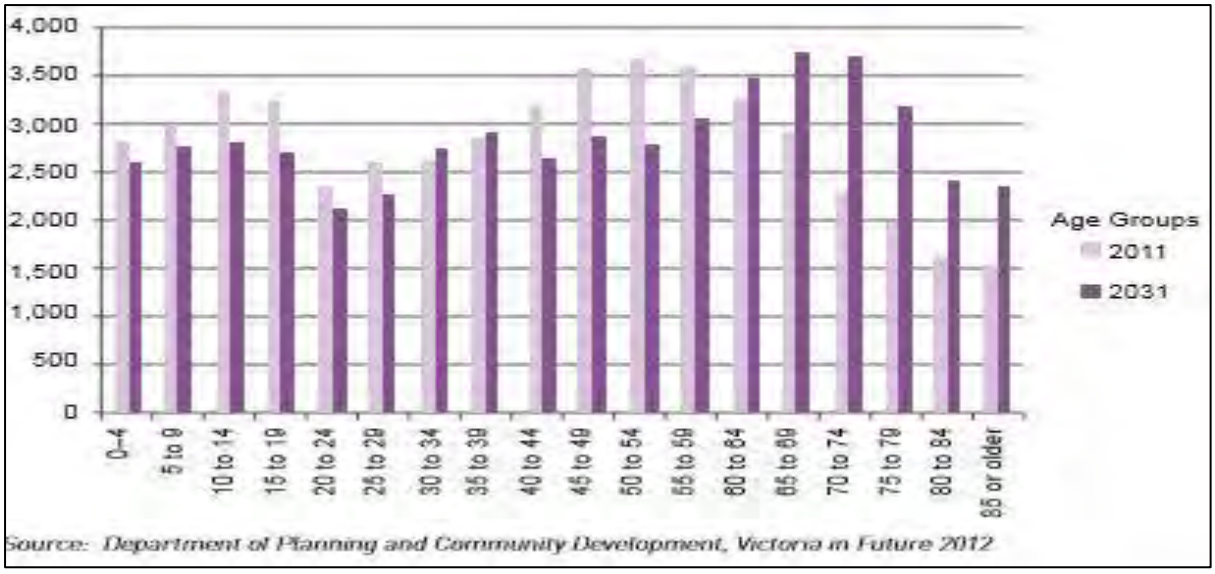
The extent of trade training outside Ballarat is limited, so apprentices from the region are often required to undertake several weeks' offsite training in Ballarat or Melbourne on a regular basis. A faster and more direct public transport service would assist these apprentices to complete their training in greater safety than would be involved in frequent car journeys on the Western Highway.

Secondary students are also significant users of public transport services in the corridor, although in several cases schools have introduced their own charter coaches as a substitute for unsuitable public services. A wide range of different secondary education opportunities is available in the region, with private schools at Ballarat and Hamilton (with 3 private schools), secondary colleges, community colleges or high schools at Ararat, Balmoral, Edenhope, Goroke, Hamilton, Hopetoun, Horsham, Kaniva, Murtoa, Nhill, Portland, Rainbow, Stawell and Warracknabeal as well as at Ballarat and Beaufort and several special schools for example at Horsham and Hamilton. This choice of schools is desirable from an educational standpoint, but a variety of transport options is needed. Dedicated school buses play a central role, but public rail, bus and coach services also can have a role to play in allowing students to reach their school of choice.

2.5 Aging of the Population – Transport Requirements

The region also requires improved public transport services because of its aging population. All local government areas exhibit a strong proportional increase in persons aged over 65, for whom access to leisure activities, family visits, medical and health care and social activities are critical to their social inclusion.

The following graph shows the aging of the population in the region, and the expected growth of the aged cohorts to 2031, which is very marked in some districts: -



It is highly desirable that the large and growing contingent of residents aged 65 and over has the choice of using public transport rather than being car-dependent. Improved rail services can greatly assist aged residents to access health facilities, visit relatives and avoid social isolation.

Aged persons may lack confidence to drive in heavy traffic and congested circumstances and this may circumscribe their quality of life. As they pass into older age and relinquish their motor vehicles they may become isolated socially and unable to easily access necessary medical care unless effective public transport opportunities exist. For most of those living in the region, they do not.

Aged persons frequently require access to specialised medical services that require them to travel to Ballarat or Melbourne – or in some cases to Naracoorte or Adelaide. Such journeys are extremely challenging for many people, and we were told on many occasions that such travellers far preferred a through train service without the requirement to use connecting coaches or to change trains. In the absence of such services we were told that some older residents preferred to remain untreated, while others relied on friends, family or volunteers. In some towns, such volunteer services are extremely stretched.

Improved public transport and longer distance through train services will not substitute for all of these journeys, but for older people in moderate health, a through train service would be adequate for many people and their carers.

An important factor in making such trips possible by public transport is the "last mile problem", in other words, how people with limited mobility or low levels of confidence can get to the station or coach stop in their community, and at the other end get from Ballarat or Southern Cross Station to their medical specialist or other destination. In Ballarat, a Ballarat Companion Health Service has been established, which provides a free service whereby a companion will meet a traveller at Ballarat Railway Station and help them get to hospitals, specialists and dental appointments. This project was a product of the Grampians Pyrenees Flexible Transport project and is a most important facility for addressing transport aspects of rural health access. At Southern Cross station, Travellers' Aid provides various forms of assistance.

As well as visits to Ballarat or Melbourne, access to the nearest regional centre is critically important for residents of smaller towns if they are to age in place in good health. There is significant scope to improve such access by public transport, and later in this Report we suggest coach service standards that would support such access by small and medium towns to their regional centres.

The following table illustrates the difficulty facing older residents in the Glenelg Shire in visiting Hamilton, Portland or Mount Gambier for medical appointments, shopping or visits to relatives. We spoke to several elderly residents of these towns who confirmed the reality of these difficulties. They told us directly of their difficulty in accessing fruit and vegetables and of keeping in touch with friends and relatives because of the coach schedules, which were not geared to their needs, particularly in winter.

Table 10: Case Study: Towns in Glenelg Shire - bus times for trips to Hamilton or Portland

City or Town	Regional Centre	Distance km	Bus departs town	Bus arrives Regional Centre	Trip Time mins	Time in Regional Centre	Bus Departs Regional Centre	Bus arrives town	Taxi available in town
Casterton	Hamilton	64	09.00	09.55	55	2 hr 40 or 3 hr 35 mins	12.35 or 13.30	13.25 or 14.25	No
Casterton	Mount Gambier	69	13.25	13.45 SA time (14.15 Vic time)	50	35 mins	14.20 SA time	15.39	Yes
Dartmoor	Portland	56	09.15	10.10	55	8 hrs 35 mins	18.45	19.35	No
Heywood	Portland	21	08.55	09.21	20-26	3 hrs 29 mins	12.50 or 18.45	14.30 or 19.05	No
Nelson	Portland Mount Gambier	65 37	Nil				Nil		No

PRACTICAL= GREEN POSSIBLE BUT DIFFICULT= YELLOW IMPRACTICAL = BLUE

2.6 Public Transport and Tourism

2.6.1 Public Transport Access to Tourist Destinations

Tourism is a critical economic growth segment for regional areas as tourist business provides an income stream largely immune from the seasonal and price variations that affect agricultural output and income.

The Grampians and Barwon South West Regions offer many outstanding tourist destinations that offer opportunities for regional economic development through hospitality and accommodation industries, but unfortunately most of these are accessible currently to car based tourists only. Improved public transport connections will be needed to better realise the region's tourist potential.

The following table notes some of the outstanding tourist attractions in the region and the extent of public transport access.

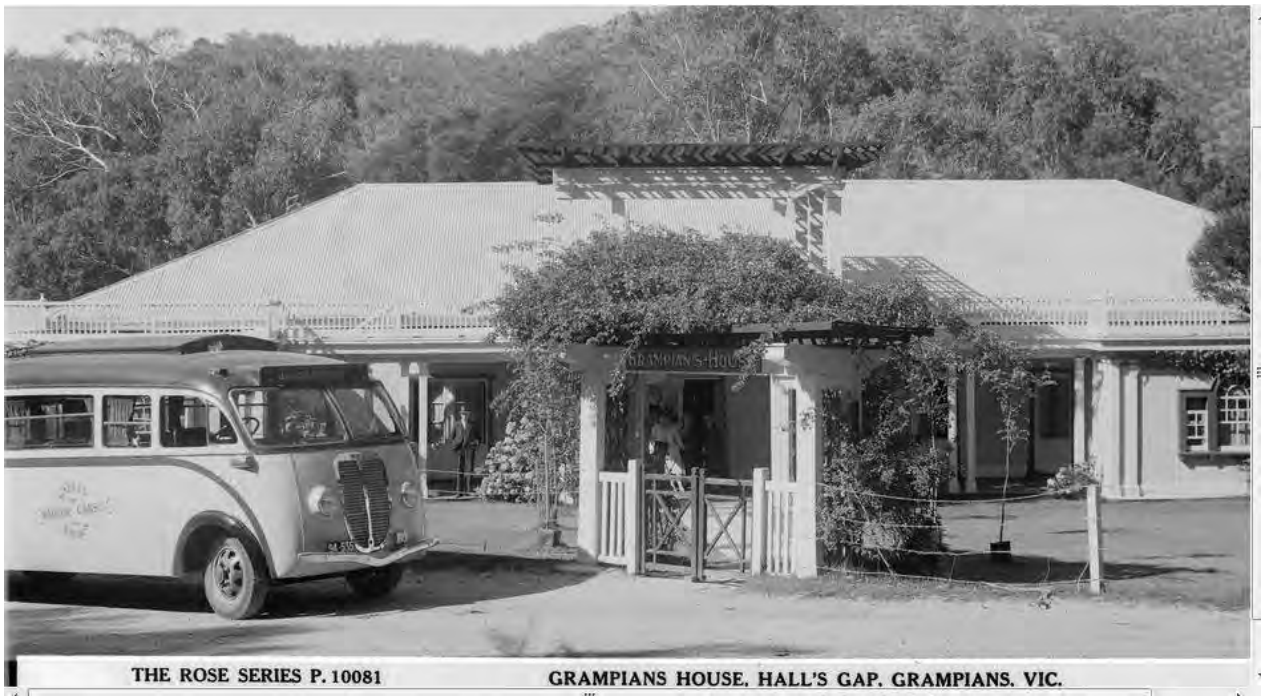
Table 11: Public transport access to tourist destinations

Attraction	Extent of Public Transport Access	Comments
Bike tourism in the region – Many attractive roads for bike based tourism	Very limited.	Considerable opportunities to develop bike based tourism in the region. Limited numbers of cyclists may travel to Ararat by train. Beyond Ararat the official V/Line position is that bikes may not be carried on coaches.
Edenhope/Harrow - Very old townships, (Harrow is Australia's oldest inland township); log lock-up, Johnny Mullagh Cricket Centre, Transport Museum, Sound and Light Show and annual aboriginal cricket match at Harrow, memorial to famous Aboriginal cricket team and annual Lake Charleygrark Country Music Festival near Edenhope	Edenhope is served by Horsham to Naracoorte bus, Mondays to Fridays. No service to Harrow or Balmoral.	No service to enable weekend visitors to Edenhope. No service to Harrow or Balmoral.
Lake Condah and Mount Eccles National Park – Unique natural beauty and indigenous cultural site with eel traps	No public transport access	Comment from the Sydney Morning Herald website, which had promoted Lake Condah: *"...just spent a lovely long weekend at Mt Eccles in Victoria after reading up on Lake Condah on your website. Mt Eccles was brilliant but, despite extensive information about the lake's history on your site, we couldn't find it!! Drove around for hours up every dirt track we could find (we had 5 different maps!!). Who would believe an entire lake could be so elusive? Found the old mission ruins easily enough but no information at all about how to get to the lake...no signposts, no contact numbers, no nothing. We understand that the lake is in the hands of the traditional landholders and after our experience this weekend it doesn't seem like they really want people to visit the lake. Perhaps you could add this info to your website or at least add further information as to how to access the lake as we were very disappointed that we missed out on seeing all those fab Koorie ruins…"*
Lakes and Wetlands in West Wimmera – Extensive natural wetlands with camping and birdwatching opportunities; Lake Charleygrark Country Music Festival	No public transport access.	Public transport access is also needed when the annual Country Music Festival at Lake Charleygrark takes place in February.

Grampians Peak Trail -This 144-km project is intended to provide a walking trail connecting the major peaks of the Grampians. It is recognised by the State as a priority opportunity for the region. Public transport access should be part of the design of the project	Currently the trail commences at Halls Gap, served by Sandlant and V/Line coaches and ends at Borough Huts campground. When completed, the trail will extend 144km from Mount Zero to Mount Abrupt at Dunkeld.	Public transport access should be designed and described in Grampians Peak Trail brochures and descriptions. This Report recommends reintroduction of passenger trains to Dunkeld, but coach access to Mount Zero will also be needed.
Little Desert – Unique desert flora and fauna including Mallee Fowl nesting, wildflowers, bushwalking and nature trail.	No local scheduled public transport access. Conservation Volunteers Victoria, the operator, offer package tours from Melbourne.	No public transport access.
Mount Arapiles – Renowned climbing destination	The Monday to Friday Horsham to Naracoorte coach will deviate via Mount Arapiles on request, leaving Horsham at 14.20. Return service from Mount Arapiles Monday to Friday at 09.50 on request.	No weekend service to or from Mount Arapiles
Northern Grampians/Halls Gap - Outstanding natural beauty, bushwalking, waterfalls, holiday cottages, guest houses	Daily Sandlants coach connects at Stawell with the Overland train (twice weekly) and connecting V/Line coaches at 12.20, but service goes to Halls Gap town only; doesn't serve whole valley.	No weekend service to or from Halls Gap
Pyrenees Wine Region – Outstanding wineries and historic villages; accommodation including self-catering and bed and breakfast. Fine dining and wining.	Coach to Avoca at very inconvenient timings- access to Moonambel, Landsborough, Elmhurst and Amphitheatre quite limited. There are two coaches on Fridays and Saturdays from Ararat to Maryborough via Avoca (for example on Saturday at 07.07 and 15.08), which allow residents of the sub-corridor to access Maryborough or Avoca, but they do not provide feasible connections for tourists visiting the area.	No suitable weekend service for tourists wishing to visit the Pyrenees wine region.
Rail Trails –There are existing Rail Trails from Stawell to the Grampians and from Hamilton to Coleraine	Coach services are available to the start of these trails but the market is relatively undeveloped	No capacity for cycle tourists to be dropped and/or collected at start or finish of trails
Southern Grampians/Dunkeld - Fine dining, walking, climbing at Mount Abrupt, southern access to Grampians Peak Trail	Daily coach from Ballarat to Hamilton serves Dunkeld Daily coach from Ararat to Warrnambool	Good access by V/Line road coach
Volcano Region Unique prehistoric volcano fields	No public transport access	
Wartook Valley and Lake Wartook	No service. Nearest V/Line coach stop is Dadswell's Bridge.	There was a daily bus in 1948; today visitors must make their own arrangements

Improvement is clearly needed as to tourist access to the region by rail and connecting coach, as the holiday and tourist component among V/Line travellers on this corridor is very low. Higher tourist usage of V/Line

services will support improvements to service frequencies, and support local accommodation and hospitality ventures and employment. The current low level of public transport-based tourism in the region appears to be attributable to a range of factors, including inadequate passenger service offerings to allow pubic transport access to many of the region's key attractions, poor or non-existent coach and/or taxi connections, a complete lack of marketing of public rail and coach services as a means of accessing the region's attractions, and a view that public transport's functions do not include contributing to the region's tourist industry.



Public transport based tourism in the region has a long history, as this illustration from the late 1930s shows. Unfortunately, tourists today using public transport in the Grampians and Barwon-South West regions have very limited options. This deluxe coach, built by Cheetham and Borwick in Melbourne and operated by Parlorcars, had a full-length sunroof and luxury fittings, and provided Grampians House (pictured) with first class public transport access.

2.6.2 Public Transport and Cycling based Tourism

A growing section of the local tourist market is cycle based tourism, which is popular in many areas of the state. Cycling tourists can be accommodated on most V/Line long distance trains, but there is only limited accommodation for them on VLocity trains and no accommodation on connecting coaches unless the bike is dismantled and placed in the underfloor luggage area. Cyclists also would like to be able to book their bikes on to a trip, to avoid the possibility of being unexpectedly stranded. Cycling tourism is extremely consistent with other regional tourism goals, and V/line should work with tourism authorities to see what improvements can be made.

Although V/Line coaches carry bicycles in north east Victoria, the V/Line website indicates that their carriage is not permitted in the Grampians and Barwon South West regions:

"Bicycles can be carried for free on the following V/Line scheduled coach services, if there is space available. They will be accepted on a first-come, first-served basis only.

- *Beechworth - Wangaratta*
- *Bright - Wangaratta*
- *Corowa/Rutherglen - Wangaratta*
- *Mulwala/Yarrawonga - Benalla*
- *Wangaratta - Bendigo*

Bicycles are not permitted on any other timetabled V/Line coach services, with the exception of folding bicycles."

-V/Line website

The arrangements in north eastern Victoria reflect the development and promotion of rail trails in the area, as well as positive involvement from V/Line and the local coach operator. The Grampians and Barwon South West regions should consider emulating the approach at Wangaratta, where carriage of cycles on V/Line coaches is permitted, a cycle hub has been created, and cycling along rail trails has become a significant tourist activity. The Hamilton to Coleraine Rail Trail and the Grampians Rail Trail provide opportunities. The Rail Trails Australia website states, in relation to these trails, that access by train, bus and coach is available but this conflicts with advice provided by V/Line on their website. In relation to the Hamilton to Coleraine trail, public transport access is described as being by train, though the passenger train to Hamilton was withdrawn on 12 September 1981.

A user comment on the Grampians Rail Trail in October 2016 indicates that there is also work to be done on marketing and signage in relation to this trail:

> *Really disappointed by the lack of current communication about this rail trail. On Saturday I looked on this site for an update, checked the North Grampians Shire website and Facebook group. No updates in one and a half years. I sent a message to the shire and asked them to let us know if the trail was opened or closed. As we were staying in Dunkeld, we dropped into the information centre. The lady there had never heard of a rail trail in the Grampians. She tried to ring Halls Gap information, they didn't answer. So, we decided to risk it and go for it. On Sunday, we drove to Stawell (a 3 hour return trip) to try to find the trail. We could see part of it but there was no signage. We went to Stawell information. They were out of brochures but the lady there told us to go to Federation Park for the trail head. It was raining all day, so on Monday afternoon we returned, but there was no signage, no indication of a trail head. We rang the shire. They advised to cross the road and continue further down. I told the lady who answered my story and asked for the person responsible to return my call (haven't received a call back as yet). We soon found it and enjoyed the 11km immensely. Sad to see others don't seem to be doing it but I can see why! Get your act together Northern Grampians Shire Council. Get the trail revitalised and we will come! Finalise your negotiations with the sheep farmer! Communicate with Stawell, Halls Gap and Dunkeld information centres! Please facilitate this railtrails.org.au. Thank you*

2.6.3 Rail and coach service offerings.

As the examples in the above table demonstrate, rail and rail/coach services to several key destinations in the region do not serve the tourist well, and in several cases, do not permit visitors to make weekend visits to key destinations. A review of rail and coach services from the tourist point of view is required.

Added use of train and train coach services by holidaymakers and tourists can assist regional tourism, but also helps regular train and train/coach users. Extra demand supports the case for the provision of extra and more convenient services. At present, the tourist/holidaymaker component of travel in the corridor is so small that it provides no leverage. However, rail based holidays and tourism is strong worldwide and there is no reason for the region not to benefit from this in view of the V/Line rail and coach corridors along the centre of the region.

Sandlant Coaches in our consultation with them have proposed some limited and useful proposals for extensions to their Grampians services, to extend coach services beyond Halls Gap to the end of the valley, serving additional accommodation locations and permitting walkers to utilise the coach service as a starting point for walks. This is a valuable suggestion and more should be done to facilitate walkers' access to the Grampians and other areas, for example the Southern Grampians and Pyrenees, that are suitable for walkers. Sandlant Coaches made the valuable point to us that many Government supported services in the region are not funded to operate on weekends or public holidays, when tourists are likely to wish to visit the region. Public transport based walking and cycling are familiar activities in overseas areas of natural beauty but are not well supported in this region.

The arrangements provided for the Wimmera Roadways Horsham to Naracoorte coach to service visitors to Mount Arapiles by prior arrangement is commendable and there may be other opportunities for servicing tourist destinations that are yet to develop patronage levels that would justify scheduled public passenger services. Such arrangements need to be well marketed. For example, the Parks Victoria website Mount Arapiles page does not mention the arrangement for public transport access to this location although it does suggest international visitors get a myki Visitor Value Pack (which would be of no use to them in this instance and has no relevance to Mount Arapiles). It refers users to the PTV and V/Line websites. The PTV journey planner responds with the Horsham to Naracoorte bus times if asked to plan a journey to Mount Arapiles and mentions the requirement for prior booking and the relevant phone number. However, the V/Line website makes no reference to Mount Arapiles.

By 1948, there were daily buses to Lake Wartook, the Wannon Valley and other sites by operators in Stawell and Horsham. They also advertised services on Sundays and public holidays.

2.6.4 Website issues

There are three principal Victorian Government websites that tourists wishing to use public transport to visit the Grampians and Barwon Southwest regions can use – those of Public Transport Victoria, V/Line, and the

state government's tourism portal, *Visit Victoria*. These government websites provide variable information as to public transport access to the region. The *Visit Victoria* website – the state's primary tourist web portal – provides only cursory information about public transport access and refers users to the V/Line site. However, the V/Line site covers only V/Line services and does not include key destinations. The most comprehensive site is the PTV journey planner, as it contains both V/Line services and those of other providers.

There are also converse examples. For example, *The Overland* train (not operated by V/Line), is shown in the V/Line Ararat-Melbourne and Nhill-Melbourne card timetables but not on the PTV website, although carriage of Victorian passengers on *The Overland* is funded by PTV.

3. Current Rail and Road Coach Services

3.1 Overview of Current Public Transport services

Most public transport in the study area is provided by V/Line broad gauge trains between Melbourne and Ararat, road coach services contracted to V/Line and regional and town buses managed by Public Transport Victoria (PTV). Major centres, including Horsham, Hamilton and Portland. which previously enjoyed passenger trains, now rely on road coaches to meet their public transport requirements. (See map of V/Line rail and coach services at the end of this Section. The map does not include other regional coaches managed by PTV).

The southern part of the study area is also served by road coaches that connect with V/Line Melbourne-Warrnambool trains.

Great Southern Railway operates the bi-weekly standard gauge *The Overland* train from Melbourne to Adelaide with stops (on request) at some of the larger towns in the region.

The "Firefly Express" company schedules a daytime and overnight road coach service between Melbourne and Adelaide and this service also stops at major towns along the Western Highway if required.

Community buses and taxi services are available in some towns.

3.2 Train Services

3.2.1 Melbourne-Ararat services

V/Line train services between Melbourne and Ararat are operated with modern Diesel Multiple Unit (DMU) VLocity rolling stock. The trains consist of 3 car units with 222 seats. No first class is available on these trains and there is no refreshment service available. However, the quality of service is generally regarded favourably by passengers. The oldest of these units, which are still being delivered, dates from 2005.

Figure 1: V/line 3-carriage VLocity train and GSR *The Overland* at Ararat Station

The trains are permitted to travel at speeds up to 160 km/h between Melbourne and Ballarat (subject to local speed restrictions) and 130 km/h between Ballarat and Ararat (subject to local speed restrictions).

Train travel times compare favourably with car travel.

There are currently three return services between Melbourne and Ararat on weekdays and two trips on both Saturdays and Sundays. In addition to the through trains to Ararat, some VLocity trains to/from Ballarat also connect with road coaches to Ararat and beyond and there is one return road coach service between Melbourne and Ararat each weekday. Details applicable as from 29 January 2017, including connecting services from and to Horsham, are shown in Table 12 below.:

Table 12: Current rail and connecting coach times between Horsham, Ararat and Melbourne

To Melbourne (Up)				From Melbourne (Down)			
Horsham depart	Ararat depart	Ballarat arrive	Melb. arrive	Melb. depart	Ballarat depart	Ararat arrive	Horsham arrive
Weekdays							
05.45	07.16	08.07	09.39	08.17	09.43	10.40	12.05
06.58	08.17	09.40	11.39	09.17	11.00	12.16	13.35
Ex Stawell	10.40	11.52	13.39	12.17	13.43	14.40	16.03
10.45	12.26	13.16	14.39	13.17	15.00	16.11	To Stawell
14.15	15.32	16.55	19.10	16.33	17.50	19.09	
15.20	16.49	17.41	19.27	17.51	19.05	20.21	
	17.30	18.50	20.38	18.26	19.38	20.35	21.58
Saturdays							
05.40	07.13	08.04	09.38	08.14	09.43	10.39	12.37
	08.25	09.42	11.38	08.14	09.55	11.10	
07.35	09.22	10.45	12.58	12.14	13.55	15.17	16.32
	15.35	16.52	18.38	18.14	19.38	20.34	22.27
13.52	16.08	16.59	18.38	18.14	19.45	21.00	
Sundays							
06.40	07.50	09.07	10.38	08.14	09.41	10.37	12.37
	08.13	09.04	10.38	08.14	10.00	11.15	
	11.40	12.52	14.38	13.34	15.20	16.37	17.03
	15.35	16.52	18.38	15.14	17.05	18.20	
13.55	16.08	16.59	18.38	18.14	19.38	20.34	22.30
15.45	17.45	19.00	20.38	19.14	20.50	22.05	23.17
Trains shown in BLACK, Road coaches in RED							

Although the VLocity railcars are of recent construction and are extremely reliable units, the service is sometimes made unreliable by lack of capacity between Melbourne and Ballarat with delays caused by the intense use of the inadequate single track infrastructure in that section of the corridor. The Victorian

Government recently announced a significant program of line upgrading between Melbourne and Ballarat including duplication of some sections of the line. Details are in Section 5.1.3.

The design of these vehicles compromises Wi-Fi and mobile phone reception and they have only limited capacity to convey bikes. An engineered solution to the poor wireless reception is an urgent requirement to meet current passenger expectations to use time spent on train journeys productively in a way not possible on car trips.

3.2.2 Melbourne – Warrnambool Train Services

The Warrnambool train services are provided by locomotive hauled trains constructed in the 1980s with some carriages dating back to the 1950s.

Usually the trains comprise of a 4 car N set, which consists of ACN, BRN, BN and BZN carriages. These sets seat 282 passengers of which 52 are First Class. The overall design of the carriages used on these trains is dated and ride quality can be poor on some sections of track. These vehicles are due for early replacement or complete refurbishment. Bike accommodation is available in the ACN van

All trains are air-conditioned, and a mini-buffet service is provided, although the catering service is sometimes cancelled at short notice due to staff shortages.

The maximum line speed between Melbourne and Warrnambool for these train sets is 115 km/h. The current scheduled duration of journeys between Melbourne and Warrnambool varies between 211 and 231 minutes, which compares adversely with an average trip time of 195 minutes in 1985. Notwithstanding the much slower schedules presently in force, actual on-time performance of the Warrnambool line service has been poor in recent times with, for example, only 58.4% of trains arriving at their destination within 10 minutes and 59 seconds of scheduled time over a period of 12 months to February 2017, inclusive[1].

The current timetable for these services is shown in Table 13 below.

Table 13: Current rail and connecting coach times between Portland, Warrnambool and Melbourne

To Melbourne (Up)				From Melbourne (Down)			
Portland depart	W'bool depart	Geelong arrive	Melbourne arrive	Melbourne depart	Geelong depart	W'bool arrive	Portland arrive
Weekdays							
04 15	05.55	08.24	09.32	07.20	08.31	11.03	12 55
07 20	09.05	11.50	12.53	13.20	14.31	16.55	18 40
10 15	12.03	14.27	15.36	17.13	18.23	20.59	22 32
15 50	17.35	20.15	21.24	19.05	20.16	22.47	00 17
Saturdays and Sundays							
05 50	07.35	10.02	11.06	07.00	08.16	10.51	12 50
09 05	11.25	13.47	14.57	13.00	14.10	16.35	
15 35 Sunday only	17.25	19.47	20.57	19.00	20.10	22.35	00 07
Trains shown in BLACK, Road coaches in RED							

[1] PTV Track Record, February 2017, see https://www.ptv.vic.gov.au/about-ptv/ptv-data-and-reports/track-record-2/

3.2.3 *The Overland* train

Great Southern Railway operates the bi-weekly standard gauge *The Overland* train from Melbourne to Adelaide with stops (on request) at some of the larger towns in the region.

The train operates between Melbourne and Adelaide on a circuitous route via Geelong and Cressy. This route also involves very slow passage through Melbourne's western suburbs as the standard gauge line is routed via Newport and Tottenham and slow speeds apply to it. Travel time between Melbourne and Ararat is 3hr 35mins which compares very unfavourably with car travel and with the direct V/Line Melbourne –Ararat train services (2hr 08-38 min – see Table 22) This train is not a realistic option for travel except for the tourist market it serves; however, few tourists join or leave the train in the region.

The Overland uses locomotive-hauled rolling stock dating from the 1950s and 1960s. It includes a buffet service. The standard consist of *The Overland* train is - Locomotive, PHN or PCO power van, BJ (Red Premium Class), BJ (Red Premium Class + Disabled accommodation) RBJ (Cafe Car), BJ (Red Class + Disabled accommodation), BJ (Red Class), BJ (Red Class). The standard Red Premium car seats 39, Red Premium + Disabled seats 36, Standard Red seats 60 and red + disabled seats 58.

Although operated by a private company, *The Overland* receives a subsidy from the Victorian Government which ensures it is available for travel by Victorian roadside passengers to and from Ararat, Stawell, Horsham, Dimboola and Nhill at V/Line fares. 48-hours' notice of travel is required and signage provided at stations provides no guidance as to how such passengers could access the service. Accordingly, it is little used by passengers to or from its Victorian stops.

Figure 2: *The Overland* at Stawell Station

3.3 Road Coach Services

3.3.1 Coach services overview

Apart from V/Line's Ararat and Warrnambool train services and *The Overland* train, all regional and local public transport routes in the study area are now served by road coaches. Modern air conditioned, toilet and DDA compliant road coaches operate on these routes.

Coaches contracted to V/Line operate between regional towns and cities and are usually co-ordinated with Melbourne train services. Some other bus services operate under contracts directly administered by Public Transport Victoria (PTV). These mainly provide local connections within the larger towns and between nearby towns. A summary of the V/Line services is provided in Table 15 and the PTV administered services in Table 16.

Most V/Line contracted road coaches in the study area connect with the Melbourne – Ballarat –Ararat trains at Ballarat or Ararat or with Warrnambool line trains at Warrnambool or Terang. These connecting coaches serve Victorian towns as well as Naracoorte and Mt Gambier in South Australia. A daily V/Line Bendigo – Adelaide via Horsham road coach (*Daylink*) provides connection from Wimmera towns to Adelaide. The former service between Horsham and Hamilton has been discontinued.

Firefly Coaches Pty Ltd operates daytime and night-time services between Melbourne and Adelaide. These services will stop at major towns along the Western Highway if required - see Table 22. Fares are generally higher than V/line services and most journey times are longer.

The non-V/Line services are contracted by PTV and give access from smaller towns into the regional centres including Ballarat, Horsham, Ararat, Portland and Warrnambool. They also provide intra-town services in some of the larger towns. Many of the non-V/Line services operate on limited days only and are designed to give residents a few hours in the larger centres for shopping, medical appointments etc.

Some of the coach services are relatively infrequent and meet only the travel requirements of relatively few people and many areas are effectively isolated. Travel to the main centres including Ballarat, Geelong and Melbourne is often difficult and time consuming because of slow coach journey components.

3.3.2 V/Line coach services

Current V/Line rail and connecting coach services between Melbourne and Hamilton via Ballarat are shown in Table 14 below.

Table 14: V/Line Melbourne – Hamilton rail/coach services via Ballarat

To Melbourne (Up)			From Melbourne (Down)		
Hamilton depart	Ballarat arrive	Melbourne arrive	Melbourne depart	Ballarat depart	Hamilton arrive
Weekdays					
06.30	09.00	10.39	08.17	10.00	12.20
16.35	18.55	20.38	18.26	19.50	22.10
Saturdays					
07.30	10.00	11.38	09.14	10.55	13.15
16.30	18.50	20.38	18.14	19.50	22.10
Sundays					
07.55	10.20	11.58	09.34	11.15	13.35
16.30	18.50	20.38	18.14	19.50	22.10
Trains shown in BLACK, Road coaches in RED					

Table 15 shows the days of operation and the routes of all road coaches within the study area that are operated under contract with V/Line.

Table 15: V/Line Regional Road Coach Services

Route Description	Days of Operation (SEE NOTE)
Hamilton – Ballarat and vv	Daily
Ballarat –Mt Gambier and vv	Mon-Fri
Ouyen – Ballarat and vv	Mon-Fri, Sun
Murtoa – Rupanyup and vv	Mon-Fri
Halls Gap – Stawell and vv	Daily
Ararat- Warrnambool and vv	Tues, Fri, Sun
Nhill – Ballarat and vv	Daily
Mt Gambier – Warrnambool and vv	Daily
Warrnambool – Heywood and vv	Daily
Casterton – Warrnambool and vv	Mon-Fri
Casterton – Terang and vv	Fri & Sun
Bendigo – Adelaide (*Daylink*) and vv	Daily

NOTE: Daily includes one or more services each day

3.3.3 Non- V/line Regional Bus Services

Bus and coach services contracted to PTV operate within towns and cities in the study area. Some routes also link smaller towns to major regional centres. Many services operate only a few days per week and are intended to provide time in regional centres for shopping and personal business.

Town bus services also operate within Ararat, Stawell, Horsham, Warrnambool, and Portland, providing residents with access to local shops and amenities links to the regional train and road coach routes. Many local town services are operated by buses that are generally not used outside school hours and could be utilised for additional public transport services. Urban bus services do not always meet connecting trains and coaches and there is scope for further improvement of co-ordination.

Table 16 shows the days of operation and the routes of all road coaches within the study area that are operated under contract with PTV.

Table 16: PTV Contract Services

Shire	PTV Service	Days of Operation
Ararat	Ararat school service and Rainbow-Horsham	School days
	Ararat to Maryborough	Fri and Sat
	Lake Bolac to Ararat	Mon-Fri
	Ararat Prison	Sat – Sun
	Ararat town service	3 routes, operates Monday to Saturday
Hindmarsh	No PTV contracted services	
Horsham	Birchip- Warracknabeal- Horsham	Wed
	Horsham–Goroke-Edenhope– Naracoorte	Mon-Fri
	Mildura – Horsham Horsham – Mildura	Mon, Wed, Fri Tue, Thur, Fri
	Horsham school	Weekdays
	Kaniva to Horsham via Nhill	Wed
	Murtoa to Rupanyup	Wed and Fri
	Horsham town service	7 routes Monday to Saturday (limited Saturday service)
Northern Grampians	Stawell town	Weekdays
	Grampians Link Services – Stawell to Halls Gap	Daily
Yarriambiack	Mildura-Warracknabeal-Horsham Horsham-Warracknabeal-Mildura	Mon, Wed, Fri Tue, Thur, Fri
West Wimmera	Horsham–Goroke–Edenhope-Naracoorte	Mon-Fri
Glenelg	Portland school	School days
	Portland town service	2 routes Monday to Saturday (Saturday service am only)
Southern Grampians	Hamilton school town	School days
	Hamilton town	Weekdays
	Casterton – Hamilton school town	School days
	Hamilton town service	3 routes Monday to Saturday (Saturday service am only)

Figure 3: PTV contract service Horsham – Mildura road coach and trailer at Horsham Interchange

3.4 Taxi Services

Taxi services are based at the following towns in the Study area:

Ararat	Casterton	Dimboola	Horsham	
Stawell	Hamilton	Portland	Terang	Warracknabeal

The availability of taxi services throughout the Study area has decreased in recent years significantly reducing travel options and accessibility for residents of smaller towns. This materially affects the mobility of members of the community without car access, including teenagers and elderly and disabled residents.

3.5 Passenger Infrastructure – Stations, Interchanges, Coach Stops, Taxi Ranks

Interchanging between coaches and/or trains in the study area occurs at Ballarat, Ararat, Hamilton, Stawell and Horsham. Warrnambool station is the major interchange location for road coaches serving the south west part of the study area. Apart from Horsham, the interchanges are railway stations.

Ballarat is a major train-coach interchange for urban and regional bus services serving the study area and including routes to Geelong, Hamilton, Warrnambool, Bendigo, Mildura and Mount Gambier. Coaches connect with the frequent Melbourne train service. Transferring between coaches and trains using the southern platform is convenient but accessing the northern platform via either the footbridge or the Lydiard Street level crossing pedestrian path is not DDA compliant.

Ballarat station is a grand heritage building with reasonable facilities for travellers and the availability of refreshments on the southern platform is an added attraction. The Government proposes further improvements to the station including installation of a new footbridge with lifts to meet DDA requirements although the timing of this work is uncertain. Major redevelopment of the adjacent former goods yard site, including a new road coach interchange and commuter parking facilities, is also planned.

Figure 4: Road coach terminal at Ballarat Station

Figure 5: Refreshment room at Ballarat Station

Ararat station was upgraded to coincide with the reintroduction of passenger trains in 2004. The passenger waiting area is modest but reasonable. The building also includes a tourist information bureau.

Limited all-weather protection is provided between the train platform and the coach and bus loading area but this boarding area is not DDA compliant.

Figure 6: Road coach boarding area at Ararat Station

Hamilton railway station has been converted into a reasonable regional coach centre for the city. Experienced staff are available to guide travellers. The coach loading area is not DDA compliant.

The footpath from the town centre to the station is sub-standard and upgrading is required.

Figure 7: Boarding a road coach outside Hamilton Station

Stawell railway station provides a reasonable passenger facility but the coach loading area is not DDA compliant.

Figure 8: Interchanging at Stawell Station

Horsham coach interchange is based at the former police station in Roberts Avenue. There are modest passenger booking and waiting facilities. The facility is staffed during day times. The passenger boarding and alighting area is unsatisfactory and it is regularly necessary for buses to double-park in the street.

Figure 9: Horsham coach terminal – unsatisfactory arrangements for a major regional city

Figure 10: Signage at Horsham coach terminal – confusing distinction between bus and coach services and reference to a non-existent service to Horsham Station

Other sites

Coach stop facilities in smaller towns vary considerably. Good facilities are provided at Nhill where bus waiting facilities have been incorporated into an attractively designed building that includes passenger conveniences and a tourist information centre. Passenger facilities at many other sites are very basic – not DDA compliant, with no cover, seating nor adequate information. These are features now expected by today's travellers.

Figure 11: Tourism Centre and Coach Terminal at Nhill

Figure 12: Coach stop at Casterton – unsatisfactory for a town and local catchment of almost 3,000 people

The Overland train stops (on request) at Stawell, Horsham, Dimboola and Nhill. Road coaches also use Stawell and Murtoa stations.

While Stawell, Nhill and Dimboola stations provide reasonable waiting facilities for rail travellers, passenger facilities at Horsham and Murtoa are substandard.

3.6 Park and Ride Facilities

Parking is available at many rail stations with the major park and ride locations at Ararat, Wendouree, Ballarat and Ballan.

Our interviews have disclosed that many residents of towns in the study region beyond Ararat choose to drive to stations on the Melbourne to Ararat line as they prefer to access the more frequent VLocity services directly rather than use the connecting coach service. Residents do not necessarily drive to Ararat, but choose a station that provides an acceptable compromise of travel time, parking availability and perceived safety for themselves and for their vehicle while it is in the station parking area.

The following table reflects comments on some of the alternative points of interchange for car users joining the Ararat train service:

Table 17: Perceptions of alternative interchange locations between Ararat and Ballan

Location	Perceptions
Ararat	• Minimises car driving distance • Maximises the train component of a journey and can cut overall journey times • Reasonable parking availability at the station although station car park needs expansion if rail services are increased and attract more patrons • Only 3 trains per day.
Wendouree	• Allows access to a very frequent train service • Possible to park quite close to station at most times • Perceived safety issues for persons and vehicles in the car park • Enclosed nature of station car park viewed as threatening by some interviewees
Ballarat	• Parking very limited due to station in the centre of the city and adjacent projects under development • Difficult access from southern platform to car park for disabled travellers.
Ballan	• Maximum train frequency • Good access from M-8 Freeway • Large and well-lit parking area, recently extended

3.7 Main Western Corridor services

3.7.1 Melbourne – Ballarat – Ararat– Horsham – Dimboola – Nhill – (Adelaide)

This corridor forms the main trunk corridor from Melbourne to Western Victoria and through to Adelaide. It is broadly the towns served by the Western Highway and Melbourne to Adelaide railway.

The corridor can be sub divided into three segments-

- Melbourne commuting segment (Melbourne – Ballarat)
- Medium distance rail served segment (Ballarat to Ararat.)
- Regional segment, served by road coaches (Beyond Ararat)

The **Melbourne Commuting Segment (Bacchus Marsh/Ballan/Ballarat/Wendouree)** is well served by high frequency Melbourne – Ballarat/Wendouree trains that have benefitted from the reduced travel times since the completion of the Regional Fast Rail (RFR) project in 2006 and construction of the Regional Rail Link (RRL) in 2015. On weekdays, there are 19 trains and 2 coach services from Ballarat to Melbourne and 22 trains and 1 coach service from Melbourne to Ballarat, with an additional late train from Melbourne on Friday evenings. Further significant improvements to the rail infrastructure to increase the line capacity have been announced by the Government.

Patronage on the Melbourne Ballarat segment has grown significantly due mainly to service improvements. Rail travel times are generally faster than comparable road trips but vary considerably due to line capacity issues.

The commuting segment is not considered further in this Report except to recognise that line capacity and passenger loadings in this section can impact on the train performance and service quality of Ararat trains and noting that, for the reasons indicated in Table 17, many Wimmera residents also drive to Wendouree, Ballarat or Ballan.

The **Medium Distance Segment (Beaufort/Ararat)** has benefitted from the restoration of passenger trains between Ballarat and Ararat in 2004 and the line improvements between Melbourne and Ballarat mentioned above. Ararat now has three return V/Line trains each weekday. In addition to the trains, each weekday there are four bus services that connect with trains (or in one case to another bus) at Ballarat. The twice weekly *The Overland* train will also stop at Ararat if required. Saturday services to Ararat include two return trains and one co-ordinated bus train service with a change at Ballarat. On Sundays, there are two return trains and two bus train combinations. Patronage on Ararat services has grown steadily since the re-introduction of passenger trains and line upgrades. Train travel times from Ararat to Ballarat (51 mins) and Melbourne (as low as 2hr.12m) compare favourably with private car travel.

In the **Regional segment (beyond Ararat)** there are no train services apart from the bi-weekly *The Overland*. Public transport travel to and from towns within the segment and to Ballarat and Melbourne must be undertaken by a combination of trains and buses. Horsham has five daily trips each way to Melbourne including three which require a mode change at Ararat and two at Ballarat (one of which is to another coach). On Saturdays and Sundays there are three return coach/train services.

Journey times by the combined train and coach services are often not comparable with motoring times and public transport has difficulty in attracting patrons. Scheduled travel times between Horsham and Melbourne vary from 3hr 50min for journeys with a transfer at Ararat, 4hr 42min when transferring at Ballarat and 4hr 55 min for the through coach service. One late afternoon fast service from Melbourne on weekdays takes 3hr 27min with a change at Ararat. Beyond Horsham there are three coach services daily to and from Dimboola, one to Murtoa, two to Nhill and one to Kaniva. For the regional services where the entire journey is undertaken by coach the travel times are invariably much slower than comparable private motoring or what could be achieved realistically by modern trains running on high quality infrastructure. Examples are shown in Table 18 below.

TABLE 18: Schedule times (fastest weekday) key centres Ararat and beyond to Melbourne

City/Town	Mode	Service Operator	Interchange Location	Weekday Services to Southern Cross (each way)	Fastest time to Southern Cross hr:min	Travel time by car to Southern Cross (light traffic) hr:min
Ararat	Train (*Overland*) Train Bus/train Bus Bus	GSR V/Line V/Line V /Line Firefly	 Ballarat	2days/week 3 3 1 1	3:19 2:13 3:08 3:38 3:30	2:06
Stawell	Train (Overland) Bus/Train Bus/Train Bus Bus	GSR V/Line V/Line V/Line Firefly	 Ararat Ballarat	2 days/week 3 2 1	3:54 3:04 3:49 4.05	2:28
Horsham	Train (Overland) Bus/Train Bus/Train Bus Bus	GSR V/Line V/Line V/Line Firefly	 Ararat Ballarat	2 days/week 3 1 1 2	4:52 3:54 4:41 4:55 4:30	3:15
Dimboola	Train (Overland) Bus/Train Bus/Train Bus Bus	GSR V/Line V/Line V/Line Firefly	 Ararat Ballarat	2 days/week 1 1 2	5:16 na 5:14 5:30 5:00	3:40
Nhill	Train (Overland) Bus/Train Bus/Train Bus Bus	GSR V/Line V/Line V/Line Firefly	 Ararat Ballarat	2 days/week 1 2	5:45 na 5:44 na 5:30	4:03

3.7.2 Services to Towns in Study Area

Table 19 below shows the current provision of public transport to and within the towns of the study area.

TABLE 19: Services available in Study Area towns

Town/ City	Train	Town Bus	Taxi	Train or Regional Bus Route
HORSHAM RURAL CITY				
Horsham	Overland	yes	yes	Melbourne –Geelong-Melbourne (Train) Melbourne-Ballarat-Horsham–Dimboola- Nhill Horsham – Warracknabeal – Birchip Horsham –Murtoa-Donald Horsham – Kaniva via Dimboola Horsham – -Natimuk, Goroke, Edenhope – Naracoorte Adelaide – Horsham – Bendigo Horsham – Mildura Melbourne- Adelaide (Firefly coaches)
Natimuk	No	No	No	Horsham –Natimuk- Naracoorte

ARARAT RURAL CITY				
Ararat	Overland V/Line	Yes	Yes	Melbourne –Geelong-Adelaide (Train) Melbourne – Ballarat – Ararat (Train) Ballarat- Ararat –Horsham – Dimboola - Nhill Ballarat – Buangor – Ararat Halls Gap – Melbourne (via Stawell, Ararat, Ballarat) Ballarat- Ararat –Hopetoun-Ouyen Ararat – Lake Bolac Ararat – Elmhurst- Avoca – Maryborough Ararat – Stawell Ararat – Warrnambool Ballarat –Ararat – Stawell
Willaura	No	No	No	Ararat – Lake Bolac
GLENELG SHIRE				
Dartmoor	No	No	No	Warrnambool – Portland – Heywood- Dartmoor- Mt Gambier
Heywood	No	No	No	Ballarat – Hamilton – Coleraine – Casterton – Mt Gambier
Nelson	No	No	No	
Portland	No	Yes	Yes	Warrnambool – Portland – Heywood- Dartmoor- Mt Gambier Hamilton – Portland
HINDMARSH SHIRE				
Dimboola	Overland	No	Yes	Melbourne-Adelaide (Train) Ballarat- Horsham – Dimboola - Nhill- Kaniva Adelaide – Horsham – Bendigo
Jeparit	No	No	No	Horsham - Hopetoun
Nhill	Overland	No	No	Ballarat- Horsham – Dimboola - Nhill- Kaniva Adelaide –Nhill - Horsham – Bendigo
Rainbow	No	No	No	Horsham - Hopetoun
NORTHERN GRAMPIANS SHIRE				
Hall's Gap	No	No	No	Ararat – Halls Gap Stawell – Halls Gap
Stawell	Overland	Yes	Yes	Ararat- Stawell- Horsham – Dimboola - Nhill- Kaniva Stawell – Halls Gap
SOUTHERN GRAMPIANS SHIRE				
Branxholme	No	No	No	Portland - Hamilton
Casterton	No	No	Yes	Ballarat – Hamilton –Coleraine – Casterton – Mt Gambier Warrnambool – Hamilton –Coleraine - Casterton – Mt Gambier
Coleraine	No	No	No	Ballarat – Hamilton –Coleraine – Casterton – Mt Gambier Warrnambool – Hamilton –Coleraine - Casterton – Mt Gambier
Dunkeld	No	No	No	Ararat – Dunkeld – Warrnambool
Hamilton	No	Yes	Yes	Ballarat – Hamilton –Coleraine – Casterton – Mt Gambier Warrnambool – Hamilton –Coleraine - Casterton – Mt Gambier
WEST WIMMERA SHIRE				
Edenhope	No	No	No	Horsham – Natimuk, Goroke, Edenhope - Naracoorte
Kaniva	Overland	No	No	Ballarat- Ararat – Horsham – Murtoa – Dimboola – Nhill- Kaniva Adelaide – Kaniva – Horsham – Bendigo
YARRIAMBIACK SHIRE				
Hopetoun	No	No	No	Horsham – Warracknabeal – Hopetoun - Mildura Ballarat – Warracknabeal – Hopetoun - Ouyen
Murtoa	No	No	No	Ballarat- Ararat – Horsham – Murtoa – Dimboola – Nhill- Kaniva
Rupanyup	No	No	No	Ballarat – Warracknabeal – Hopetoun - Ouyen
Warracknabeal	No	No	Yes	Ballarat –Warracknabeal - Ouyen Horsham – Warracknabeal – Hopetoun - Mildura

Note: The twice weekly *The Overland* train may not stop at Ararat, Stawell, Horsham and Nhill stations unless pre-booked.

A comparison of travel times from regional towns to Melbourne shows that public transport times compare unfavourably with corresponding journeys by car. However, it is noted that the car travel time is an estimate for driving in light traffic conditions and probably underestimates the car journey time in peak periods.

TABLE 20: Scheduled travel times to Melbourne (V/Line and PTV services only)

Town/ City	Travel Time to Melbourne (weekdays)		Public transport No. of services to Melbourne (each way)		
	Train/ Bus timetable (min-max) hr: min	Travel time by car in light traffic hr:min	Weekdays	Saturdays	Sundays
HORSHAM RURAL CITY					
Horsham	3:54-4;55	3:15	5	3	3
Natimuk	4.39	3:41	1	0	0
ARARAT RURAL CITY					
Ararat	2:13-3:55	2:07	6	3	4
Willaura	4.45	2:33	1	1	
GLENELG SHIRE					
Dartmoor	6:26-6:38	4:21	1	2	1
Heywood	5:41-5:47	3:56	2	2	1
Nelson	na	4:48			
Portland	5:17-5:346	4:06	4	2	3
HINDMARSH SHIRE					
Dimboola	5.14-5:30	3:40	2	2	3
Jeparit	6.15	4:30	1 (Wed, Thur)		
Nhill	5.55-6:35	4:03	2	2	2
Rainbow	6.35	4.50	1 (Wed, Thur)		
NORTHERN GRAMPIANS SHIRE					
Hall's Gap	3:29-4:50	2:50	2	1	2
Stawell	3:04-3.55	2:28	6	3	4
St Arnaud	3:50-4:25	2:37	3	2	1
SOUTHERN GRAMPIANS SHIRE					
Branxholme	6.34	3:42	1		
Casterton Via Ballarat Via Warrnambool/Terang	 4.59 5:54-6:36	 4:12 5:03	 1 1		 1
Coleraine Via Ballarat Via Warrnambool/Terang	 4:35 5.29-6.11	 3:50 3:52	 1 1		 1
Dunkeld	3.38-4.43	3:00	2	2	2
Hamilton Via Ballarat Via Warrnambool/Terang	 4:03-4.09 4:56-5:36	 3:00 3:54	 2 1	 2	 2 1
WEST WIMMERA SHIRE					
Edenhope	6.09	4:19	1		
Kaniva	7.05	4:28	1	1	1
YARRIAMBIACK SHIRE					
Hopetoun	6.09	4.54	1		1
Murtoa	4:39	3:11	2	2	2
Rupanyup	4.18	3.37	1		1
Warracknabeal	4.54	3.41	1		1

3.7.3 Coach/Train Interchange Connections

Scheduled Interchange time can add a significant extra time to the overall public transport trip. The time scheduled for interchanging is determined by –

- customer considerations (toilet and refreshment beaks)
- operator factors (labour regulations)
- timetable considerations ("end to end" connections make it difficult to closely time services in both directions and priority is usually giving to minimising time in the peak direction). Recent timetable changes in the study area have generally reduced transfer times at interchanges reducing the overall trip times for travellers to Melbourne, however there is still some scope for further reductions.

Table 21: Connection times at Interchanges

interchange	Connecting Bus Routes	Scheduled interchange times Bus/Train mins
Ballarat	• Ararat–Horsham–Dimboola •Halls Gap * Hamilton–Coleraine–Casterton – Mt Gambier Warracknabeal - Ouyen Warrnambool Donald	11-51 20 15-20 20-26 18-35 10-40
Ararat	•Horsham –Dimboola –Nhill •Halls Gap •Warrnambool	10-24 8-18 20-41
Stawell	Halls Gap	8-18
Horsham	Edenhope	45-75
Warrnambool	Casterton –Mt Gambier	15-24
Terang	Casterton	8-10

3.7.4 Links to Adelaide

The western part of the study area has significant linkages to South Australia, particularly Adelaide, for educational and medical services. Public transport links from the Wimmera to Adelaide are provided by road coaches along the Western Highway (Firefly and *DayLink*) and *The Overland* train. (See Table 22). It is also possible to travel by coach from the western district to Adelaide via Mt Gambier but Victorian and South Australian road coach timetables are not co-ordinated and a through service in one day is not possible.

Table 22: Train and Coach Connections between Wimmera Towns and Adelaide

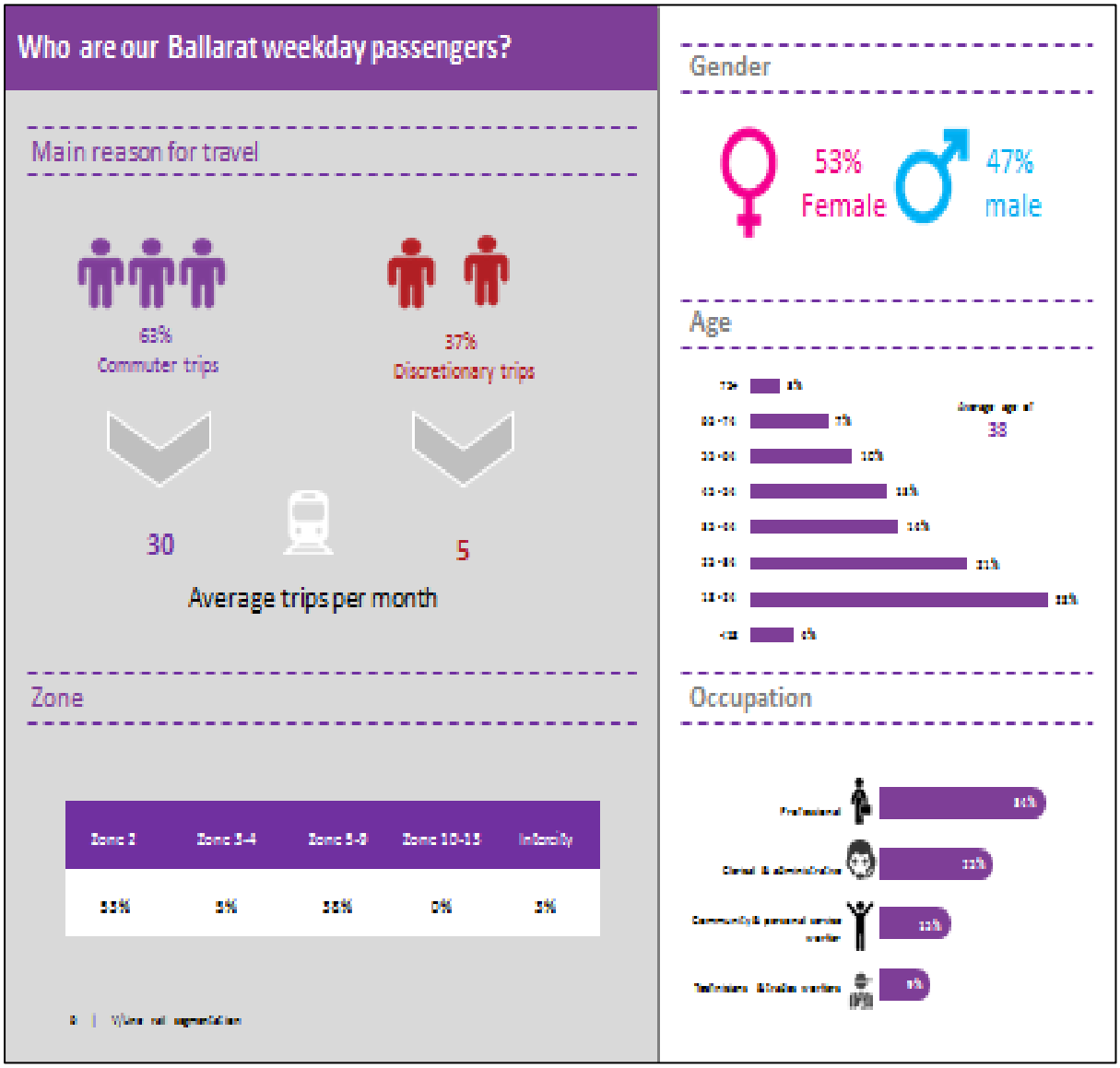
	Firefly Coaches Road Coach		*The Overland* Train	V/Line *Daylink* (via Bendigo) Train/Coach		
TO MELBOURNE	Daily	Daily	Mon and Fri	Mon to Fri	Sat	Sun
Adelaide	07.00	20.15	07.45	07.00	07.00	07.00
Nhill	12.35	01.20	13.17	12.35	12.35	12.35
Dimboola	13.00	01.50	13.50	13.00	13.00	13.00
Horsham	13.40	02.20	14.17	13.40	13.40	13.40
Stawell			15.11			
Ararat		03.20	15.35			
Ballarat		05.05				
North Shore Geelong			17.39			
Southern Cross	19.05	06.35	18.50	19.24	19.28	19.28

FROM MELBOURNE	Daily	Daily	Tue and Sat	Mon to Fri	Sat	Sun
Southern Cross	07.30	20.15	08.05	07.14	07.18	07.30
North Shore Geelong			09.42			
Ballarat		22.00				
Ararat		23.45	11.40			
Stawell			12.04			
Horsham	13.10	00.50	12.55	13.10	13.10	13.10
Dimboola	13.40	01.20	13.18	13.40	13.40	13.40
Nhill	14.10	01.50	13.43	14.10	14.10	14.10
Adelaide	18.40	06.00	17.55	18.40	18.40	18.40

3.8 Travel Markets and Market Segmentation

The main western trunk route conveys travellers with a variety of trip purposes. V/Line has undertaken surveys of their customers on trains across their network and has classified the trips of users of their service into commuter trips and discretionary trips.

A profile of Ballarat line passengers is shown below. Commuter trips are 70% journey to and from work, and 30% journey to and from school.

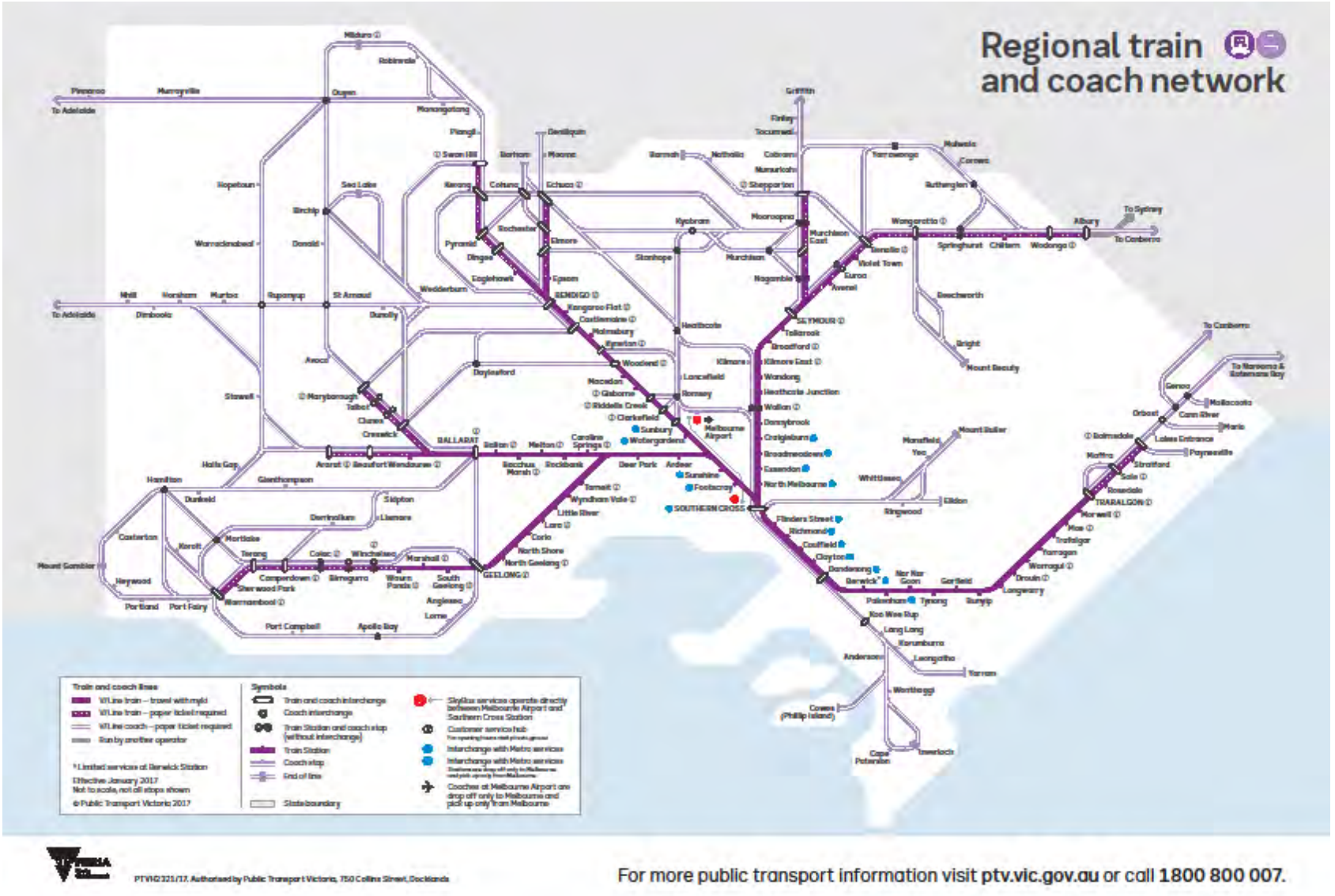


The breakdown for discretionary trips is as shown in Table 23 below:

Table 23: BREAKDOWN OF DISCRETIONARY TRIP PURPOSE - BALLARAT LINE PASSENGERS

TRIP PURPOSE	%
Visiting friends and family	49
Leisure day trips	28
Personal appointments	11
Sports and special events	9
Holidays	3
Visiting friends and family	49

Source: V/Line (May 2016) Market segmentation: Preliminary Report


Regional train and coach network
Train and coach lines
V/Line train – travel with myki
V/Line train – paper ticket required
V/Line coach – paper ticket required
Run by another operator
Limited services at Berwick Station
Effective January 2017
Not to scale, not all stops shown
© Public Transport Victoria 2017
Symbols
Train and coach interchange
Coach interchange
Train Station and coach stop (without interchange)
Train Station
Coach stop
End of line
State boundary
SkyBus services operate directly between Melbourne Airport and Southern Cross Station
Customer service hub
Interchange with Metro services
Interchange with Metro services
Coaches at Melbourne Airport are drop off only to Melbourne and pick up only from Melbourne
PTV/G2321/17. Authorised by Public Transport Victoria, 750 Collins Street, Docklands
For more public transport information visit ptv.vic.gov.au or call 1800 800 007.

4. Moving Forward – what is needed?

4.1 The need to provide good public transport services

Victoria's early transport system provided a sound base for regional connectivity. The railway system in the western part of the state generally matched the early development of Wimmera and Western District towns and rural areas. However, since the 1950s with the rapid development of private motoring and use of trucks for freight, the dependence on trains and buses diminished dramatically. Government actions in the 1970's and 80's further reduced the role and reach of the railways, and slashed investment in their modernisation.

Today in terms of their range of services and levels of accessibility much has been improved in areas served by the Regional Fast Rail project, but for the study area, the public transport systems do not effectively support many travel requirements including the basic mobility needs of those in disadvantaged groups. As much travel is essential, growing financial and personal costs associated with car dependence simply to fulfil everyday needs make households and businesses vulnerable to social and economic distress. Unemployment and social isolation results when residents are unable or can no longer afford to access jobs, education facilities, medical services and family and community networks

The provision of adequate public transport requires the public transport system to be viewed as one interconnected system. Reinvigorating the public transport system has now become critical in western Victoria. In the immediate future service provision must aim at ensuring public transport is an attractive and effective option for many trip purposes, providing a reasonable service to those without ready access to a car. Indeed, survival of some Wimmera towns will partly depend on reasonable levels of public transport services.

Coach services to surrounding towns are of critical importance and serve the following objectives:

- They support the survival of smaller towns by enabling residents to access the core public transport system and through it, needed services in the region;
- They allow residents to access medical services, schools, tertiary education institutions, shopping and employment within the region. The extent of such access by non-car drivers depends on the adequacy of the public transport system (including frequency, journey time, reliability and convenience)
- They are critical to the social inclusion of smaller town citizens;
- They can support regional tourism if services are well designed (though this is not often the case in this region).
- They feed passengers into the trunk rail system.

With the aging population, effective coach services are a prerequisite for citizens to "age in place", while retaining the capacity to visit friends and relatives, shop and get medical treatment without depending on community services.

In the longer term, a high-quality transport network can also be a proactive means to influence regionalization and decentralization. The role of transport in shaping development of towns and cities is well known as rail and coach links help to redirect growth to regional centres and better distribute economic and social benefits across the State. Increasing transport supply will induce new transport demand particularly with the provision of improved rail services. In the Wimmera and Western Districts the provision of more and faster services between Melbourne and regional centres will open significant new lifestyle and employment opportunities and induce population redistribution. Trains are a particularly effective mode for these purposes.

Transport has been recognised as a critical element of the Government's strategy to manage growth and change across Melbourne and the regions. The Government recognizes that "the most effective drivers of

population attraction to rural and regional Victoria are jobs, good infrastructure, access to services and lifestyle."[2]

In 2011, the Victorian government established a process to develop regional growth plans for each of eight regions in Victoria. The growth plans provide broad direction for land-use and development at a regional level, to plan for future growth. They are aligned with strategic planning at a local and regional level and are built into the planning framework through the Victoria Planning Provisions (VPPs).

Economic development is a central aim of the regional growth plans. Many identify a need for infrastructure to support the growth of specific regional industries, such as agriculture, tourism and renewable energy. This is reflected in calls for better roads and rail services, freight facilities, communications infrastructure and utilities in regional areas.

Increasing connectivity between Melbourne and the regions will deliver an economic dividend for the region, reducing transport costs for businesses in regional areas and increasing labour mobility. More people will be able to live in the regions and still access economic and social opportunities in Melbourne, Ballarat and Geelong. In addition, local or international tourists coming from Melbourne or Adelaide will have access and ability to visit the numerous tourist attractions in the regions.

4.2 Understanding Travel Demands

Travel is a complex aggregation of person trips and freight movements. People travel to satisfy work, business, social, recreational, educational and other goals. Travel occurs on different modes of transport over varying distances and at different times of the day. Travel is rarely an end; it is a means of connecting people with activities and services.

This study has not attempted to predict future travel demands and associated patronage on public transport services. However, understanding why, how, when and where people travel is a prerequisite for transport planning and for developing future public transport service level specifications.

For each person, travel decisions are strongly influenced by

- the purpose of the journey: travel to work, visiting medical services, friends and relatives, educational travel, personal business, holidays and tourism, business and shopping
- the characteristics of the traveller: age, sex, physical capabilities
- availability of car or public transport service for that trip
- opportunities and relative merits of each transport mode available for the trip

4.3 The Regional Travel Markets

Regional train and road coach demand is determined by the size of the total travel market and factors impacting on their share of the market

The size of the market is essentially a function of growth and distribution of population and employment and trip making rates; while regional passenger rail and bus share of the total market varies with trip purpose and geographical segment.

The starting point for determining the pattern of rail and rail coach/services to be provided is clarity as to the key drivers for the services – in other words, what are the market demands and community needs that the services must meet to be successful. The market share for some public transport in the Study Region was shown in Section 3.2.

[2] Announcement by Hon. Jaala Pulford MLC, Minister for Regional Development, 15th December 2015: http://www.premier.vic.gov.au/a-new-approach-for-regional-population-attraction/

The public transport service in the study region is predominately a publicly provided, common user facility that supports several markets: -

- Commuting workers and students to travel to their jobs or places of study.
- Business travellers
- Personal business including visiting friends and relatives
- Tourist and holiday experiences in the region
- The community service market for the subsidised provision of transport options for non-drivers, including the young, the old, the socially disadvantaged, the disabled and those unwilling or no longer willing or able to use motor cars for longer journeys.

Future train and connecting bus/road coach services in the study area should be primarily planned to meet the specific needs for travellers to Melbourne, Geelong and Ballarat and the larger Wimmera and Western District towns:

- Journeys by business people in the area particularly to Melbourne, Geelong and Ballarat
- Journeys to work and education in the major towns and regional centres
- Journeys by discretionary users who would otherwise travel by car
- Journeys by the aged and non-drivers who rely on public transport
- Journeys by tourists and holidaymakers

4.4 Factors for Increasing Public Transport Use

In each market, public transport faces challenges if it is to achieve a significant role:

Table 24: Market segmentation and key requirements

MARKET SEGMENT	KEY REQUIREMENTS
Commuters	Service schedules and routes to meet employment and school times and locations
Business travel	Minimise travel time Ability to use travel time productively Travel time options
Personal business	Convenient times to access shops and personal appointments Services to smaller towns should support day trips for shopping or health to main centres
Tourism and holiday makers	Easy access to sites Travel options Ability to transport bicycles Service and tourism information
Elderly and disabled persons	Ease of end to end journey DDA compliant vehicles and facilities Accessible toilets, access and egress

Clearly some influencing factors are external to the service providers (including government as the primary source of major network decisions and funding) but many factors are within their control, at least in the longer term, including:

- **Service provision (timetables, frequency).** In the study area, a primary travel demand is for day return trips from the rural centres, both to Melbourne and the major regional centres, especially Ballarat and Geelong, but also Horsham, Hamilton, Ararat, Warrnambool and Portland. There is a consistent demand for additional travel choices – primarily more options for morning travel from Ararat and Warrnambool to Melbourne and corresponding additional afternoon return options.

- **Service quality and convenience (reliability, comfort and customer friendliness).** The most significant request from the study area was for train services to be reinstated on the main western railway at least to Horsham as well as to Hamilton. Although the quality of road coaches was considered good there is almost universal belief that only a train service can provide the quality of service that will be acceptable for the existing market and be attractive to new travellers. The quality of the older trains operating the Warrnambool service is not considered acceptable for current and future travel. The poor condition of many roads, especially the Glenelg Highway, was criticised by both coach operators and customers and suggested as a major discouragement for road coach travel. Real time service information is considered essential but is generally unavailable. Uninterrupted Wi-Fi access at all times during a journey is now critical, but actual service is very patchy.

- **Travel times (including access, waiting, transferring and egress times**). Ballarat and Ararat train journey times are considered reasonable but travellers complained about the excessive number of stops in the Melbourne suburban area and delays awaiting passing trains. The need to transfer and wait when making multi modal journeys was a drawback to some people using public transport. The need for an almost seamless journey from origin to destination is an important feature if public transport is to be an attractive option. This particularly applies to attracting the tourist market and facilitating travel by elderly and less able travellers.

- **Fares and ticketing.** Currently around 61% of regional rail travel is made on full fares, and 39% on concession fares. Many travellers on concession tickets do not have travel options because of their age or physical restriction.
  Currently myki tickets are only valid for trips wholly within the area between Melbourne and Wendouree. Travellers to and from destinations in the study area are therefore required to hold a V/Line paper ticket. Travellers holding myki cards are often confused about not being able to use the card to complete a journey. Extension of the myki system to cover all regional services is of high priority.
- **Marketing**. While numerous timetables and maps are generally available there is a constant need to identify and react to public (locals and visitors) expectations. While information about V/Line services is readily available there is a scarcity of significant customer advice concerning the non-V/Line road coaches and *The Overland* train.
- **Special events** - such as the Stawell Gift, wine and music festivals, often provide opportunities for increased public transport patronage on regular scheduled or special services due to large concentrations of people destined to a specific site at specific times. Currently a winery at Beaufort advertises fine dining opportunities with the possibility of rail travel, while music festivals often provide charter buses connecting at stations such as Beaufort or Ararat.

4.5 Train and Bus Service Plans – Principles and Service Standards

The introduction of new services involves both capital and operating costs and needs consideration through a careful planning process that matches the costs of new services with likely present and emerging demand. Therefore, the suggestions made below should also be inputs to a planning process that includes local government, residents' groups, tourist and accommodation providers as well as central PTV planners.

Development of an adequate public transport system for the study area requires services to be designed with a full understanding of the social and economic issues associated with the region, with the functioning of small towns in the region, and with the needs of citizens and businesses for public transport connection. In recent years, Transport Connections officers were funded within local governments to assist in the identification of such needs.

Train and bus timetable design is a compromise between market-based requirements and practical issues including costs, infrastructure capacity and train and bus availability and driver rosters. For train services, there are additional considerations of rolling stock allocation, overnight stabling facilities and, in the case of services extending beyond Ararat, arranging track access with ARTC.

In this study, we have carefully analysed connecting coach services to the communities served by the railway and coach services.

We have also examined connecting coach services to several established tourist regions/destinations with very small populations but considerable tourist potential, as well as north-south and interstate coach connections. We believe that tourist developments in these areas should be accessible by scheduled coach services, and these will in turn support better mainline train services.

To meet realistic expectations for these services, we recommend the following:

- Schedule services in accordance with the demands of each market segment. Major towns should be served by at least five services per week day on the trunk routes. This will require additional rail or bus services to Ararat, Hamilton and Warrnambool
- New and expanded road coach services between regional towns of Horsham, Hamilton and Portland and Mt Gambier to provide greater inter-regional connectivity and greater opportunity for communities to access jobs and services in other towns in the region. Of critical importance is the need to take a network approach creating service patterns that meet the needs of a wide range of potential users
- A minimum of daily services on minor bus routes with allowance for adequate time in major towns for shopping and appointments
- Provide for convenient multiple options for same day return trips from major regional centres to Melbourne and into regional cities (Ballarat and Geelong), largely for business, medical, shopping, entertainment and sporting events. Schedules to include services to Melbourne that start earlier and finished later and train and bus timetables that correspond
- Provide options for tourist traffic to major attractions
- On weekends provide easy travel options for same day return traffic between Melbourne and regional centres in both directions
- Provide for tourist traffic especially to Warrnambool, Ararat (for the Grampians), and Ballarat
- Integrate local bus services with trunk services at regional centres
- Use scheduled public transport, school buses and, community transport to complement each other to provide the optimal level of service
- Redeploy local community transport and taxis (or similar) to provide on-demand services in regional and rural areas, including for people who experience mobility challenges
- Minimise travel times where feasible by increased operating speeds, reduced waiting and transfer times. Long distance regional trains should not be required to stop frequently in “suburban “areas of Melbourne. Train travel times should be less than corresponding car journeys
- Multi-modal journeys should optimize the use of the faster travel mode (trains) for journeys that involving both a train and road coach. This can be achieved by scheduling transfers at Ararat instead of Ballarat whenever practical
- Expand the availability of open-source, real-time public transport information, including passenger loading data, across the regional networks covering all modes.
- Provide improved internet and mobile phone connectivity
- Extend the myki ticketing system to cover all regional services.

Based on the above considerations, recommendations for future service levels to towns are summarised in Table 25 below.

TABLE 25: Proposed Service Standards for Regional Towns

TOWN TYPE	TOWNS IN REGIONS	OBJECTIVE	RECOMMENDED MINIMUM STANDARD OF SERVICE
Small towns up to 1000 people	Natimuk Willaura Dartmoor Nelson Jeparit Rainbow Hall's Gap Branxholme Dunkeld Edenhope Hopetoun Murtoa Rupanyup	Access for shopping and medical services to a regional centre at least twice weekly Access to mainline rail services to Melbourne	Two days each week on which a morning coach takes passengers to a regional railhead/shopping centre and afternoon evening coach returns from the railhead to the town.
Medium towns up to 2000 people	Heywood Dimboola Casterton Coleraine Kaniva	Daily access for shopping and medical services to a regional centre Access to mainline rail services to Melbourne	Six days each week on which a morning coach takes passengers to a regional railhead/shopping centre and an afternoon evening coach returns from the railhead to the town
Larger towns up to 5000 people	Nhill St Arnaud Warracknabeal	Daily access for shopping and medical services to a regional centre. Access to mainline rail services to Melbourne	Seven days each week on which three daily coach services are provided to and from a regional railhead.
Tourist destinations with small permanent population	Hall's Gap	Support for weekend vacations for visitors and midweek access to regional centre and mainline train connection	A coach service connecting with the morning train from Melbourne on Saturdays and Sundays and an evening return coach on Sundays. A midweek return connecting coach.

It is important that the development of coach connections should be undertaken through Coach Service Reviews led by Public Transport Victoria, but significant local involvement is critical. We suggest that local governments in the region consider establishing an ongoing Public Transport Forum to articulate the region's needs. The Forum would:

- include representatives of participating councils, PTV or other appropriate government agencies, coach operators and public transport users;
- be a conduit for wider community consultation and feedback to State Government agencies on specific issues, e.g. proposed major changes to rail services or timetables;
- help ensure that coach and local bus service reviews conducted by PTV fully reflect local needs;
- provide an opportunity to confer and co-ordinate council public transport approaches and strategies within the region;
- if practicable, fund a full or part time Transport Connections Officer to support local public transport development in the region;
- explore opportunities for local transport innovation, including innovation to assist elderly and disabled persons, and mobility.

Suggestions for improved coach connections are listed in Section 6 below, although we would expect these suggestions to be subject to the Coach Service Review process described above.

Rail and coach timetables will define service frequencies and journey times. However other important characteristics of rail and other public transport services which need to be built into service plans include:

- Reliability
- Fares and ticketing
- Timetable, journey planner and real time service information, particularly connections
- Rolling stock allocation
- On-board comfort and amenity
- Dealing with luggage and bicycles
- Accessibility
- Facilities at stations and interchanges
- Safety and security

4.6 Coach to Train Interchange Principles

Coach to Train and Bus to Train interchange facilities are critical to ensuring that travellers to and from cities and towns that are not on the main railway corridor have reasonable public transport access. Making such interchange effective requires that:

- Timetables are designed to support interchange
- Coaches do not depart if connecting trains are running late
- Signage at interchanges is comprehensive as to timetables, frequencies and departure points
- Real time information is provided
- The interchange area is compact, and facilitates easy transfer of passengers with luggage
- The interchange area is well-lit, safe and sheltered from inclement weather
- The interchange area meets DDA requirements and can readily be traversed by patrons in wheelchairs, as well as the elderly and those with children
- The interchange area provides toilet and refreshment facilities, either staffed or in the form of vending machines

4.7 Park and Ride

The aim of an integrated transport network is to design a system that uses each mode of transport where it is most efficient and provide a smooth transfer between modes. "Park and Ride" facilities are the connecting link between the car and a road coach or more usually a train. The study team found that car drivers are rarely prepared to substitute their car journey with a trip in a road coach but will readily make the change to a fast, convenient and comfortable train. Total travel time is a key determinant of mode choice particularly for business related trips.

Developing Park and Ride facilities along the western corridor has many positives for users and train operators, including an increased demand for and viability of rail services, reduction in highway traffic, driver fatigue, car operating costs and more efficient use of travel time.

Currently residents form the study area drive to Ararat, Wendouree, Ballarat and Ballan to catch trains to Melbourne. We recommend consideration be given to the provision of a large new Park and Ride east of Ballarat in the Warrenheip area, designated Warrenheip Parkway, designed to serve Ballarat and Western District commuters and to permit access to fast trains to and from Melbourne with minimum inconvenience.

4.8 Non-Scheduled Services

A further important issue is that the type of service provided needs to be cost-effective. Cost effectiveness in some instances may mean the provision of a taxi service or a minibus is more appropriate than a full-size coach.

Expansion of local bus and inter-town coach services, and enabling more innovative transport solutions, including on-demand services, could have a transformative effect on travel in smaller towns and remote areas. Addressing this need is complex because the profiles of different locations in region are so varied. For low populated areas, the focus is much more on maintaining basic services, noting that, in some cases, those basic levels are not provided.

Only a few of the larger centres in the regions have taxi services but there are opportunities to be innovative in the provision of non-scheduled services. Areas of opportunity include ride sharing, car-pooling and private minibuses and coaches providing either on-demand or fixed schedule services through third-party applications. In regional areas, the ability to earn a supplementary income and provide much needed local on-demand transport has the potential for widespread community benefit.

There are opportunities to redeploy local community transport and taxis (or similar) to provide on-demand services in regional and rural areas, including for people who experience mobility challenges. This initiative may require ongoing subsidies and regulatory changes and should build on the recent "Connectu" trials in Warrnambool which use donated cars and volunteers to get people who are unable to access public transport to medical appointments, shopping and community activities. The first steps will be to refine the proposed service changes based on the evaluation of these trials and to identify high-priority locations for implementation

For smaller towns and localities where dwellings are scattered, we commend the demand responsive "flexible" service currently provided to Paynesville in Gippsland, whereby the bus will call or deliver passengers to their addresses. This service is relevant to senior patrons, who may have difficulties in reaching a bus stop, as well as to tourists with luggage (possibly including at times surfboards, bicycles or skis). A "Flexiride" on-demand service has recently been introduced in Woodend operating from designated stops around the town to the Woodend shopping centre.

With the development of internet booking services, the Demand Responsive Bus concept may allow better public transport services to be provided to sparsely populated and low density areas more effectively than in the past.

4.9 Regional Network Development Plan (RNDP)

The Government's May 2016 RNDP is essentially a tactical rather than a strategic plan. Its focus is relatively short term, primarily considering focussed on outputs over the next 5 to 10 years. While the challenges it lists are real, they are understated and the plan for addressing them assumes a 'business as usual 'approach, including in the context of official population forecasts.

Its "Next steps" acknowledge "the importance of integrated long term planning" and "to give local governments and communities…a significant voice in planning and delivering future regional transport". The Plan does not propose any strategic policy changes, or actions to address some of the more serious challenges expected to emerge within the next 10 to 15 years.

Some of the RNDP's more significant proposals for the Study area include, which we broadly endorse, are to:

- Procure and roll out the next generation of regional trains
- Develop a pathway towards providing five services, five days a week to Warrnambool, Bairnsdale, Albury-Wodonga, Echuca, Swan Hill and Shepparton
- Provide two additional return off-peak services from Melbourne to Ballarat each day

- Proceed with the Ballarat Line Upgrade Program. This program includes:
    - Duplicating a 17 kilometre section of single track between Deer Park West and Melton
    - Duplicating 3 kilometres of track at Warrenheip
    - Building three passing loops at Bacchus Marsh, Ballan and Bungaree to accommodate trains passing in opposite directions
    - Train stabling at yards at Melton and Rowsley
- Improve Hamilton, Warrnambool, Ballarat and Horsham coach interchanges and bus stops
- Investigate the need for extra stations near Ballarat

Under the heading of "Future Directions", it also proposes to:

- Investigate opportunities for passenger trains to use the interstate line more frequently
- Improve safety at regional level crossings
- Retire the classic fleet[3] and procure replacement rolling stock
- Provide extra passing loops, track and signalling upgrades on the Warrnambool line to allow for more passenger services and more freight
- Upgrade Warrnambool station and car park
- Investigate opportunities for local transport in the Grampians to provide additional travel options for residents
- Review and upgrade stations and facilities in Grampians in line with changing community needs
- Plan for and implement bus services improvements across Grampians as demand for services change.

From the perspective of the Grampians and Barwon South West regions, improvements to the Ballarat corridor will certainly be beneficial, as would the generalised intentions regarding improvements to bus services, however the RNDP provides little else to address the specific service shortcomings and community needs described in this Report. Section 6 of this Report provides a pathway towards meeting these needs.

[3] The "classic fleet" referred to in the RNDP includes V/Line's fleet of conventional locomotive-hauled carriages of the N and Z types that have been in operation for between 33 and 61 years. They are currently used on all services to Warrnambool, Swan Hill, Shepparton, Albury and Bairnsdale.

5. Infrastructure to support rail services

5.1 Current Position

5.1.1 Network overview

The Grampians and Barwon South West Regions are served by three primary and two secondary rail corridors. The three primary corridors are:

- The Melbourne-Geelong-Warrnambool broad gauge line leased, controlled and operated by V/Line[4]
- The Melbourne-North Geelong-Maroona-Ararat-Horsham-Adelaide standard gauge line leased and controlled by ARTC, and operated by a variety of accredited private rail operators
- The Melbourne-Ballan-Ballarat-Ararat broad gauge line leased, controlled and operated by V/Line.

The secondary corridors are:

- The Gheringhap to Warrenheip broad gauge line, leased, controlled and operated by V/Line
- The Maroona to Hamilton and Portland standard gauge line, leased and controlled by ARTC and operated by private train operating companies.

The Warrnambool line services Glenelg Shire by road coach connections from Warrnambool to Portland, Heywood and Mount Gambier. (There is also a very limited road connection from Ararat.) For the purposes of this Report and consistent with discussions with Glenelg Shire officers, its infrastructure and related services have not been considered further in this context.

A simplified diagram of the above overall network showing broad and standard gauge lines is shown below.

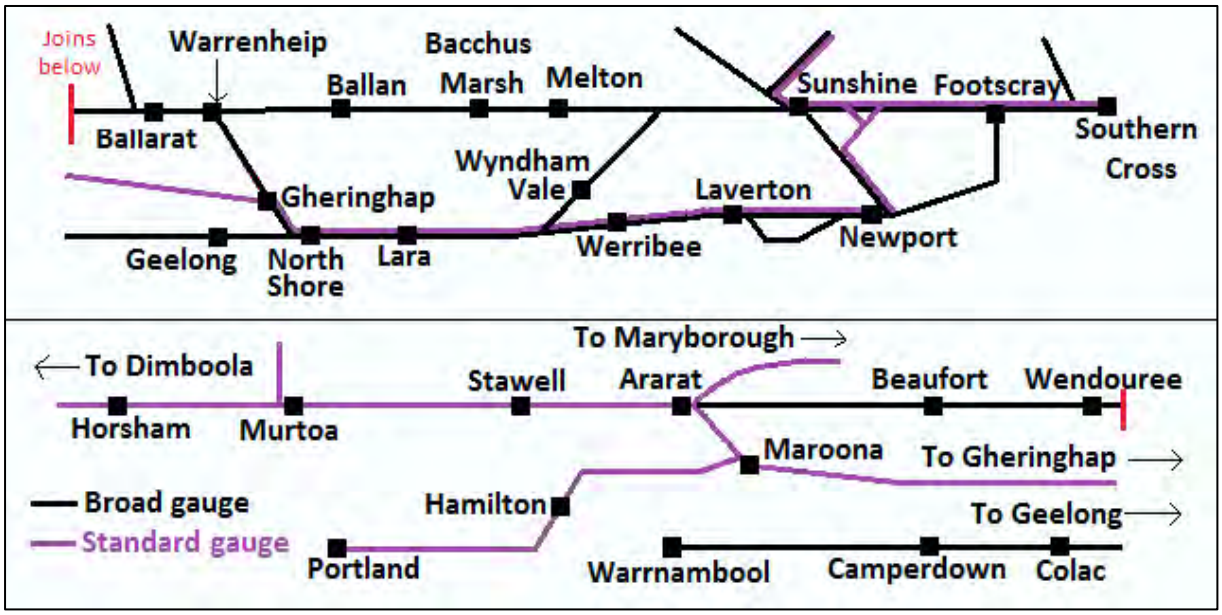


Figure 13: Simplified diagram of the current western and south-western rail network showing broad and standard gauge lines

For the purpose of this Report, this section focusses on the existing broad gauge corridor from Melbourne to Ballarat and Ararat and the standard gauge corridors from Ararat to Horsham and Ararat to Hamilton. The other corridors listed above are further considered in the context of future options – see Section 10.

[4] All railway land in Victoria is owned by VicTrack on behalf of the Victorian Government. All land and associated infrastructure required for operational purposes is leased by VicTrack to PTV. In turn, PTV sub-leases the relevant rail corridors to one of ARTC, V/Line or Metro Trains Melbourne.

5.1.2 Melbourne to Ballarat

The infrastructure comprising the Melbourne-Ballarat broad gauge rail corridor as at February 2017 can be broadly described, section by section, as under:

- Double line (fully segregated from Metro tracks) Southern Cross to Sunshine (Bendigo line diverges)
- Double line Sunshine to Deer Park Junction (Wyndham Vale/Geelong line diverges)
- Double line Deer Park Junction to Caroline Springs
- Single line Caroline Springs to Melton (crossing loops at Rockbank and Melton)
- Single line Melton to Bacchus Marsh (crossing loops at Parwan and Bacchus Marsh)
- Single line Bacchus Marsh to Ballan (crossing loops at Rowsley and Bank Box)
- Single line Ballan to Warrenheip (crossing loop formed by original line through Bungaree)
- Warrenheip (where the line from Gheringhap converges with no physical connection)
- Warrenheip to Ballarat single line linked to multiple platforms at Ballarat

West of Melton, the line traverses difficult terrain with steep gradients and significant curvature which tends to be challenging for fast operation. Notwithstanding, the 2003-05 Regional Fast Rail (RFR) project upgraded much of the track infrastructure to be suitable for 160km/h operation of VLocity railcars, as permitted by curvature. The RFR project also renewed the signalling system and constructed major deviations near Bacchus Marsh, Gordon and Bungaree which significantly improved the track alignment in those areas.

All level crossings on the line are fully equipped with active protection (flashing lights and boom barriers) to RFR standards, thus enabling the use of non-locomotive hauled trains such as the VLocity railcars.

The 2012-15 Regional Rail Link project provided full segregation of the Ballarat line (together with the Geelong and Bendigo lines) from the metropolitan lines by the construction of an additional pair of tracks between Southern Cross and Sunshine, thus very significantly increasing track capacity in this area for both regional and metropolitan services. It also allowed for an approximate 10-minute saving in average trip times.

The May 2016 State Budget included an allocation of $518 million for further major works on the Ballarat corridor. These are planned for implementation between 2017 and 2019, as shown in red on the diagram below.

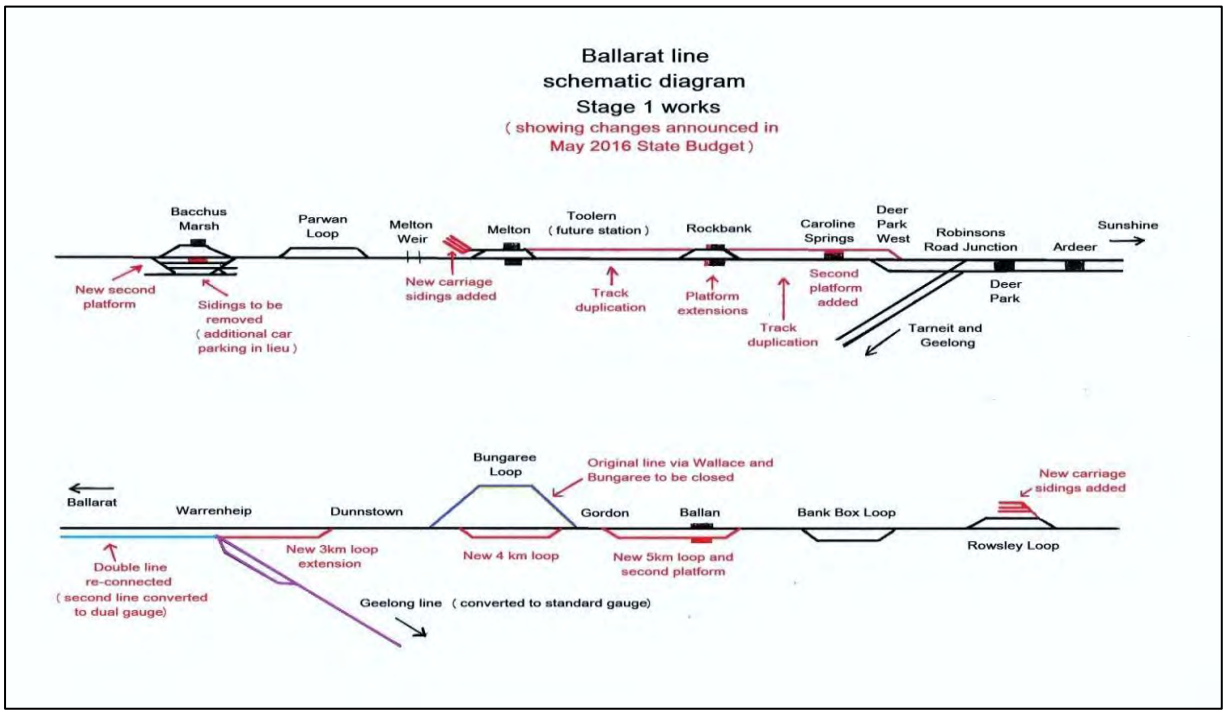


Figure 14: Impending Ballarat line upgrade works as funded in the 2016/17 State Budget

During the same period, additional works are to be undertaken in the Ballarat area through the Murray Basin Rail project (MBRP). The current scope of this $440 million project involves conversion of all lines extending north of Ballarat towards Mildura, Sea Lake and Manangatang from broad to standard gauge, with the exception that the Ballarat to Maryborough section is proposed to be dual (broad and standard) gauge. This will necessitate various alterations in the Ballarat area, as shown in the diagram below.

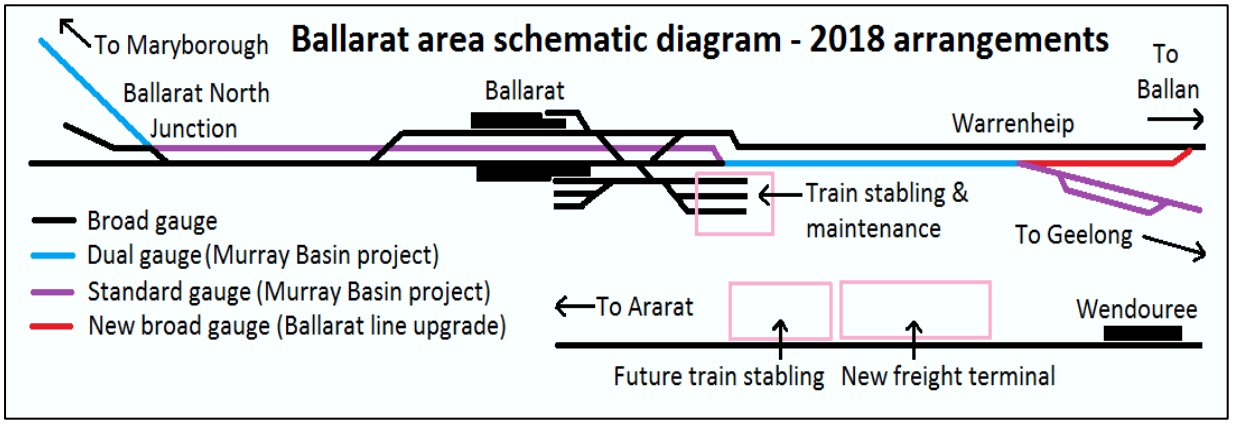


Figure 15: Proposed re-configuration of Ballarat area track infrastructure following completion of Murray Basin Rail Project in 2018/19

A new rail-served intermodal freight terminal is proposed for construction approximately 2km west of Wendouree station on the Ararat line. In future, this may have implications for the operation of Ararat trains. Land has also been acquired immediately to the west of the freight terminal for a future major train stabling and potential maintenance facility. This has been done in anticipation of the present facilities at Ballarat East having inadequate capacity to handle these functions in coming years.

5.1.3 Ballarat to Ararat

Beyond Ballarat North Junction where the line to Maryborough and Mildura diverges, this is a single broad gauge line with no crossing loops or facilities for handling more than one train at a time in the 88km section of line to Ararat. The only intermediate station is at Beaufort. Until 1995, this line was an integral part of the Melbourne-Adelaide corridor hence it had been historically maintained to a main line standard. When the Adelaide corridor was being converted to standard gauge during 1994-95 and was diverted to run via North Geelong, Cressy and Maroona, passenger services beyond Ballarat ceased in May 1994 and the line was finally closed to all traffic beyond North Ballarat Junction in April 1995.

In 1999, the incoming Bracks Government launched its *Linking Victoria* program which included a commitment to reopen the broad-gauge line to Ararat. This finally occurred on 11 July 2004. At that time, it was restored to its former Class 2 track standard with the pre-existing 47 kg/metre continuously welded rail retained in situ. This has since enabled VLocity railcars to operate over almost all of the line section at 130km/h.

All level crossings on this line section have now been upgraded to full RFR standards with two exceptions, at 147km and 206 km from Melbourne, which still have only passive protection. These crossings currently have a 50 km/h speed restriction.

The new Wendouree station, located approximately 4km west of Ballarat, was opened on 11 June 2009. Most Melbourne-Ballarat passenger services were subsequently extended to originate and terminate at Wendouree.

The track arrangements at Ararat are shown in the diagram below. This includes the proposed reopening of the standard gauge line to Maryborough (unused since 2005) and construction of a direct link between it and the line towards Maroona, both anticipated during 2018/19, as part of the Murray Basin Rail Project.

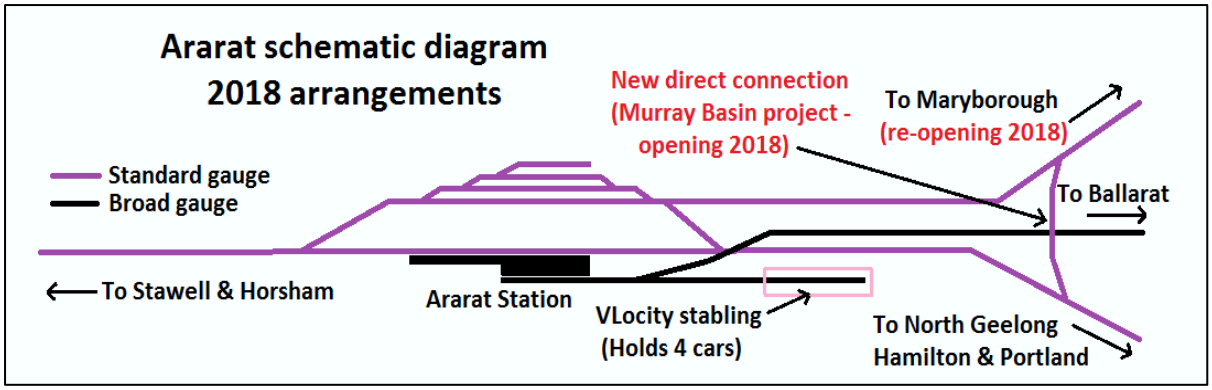


Figure 16: Proposed re-configuration of Ararat track infrastructure following completion of Murray Basin Rail Project in 2018/19

5.1. 4 Ararat to Horsham

This 116km section of single line has been an integral part of the main Melbourne-Adelaide corridor since 1887. During the 1980's it underwent a significant upgrade with the installation of heavy duty 60kg/metre rail, 1500-metre-long crossing loops and new remotely controlled signalling. The line was converted from broad to standard gauge during 1994-95 as part of the Keating Government's *One Nation* program to standardise the Melbourne-Adelaide corridor.

The long crossing loops are located at Pyrenees, Great Western, Deep Lead, Lubeck, Murtoa and Horsham with separate sidings at Stawell, Glenorchy, Marmalake/Murtoa, Jung, Dooen and at the Wimmera Intermodal Freight Terminal near Dooen. Passenger platforms have been retained at Stawell, Murtoa and Horsham. The track is currently rated at 115 km/h capability for passenger trains and up to 110 km/h for freight trains.

Control of this section of line was transferred from V/Line to the Australian Rail Track Corporation (ARTC) in 1997 and it became part of ARTC's 60-year Infrastructure Lease from the Victorian Government in 1999. Since then, its physical infrastructure has largely remained unchanged with the important exception of the main running line being progressively converted from timber to concrete sleepers. In addition, the Pyrenees crossing loop has recently been extended from 1500 to 1800 metres in length.

Some level crossings between Ararat and Horsham are equipped with full active protection, i.e. flashing lights and boom barriers to a standard that would allow for the operation of non-locomotive hauled trains, e.g. VLocity or similar railcars. The overall situation is shown in the following table.

Table 26: Level crossings between Ararat and Horsham showing current protection arrangements

Level crossings Ararat to Horsham – current protection					
Line section	RFR standard (flashing lights and booms)	Flashing lights only	Passive only (Stop or Give Way signs)	Occupation crossings (no protection)	Total number
Ararat-Stawell	1	7	5	n/a	13
Stawell-Murtoa	5	5	21	n/a	31
Murtoa-Horsham	4	1	10	n/a	15
Totals	**10**	**13**	**36**	**n/a**	**59**

Therefore, if VLocity or similar railcars were required to operate on this corridor, it is likely that at least 49 out of 59 level crossings on this corridor would need to be upgraded.

The track arrangements in this section are shown in the following diagram.

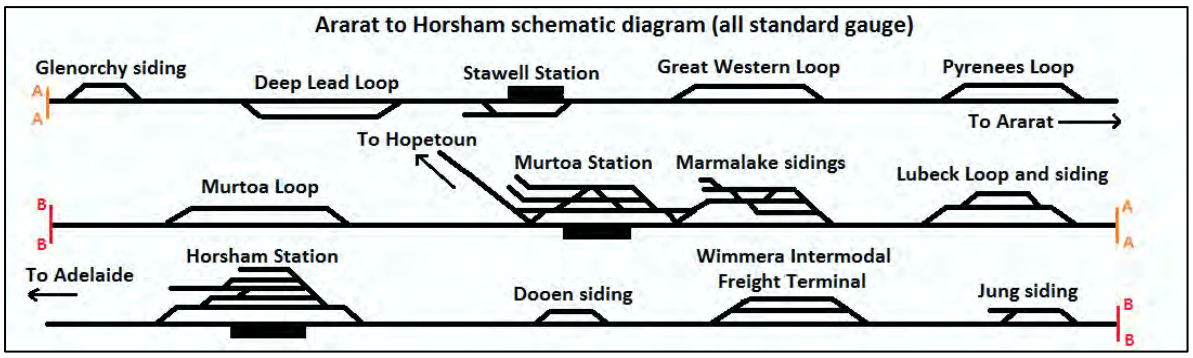


Figure 17: Schematic diagram showing rail track infrastructure between Ararat and Horsham

5.1.5 Ararat to Hamilton

Between Ararat and Maroona (21 km) the line forms part of the main Melbourne-Adelaide corridor leased to ARTC. Consistent with the rest of the Melbourne-Adelaide standard gauge corridor, this section of line has heavy duty 60kg/metre rail and concrete sleepers. As with the line from Ararat to Horsham, train movements on this section are regulated by remotely controlled signalling, operated from Adelaide.

Maroona is a junction station with the line from North Geelong and Melbourne entering from the east while the line to Hamilton and Portland continues to the south. The remotely controlled signalling includes operation of the Portland line junction.

The Maroona to Portland line was extensively upgraded during the 1980s with the installation of continuously welded 47kg/metre rail and 900-metre-long crossing loops with trailable turnouts (points). The line was converted from broad to standard gauge in 1995 to maintain its operational viability through connectivity with the Melbourne-Adelaide corridor. During the period (1999 to 2007) that the Victorian regional network was leased to private operators, the line was little used and its condition steadily deteriorated.

The regional network was returned to Victorian Government control in 2007 following a buy-back of the private sector infrastructure lease and was subsequently restored to its previous condition with freight trains permitted to operate at 80 km/h. On 22 March 2009, it was formally transferred to the control of ARTC under a 50-year lease agreement. The 80km/h capability for freight trains has been maintained since that time. Passenger trains have not operated on the line since 1981 hence no specific allowable speeds for passenger trains (more than 80 km/h) have been in force since that time.

Between Maroona and Hamilton (and beyond to Portland) train movements on the line are controlled by the Train Order system of safe working involving the verbal transmission of authorities to proceed between Train Controllers located in Adelaide and train drivers. Crossing loops are located at Maroona, Glenthompson, at Grampians Loop between Dunkeld and Hamilton, and at Hamilton. Passenger platforms remain intact at Willaura, Glenthompson, Dunkeld and Hamilton.

Table 27: Level crossings between Ararat and Hamilton showing current protection arrangements

Level crossings Ararat to Hamilton – current protection					
Line section	RFR standard (flashing lights and booms)	Flashing lights only	Passive only (Stop or Give Way signs)	Occupation crossings (no protection)	Total number
Ararat-Maroona	1	3	10	n/a	14
Maroona-Glenthompson	nil	4	3	n/a	7
Glenthompson-Hamilton	nil	4	4	n/a	8
Totals	**1**	**11**	**17**	**n/a**	**29**

As shown in the above table, no level crossings between Maroona and Hamilton are equipped with full active protection, i.e. flashing lights and boom barriers to a standard that would allow for the operation of non-locomotive hauled trains, e.g. VLocity or similar railcars.

Therefore, if VLocity or similar railcars were required to operate on this corridor, it is likely that at all 15 level crossings would need to be upgraded.

The track arrangements in this section are shown in the diagram below.

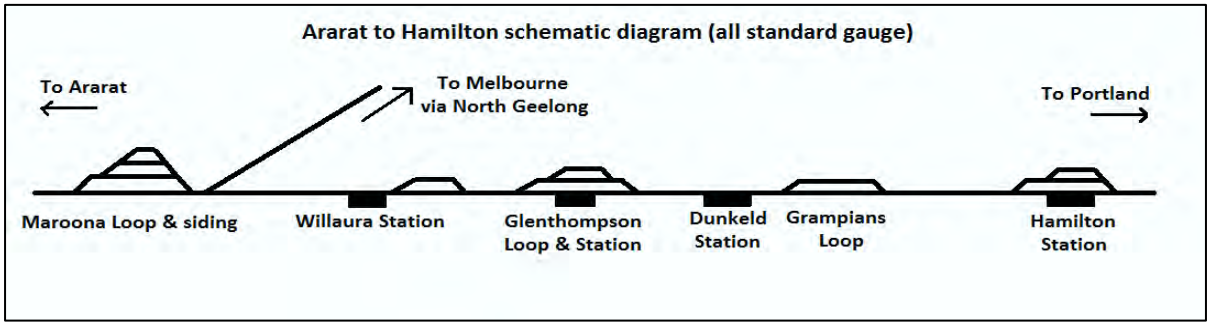


Figure 18: Schematic diagram showing rail track infrastructure between Ararat and Hamilton

5.2 Network capacity and key gaps

5.2.1 Melbourne to Ballarat

The most immediate deficiencies that prevent the operation of additional services will be addressed by the $518 million package of infrastructure improvements announced in the 2016/17 State Budget. Details are shown in the diagram in Section 5.1.2, above. Most significant of these changes is duplication of the line between Deer Park West (Caroline Springs) and Melton which will remove a substantial bottleneck that has prevented the operation of additional services during peak periods. This work is also a pre-requisite for the intended electrification of the line between Sunshine and Melton, and possibly as far as Bacchus Marsh.

From the perspective of passengers travelling to and from Ararat and beyond, another important and beneficial change will be closure of the original section of line that now makes a circuitous deviation via Wallace and Bungaree. This was effectively duplicated by a new section of line, 5km shorter than the original, which was constructed between Millbrook and Dunnstown as part of the Regional Fast Rail (RFR) project. The old line was retained to act as a long crossing loop, thus adding approximately 6 minutes to the journey of all trains that use it. A new 4 km crossing loop is to be built beside the new line, allowing trains in both directions to use the new, shorter route and allowing the Bungaree loop to be abandoned.

Once the overall package of works for the $518 million Ballarat line upgrade has been completed (currently anticipated by mid-2019), additional services can be scheduled, including a proposal for Ballarat weekday off-peak services to operate at a 40-minute frequency. Further, the availability of additional train passing facilities on the duplicated line to Melton, at Bacchus Marsh, Ballan, Bungaree and near Warrenheip should considerably assist in providing a more reliable service and allow for more effective recovery from unplanned delays.

However, these improvements will not achieve average trip times that are noticeably faster than at present. This cannot occur until all or most of the line has been duplicated and is effectively segregated from the planned extension of metropolitan services to Melton, and possibly to Bacchus Marsh and Rowsley. The electrification project is scheduled to occur in conjunction with completion of the $11 billion Melbourne Metro project, currently scheduled for completion in 2026, but possibly as early as 2024. The further changes to the Ballarat corridor required as part of the electrification project, should it be extended to Bacchus Marsh and Rowsley, are shown in red in the diagram below.

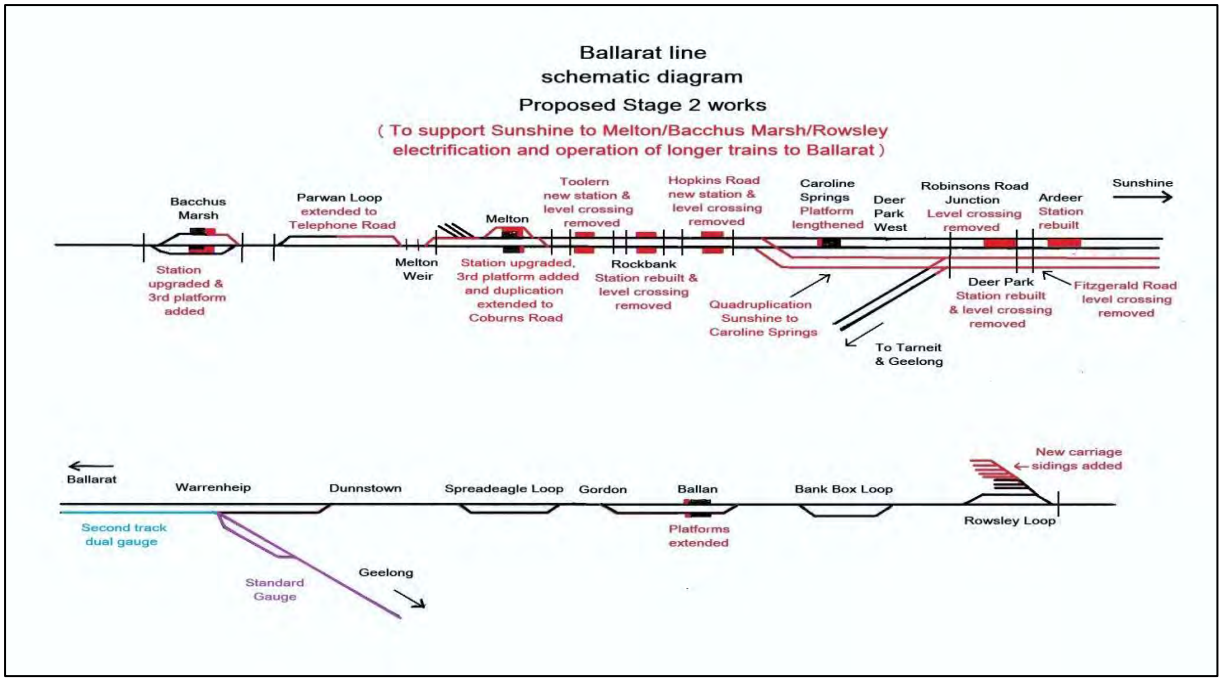


Figure 19: Planned further stage of major infrastructure works on the Ballarat line for Melton electrification

The further works that would be required to achieve effective segregation of regional from metropolitan electric services and full duplication of the line to Ballarat are shown in red in the diagram below. This could include provision of a separate standard gauge track (third line) between Warrenheip and Ballarat East to segregate standard and broad gauge trains in this area and, as far as possible, eliminate the need for complex dual gauge track with its inherent speed restrictions for broad gauge trains. This could become essential if regular passenger services are restored between Geelong and Ballarat and/or regular passenger services are to run between Melbourne and Horsham via North Geelong and Ballarat.

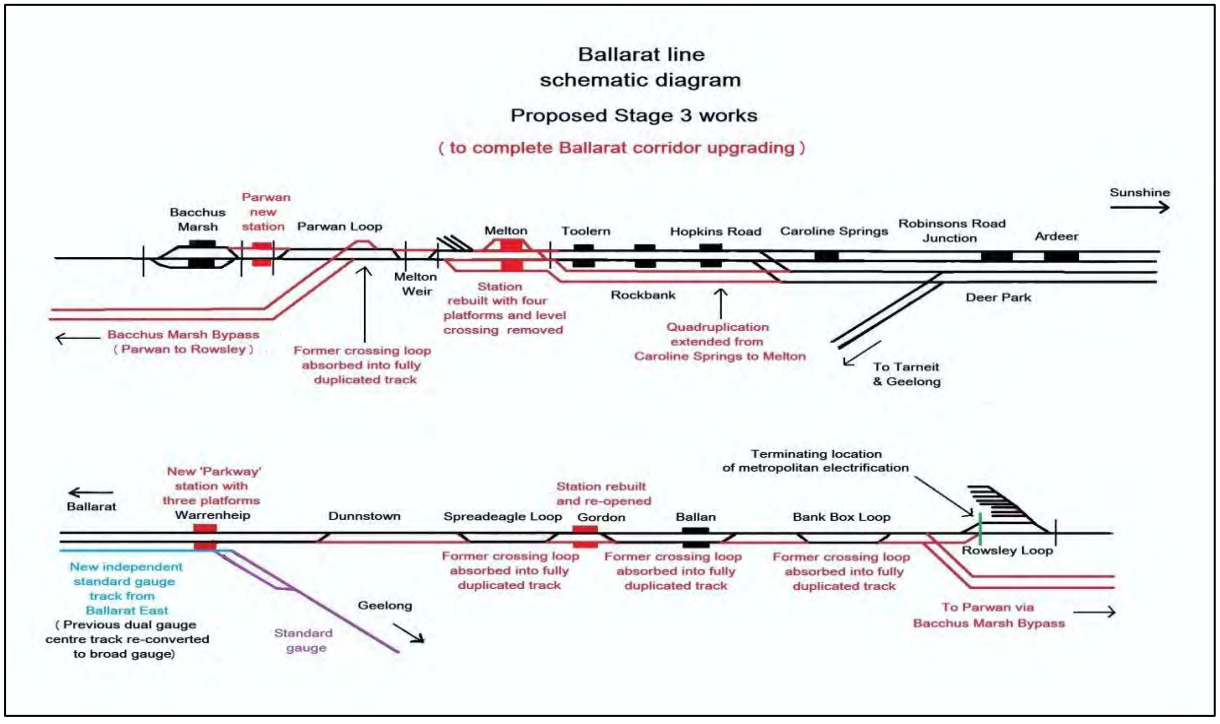


Figure 20: Anticipated further stage of Ballarat line upgrading to complete track duplication

At that stage, it would be a reasonable expectation that Melbourne-Ballarat trains could achieve 60 minutes or better journey times for express services using existing VLocity rolling stock.

At this point the full conversion to standard gauge of the segregated regional component of the Ballarat corridor could occur, with the separate suburban line from Melton remaining as a parallel broad gauge line. This would require that all future new works on the corridor for use by regional services be constructed using gauge convertible sleepers – sensible future proofing that was not provided for in earlier major projects.

Only at that time, could Ararat, Horsham and other towns in the region be served by a truly high quality, fast rail passenger service with through standard gauge services from the region to Melbourne.

5.2.2 Ballarat to Ararat

As noted in Section 5.1.3 above, this is an 88km single broad gauge line with no crossing loops or facilities for handling more than one train at a time. Its safe working system is known as Staff and Ticket, a simple but safe system for regulating train movements that has been in use for around 140 years in Victoria and elsewhere. As presently configured, this arrangement can handle up to five return trips per day between Ballarat and Ararat, including early morning and late afternoon/evening follow-on movements if more than one train is to be stabled overnight at Ararat. A more sophisticated signalling system would be required if more services are to operate on this section of line, although V/Line could opt for this in any event for staffing economy reasons.

Likewise, the above level of service (with some qualifications) can be provided on this line without the need to provide an intermediate crossing loop. When this was part of the main Melbourne-Adelaide interstate corridor until 1995, crossing loops (some only very short) had at one time been provided at Windermere, Burrumbeet, Trawalla, Beaufort, Middle Creek, Buangor and Dobie. Should a new intermediate crossing loop be required, the logical site for it would be at Trawalla.

Should the Ballarat to Ararat line be standardised, an option would be for a second platform to be provided at Wendouree, depending upon whether standard gauge trains will need to stop there. It will require restoration of the former double line between Ballarat and Wendouree, but with separate broad and standard gauge tracks. This would allow Melbourne-Ballarat-Wendouree broad gauge services to operate without mutual interference with standard gauge trains running to and from Ararat and beyond.

5.2.3 Ararat to Horsham

This section of the main Melbourne-Adelaide railway has potential for conflict between passenger trains and long and heavy interstate freight trains, including those operating between Melbourne, Adelaide and Perth. However this drawback would be largely offset by the provision of 6 crossing loops on the single line sections, generally spaced about 20km apart. In addition, some 49 level crossings between Ararat and Horsham do not meet current standards for VLocity or similar railcars to operate on this line.

To provide reasonable journey times for a passenger service using VLocity or similar railcars on this corridor, the permitted line speed for such trains would need to be raised to 160 km/h. This may require some track upgrading and modifications to the existing signalling system, including re-spacing of some existing signals and some additional signals. To comply with current safety standards for trains operating at this speed, it would also likely require a Train Protection and Warning System (TPWS) overlay on the signalling system, or an alternative technology providing at least equivalent functionality.

Reintroduction of daily passenger services to Horsham will require upgrading and rehabilitation of station facilities, passenger platforms and platform access to meet DDA standards at Stawell, Murtoa and Horsham. It will also necessitate provision of a suitable stabling and servicing facility at Horsham. The required functionality is to provide overnight security for the rolling stock and to allow for carriage water replenishment and toilet servicing. Ideally, this would be located beyond the western end of the passenger platform using a new siding constructed for this purpose.

Figure 21: Murtoa platform and station building showing present somewhat dilapidated condition

Figure 22: Horsham Station platform and building

5.2.4 Ararat to Hamilton

If regular rail passenger services are restored between Ararat and Hamilton, they would use the Ararat to Maroona section of the main Melbourne-Adelaide interstate line before continuing on to the Portland line at Maroona. Although this section of line has an efficient signalling system and a half-length crossing loop is

available at Maroona, there is still some potential for operational conflicts with interstate freight trains in this area. As noted in Section 5.1.5, there are 13 level crossings between Ararat and Maroona which do not meet current standards and would require upgrading before VLocity or similar railcars could operate on this line. Similarly, a further 15 level crossings would require upgrading between Maroona and Hamilton.

To provide reasonable journey times for a passenger service using VLocity or similar railcars on this corridor, the permitted line speed for such trains would need to be raised to 130 km/h. This is likely to require some track upgrading. Unlike the Ararat-Horsham section which is a heavy-duty track, the Hamilton/Portland line has 47 kg/metre rail and still has mainly timber sleepers. This makes it equivalent to a normal Victorian Class 2 track which should be suitable for 130km/h operation of railcars provided track quality is adequate.

In addition, it is questionable whether the existing track arrangements using trailable points[5] and no fixed signals at the Glenthompson and Grampians crossing loops would meet current safety expectations for regular passenger train operations. If not, these crossing loops would likely be converted to a more conventional loop configuration with an appropriate remotely controlled signalling system. Concurrently, this could replace the existing Train Orders safe working system currently used on the line between Maroona and Hamilton. Train Order safe working would be retained between Hamilton and Portland, assuming passenger trains would not normally operate beyond Hamilton.

Station facilities and passenger platforms at Willaura, Glenthompson, Dunkeld and Hamilton will require rehabilitation and upgrading to meet DDA standards, assuming trains will be required to stop at these stations. Depending on proposed train lengths, some station platforms may also require lengthening. As at Horsham, reintroduction of daily passenger services to Horsham will also necessitate provision of a suitable stabling and servicing facility at Hamilton. The required functionality is to provide overnight security for the rolling stock and to allow for carriage water replenishment and toilet servicing. Ideally, this would be located beyond the southern end of the passenger platform using a new siding constructed for this purpose.

Figure 23: Hamilton station building and platform

[5] Trailable points are designed so that, when set for a different movement, trains can push through them in the trailing direction without damage. After a short delay, the points automatically return to their previous position.

It is understood that the Willaura station building and goods shed (built in 1877) are listed on the Victorian Heritage Register. The station building and goods shed at Glenthompson and the station building at Dunkeld are listed by the Southern Grampians Shire as being of architectural and historical significance.

Figure 24: Heritage station building and platform at Dunkeld (currently leased for community purposes)

Figure 25: Heritage station building and platform at Glenthompson

6. A Phased program of recommended service improvements

Public transport services In the regions need a comprehensive overhaul, with the reintroduction of trunk rail services to Horsham and Hamilton recommended as the vital cornerstone. In this Chapter, we look first at the immediate improvements that can be implemented within existing infrastructure limitations, and then the medium and longer term arrangements which the regions require as Victoria's population grows and changes in structure. In these timeframes, the rail system needs to be progressively standardised and updated with successive investments that improve connectivity, journey times, reliability and safety. We outline too how coach services need to evolve to provide better support to distant communities and better address social and medical remoteness through better structured services, linking to the enhanced trunk rail network.

6.1 Rail service improvements achievable in the short term – by 2021

6.1.1 Stage 1A proposal (within 12 months)

Short term, the objective should be to address the assessed needs to the extent practicable within the limitations of existing infrastructure and other resources, such as rolling stock. Such changes should be achievable within around 12 months.

An immediate need is to improve Ararat-Melbourne services by the addition of a fourth return train on weekdays and a third return train on weekends. The generally expressed requirement is for an earlier morning departure from Ararat to arrive Melbourne by 9.00am and for a mid-afternoon service from Melbourne to Ararat. The additional trains would replace some existing coach trips between Ballarat and Ararat. The result would be an increased weekday frequency for the Ararat train and coach services to and from Melbourne, filling in the gaps that now exist in morning services to Melbourne and mid-afternoon services from Melbourne, with a fast train from Melbourne at 16.33 and an additional coach connection to Horsham.

The following table sets out an indicative **Stage 1A timetable** for such a service. New and significantly altered services are in bold typeface. (See Section 3.1.1 for a comparison with existing services).

Table 28: Stage 1A indicative timetable

To Melbourne (Up)				From Melbourne (Down)			
Horsham depart	Ararat depart	Ballarat arrive	Melbourne arrive	Melbourne depart	Ballarat depart	Ararat arrive	Horsham arrive
Weekdays							
05.20	**06.40**	**07.33**	**08.59**	08.17	09.40	10.35	12.10
06.45	**08.13**	**09.06**	**10.39**	09.17	11.00	12.16	13.35
Ex Stawell	10.40	11.52	13.39	12.17	13.43	14.40	16.03
11.05	12.26	13.16	14.39	13.17	14.55	16.10	To Stawell
Ex Stawell	15.32	16.55	19.10	**16.33**	**17.42**	**18.37**	**20.00**
15.15	16.45	17.37	19.27	17.51	19.05	20.20	
	17.25	18.45	20.23	18.26	19.38	20.35	21.58
Saturdays and Sundays							
	06.45	08.05	09.38	08.14	09.43	10.39	12.37
06.38	08.10	09.04	10.38	10.14	12.00	13.15	To Stawell
10.50	**12.10**	**13.04**	**14.38**	**13.14**	**14.47**	**15.42**	17.15
14.00	16.10	17.04	18.38	18.14	19.38	20.35	21.55
15.45	17.45	19.00	20.38	19.14	20.45	22.00	23.10
Trains shown in BLACK, Road coaches in RED							

With careful planning, the additional services shown above can be achieved without the deployment of additional rolling stock. However, because two trains would now be stabled overnight at Ararat, the stabling siding and secure compound at Ararat will need to be extended by approximately 90 metres. If this cannot be completed prior to the additional services commencing, an early morning empty train may need to run from Ballarat to Ararat and return late evening for a short period.

The estimated additional capital and operating costs associated with **Stage1A** are as follows:

- Estimated additional train operating costs - $0.7 million per annum
- Estimated capital cost (extension of Ararat stabling siding) - $0.2 million.

6.1.2 Stage 1B proposal (by 2019)

Sometime between late 2018 and mid-2019, the $518 million Ballarat line upgrade project should be completed. At that time, various improvements can be implemented on the corridor, particularly long overdue service frequency improvements to local trains serving Melton and Bacchus Marsh. Ballarat passengers are expected to benefit by the introduction of weekday off-peak services running at 40 minute intervals and weekend services operating at hourly intervals. In addition, trains will replace the remaining coach services between Ballarat and Melbourne, apart from the Saturday and Sunday night coaches.

At that time, it will also be possible to further improve Ararat services by the addition of a fifth return service to Melbourne on weekdays and a fourth return service on weekends. The additional services will also replace some road coach trips between Ararat and Ballarat. At that time, it should also be possible to introduce these services without needing to acquire additional rolling stock. This will largely come about through further improvements in rolling stock utilisation, mainly by reducing standing time at terminal stations.

The following table sets out an indicative **Stage 1B timetable** with new and significantly altered services in bold.

Table 29: Stage 1B indicative timetable

To Melbourne (Up)				From Melbourne (Down)			
Horsham depart	Ararat depart	Ballarat arrive	Melbourne arrive	Melbourne depart	Ballarat depart	Ararat arrive	Horsham arrive
Weekdays							
05.20	06.40	07.33	08.59	08.17	09.40	10.35	12.10
06.45	08.13	09.06	10.39	09.17	11.00	12.16	13.35
09.45	**11.25**	**12.17**	**13.43**	**10.57**	**12.22**	**13.17**	**14.45**
12.40	**14.00**	**14.54**	**16.23**	**12.17**	**13.50**	**15.10**	
Ex Stawell	15.32	16.55	19.10	**13.37**	**14.57**	**15.55**	**17.25**
15.15	16.45	17.37	19.23	16.33	17.42	18.37	20.00
	17.25	18.45	20.23	18.26	19.38	20.35	21.58
Saturdays and Sundays							
Ex Stawell	**06.10**	**07.04**	**08.38**	08.14	09.43	10.39	12.37
06.35	08.10	09.04	10.38	10.14	12.00	13.15	To Stawell
10.50	12.10	13.04	14.38	13.14	14.47	15.42	17.15
14.00	16.08	17.02	18.38	**16.14**	**17.42**	**18.35**	**19.50**
15.45	17.45	19.00	20.38	18.14	19.42	20.35	21.55
				19.14	20.45	22.00	23.10
Trains shown in BLACK, Road coaches in RED							

The estimated additional capital and operating costs **for Stage 1B over and above those for Stage 1A** are :

- Estimated additional train operating costs - $0.7 million per annum
- Estimated capital cost – nil.

Improved road coach services to destinations beyond Ballarat and Ararat should also be implemented concurrently with the foregoing improved rail services. These proposals are detailed in Section 6.4, below.

The study also considered the possibility of introducing an interim form of rail passenger service to Horsham within the short term timescale. This could comprise a set of locomotive-hauled refurbished carriages making connection with selected V/Line services at Ararat and providing up to three return services from Horsham on weekdays. A through service could operate from Horsham to Melbourne early on Saturday morning, returning from Melbourne to Horsham on Sunday evenings. However, we recommend against further consideration of that option for the following reasons:

An older train will confirm perceptions that the region is the "poor relation" -

- It would not be fully "fit for purpose"
- It would not improve on present trip times
- It could prove unreliable
- It may be used as justification for delaying a permanent solution
- It would involve a change of trains on all trips through Ararat
- It could not serve Hamilton

Instead, we suggest that sufficient lead time be allowed in order that Ararat, Horsham, Hamilton, and other towns within the study area, can be provided with the best possible services at the outset. The feasible options in that regard are described in the following sections.

6.2 Rail service improvements achievable in the medium term – between 2021 and 2026

The recommended proposal is for rail passenger services to be introduced between Horsham/Hamilton and Ballarat via Ararat operating on standard gauge infrastructure, with all services connecting at Ballarat with direct broad gauge services to Melbourne via Ballan.

6.2.1 Stage 2 proposals overview

The proposals that follow will confer major benefits on the communities concerned, however the issues involved inevitably mean that, at least for the medium term, there will also be some relatively minor dis-benefits for some users. The underlying issue is that, given the detailed needs as assessed and described earlier in this Report, also given the comparative rail service levels elsewhere in regional Victoria and the general pre-existence of the principal infrastructure needed to support the service, a strong case exists for restoration of regular daily rail passenger services to Stawell, Murtoa and Horsham, as well as to Hamilton.

Consideration was also given to the possibility of extending the restored services beyond Horsham to Dimboola, Nhill or Kaniva, however this is not recommended for the following reasons:

- Aggregate population numbers served by the corridor taper off significantly beyond Horsham
- Infrastructure upgrading costs on the ARTC corridor beyond Ararat are essentially linear on a per kilometre basis, hence the benefits versus costs gap widens significantly west of Horsham
- Additional rolling stock is needed to provide a reasonable level of service west of Horsham with impacts on both capital and operating costs
- The region beyond Horsham will still gain considerable benefits if a quality rail service is provided to Horsham.

Similar needs have been assessed for the Hamilton area and while the population that would be served by restoration of rail passenger service from Ararat to Hamilton is around half of that on the Horsham corridor, the incremental costs involved are also relatively lower, particularly as it has been established that some of the additional services which would otherwise still terminate at Ararat, can be extended to Hamilton with no requirement for additional rolling stock. Hamilton services, when restored, would also stop at Willaura, Glenthompson and Dunkeld.

Consideration was also given to whether a case existed for restoration of services beyond Hamilton to Portland as was operated until 1981. A conclusion was reached that this could not be supported because:

- Most travel to and from Portland, whether on public transport or by car, is linked to Warrnambool and the Princes Highway corridor
- Travel by rail from Portland to Melbourne via Ararat has no prospect of being time competitive with travel by car or by combined coach and rail travel via Warrnambool
- Infrastructure upgrading costs on the ARTC corridor beyond Hamilton are essentially linear on a per kilometre basis, hence the benefits versus costs gap widens significantly south of Hamilton
- The need for improved connectivity between Hamilton and Portland can be suitably met by road coaches operating via Branxholme and Heywood.

Were it not for the conversion of the Melbourne – Adelaide corridor to standard gauge in 1995 and the resultant break of gauge at Ararat, it seems reasonable to suggest that when the remnant broad gauge line between Ballarat and Ararat was to be reopened by the Bracks Government in 2004, serious consideration might have been given then to extending the service to Horsham.

More than a decade later, this Report is proposing that the Ararat break of gauge be permanently removed by conversion of the broad gauge line between Ballarat and Ararat to standard gauge. This would be a timely intervention because the $440 million Murray Basin Rail Project will be converting approximately 1,000 route kilometres of broad gauge line, including the main Geelong to Mildura corridor through Ballarat, to standard gauge, starting in mid-2017 and planned for completion in 2019. The Ballarat to Ararat line, if not converted, would be the sole broad gauge line north and west of Ballarat. However, the line if converted would provide the basis for an efficient passenger train service from Hamilton and Horsham as well as providing some additional redundancy in the western rail network.

The changed services proposed in this Report, taken together with the existing Ballarat to Maryborough broad gauge passenger service which at present is driving a dual gauge solution on that part of the corridor, would constitute a sufficient critical mass of standard gauge passenger service to the west and north of Ballarat that would justify a semi self-contained standard gauge operation from Ballarat with its own rolling stock fleet, train stabling and maintenance support facility.

Detailed analysis of the operational and infrastructure implications of these proposals, together with the known detail of both the Murray Basin Rail Project and the $518 million project to upgrade the Deer Park to Ballarat rail corridor, has confirmed their general practicality and the long-term benefits that the combination of these major initiatives will bring to the entirety of western and northern Victoria.

6.2.2 Stage 2 operational considerations

The recommended proposal involves use of the 116 km ARTC Melbourne-Adelaide interstate corridor between Ararat and Horsham. Although also used by interstate and regional freight trains and also at present by the twice-weekly *The Overland* passenger train to and from Adelaide, this has ample unused capacity with an average of only five scheduled train movements per day in each direction. This line's capacity is aided by the availability of long crossing loops for trains to pass each other at Pyrenees (3 km west of Ararat), Great Western, Deep Lead, Lubeck, Murtoa and Horsham. Signalling on the line is controlled remotely from Adelaide.

The recommended proposal also involves the use of the 107 km ARTC controlled line from Ararat to Hamilton. The first section from Ararat to Maroona also forms part of the main Melbourne-Adelaide interstate corridor. Maroona is the junction for the lines towards Geelong and Portland. The Maroona-Portland line has no signalling, with train movements controlled by a Train Orders system of safe-working managed from Adelaide. A three-times weekly train conveying mineral sands to the Iluka processing plant south of Hamilton is presently the only scheduled service on the line although other trains conveying grain and other products do operate on the line as and when required.

6.2.3 Stage 2 rolling stock considerations

Implementation of the proposed Stage 2 elements of this project will require acquisition of additional rolling stock to operate on standard gauge infrastructure. In addition, a basic assumption of this Report is that the rolling stock employed to service the Horsham and Hamilton corridors will be of the diesel multiple unit (DMU) type, i.e. comprising self-propelled vehicles in units of two or more carriages, rather than a conventional locomotive hauling individual carriages. This will be an essential requirement for several reasons, the most important of which will be to reduce journey times and achieve high vehicle utilisation. DMUs can operate at higher speeds, accelerate and decelerate faster, and minimise turnaround times at terminal stations. They also are designed to allow for expeditious coupling and uncoupling of multiple unit consists, as will often be required for combined Horsham/Hamilton trains as far as Ararat. Such combined trains reduce crew costs over the sections where they are combined, as compared with the operation of separate trains, as well as allowing flexible response to varying loads.

The VLocity trains that currently operate between Melbourne, Ballarat and Ararat are a typical example of a diesel multiple-unit (DMU) train, in that case with each unit comprising three self-powered carriages and capable of operating as a multiple unit in consists of either six or possibly nine carriages under the control of one driver. Each three carriage VLocity train provides seated accommodation for 222 passengers.

One possibility is that existing VLocity rolling stock could be employed to service the Horsham and Hamilton lines by means of their re-deployment from other lines, having first been replaced by other rolling stock. For example, this could arise from extension of Melbourne metropolitan area electrification which would see new electric trains releasing V/Line rolling stock. Another scenario within the practical timeframe of this project would be acquisition of other rolling stock for V/Line that could in turn release VLocity units for re-deployment.

A further, but less likely scenario, would be for production of the existing design VLocity trains to be extended beyond the current contracts which are scheduled for completion during 2018. This is considered unlikely because the present basic VLocity design has been in near continuous production since 2005. Some elements of the design have been overtaken by the adoption of new design standards and some key components on the vehicles have been superseded by newer versions.

A more fundamental question is whether existing VLocity type rolling stock will be suited to the likely customer requirements and operation of the proposed Horsham and Hamilton services. As mentioned above, in their current configuration each three-carriage unit has 222 seats. The proposed service plan for these lines involves the coupling and uncoupling of multiple units at Ballarat and Ararat, meaning that some services would be operating with 444 seats which would probably be well in excess of likely requirements, especially in the earlier years of the operation. Two carriage units, each with 120-140 seats, but with provision for an additional carriage to be added if necessary in later years, are likely to be more suitable for these services. These would then have 240-280 seats when required to operate in multiple unit pairs.

The VLocity trains were designed for journeys of around two hours or a little more. They have limited space for passengers' luggage, bicycles and other articles which are more typical accompaniments of longer distance travellers. They also lack first class accommodation or a facility for on-board catering. However, as this proposal, at least for the medium term, involves services turning around at Ballarat, one-way journey times would rarely exceed 2½ hours so a two-carriage VLocity train could still prove suitable for this application.

New rolling stock must be procured either directly, or indirectly by the release and redeployment of existing rolling stock. The lead time for new train purchases is highly dependent upon whether the equipment to be acquired largely complies with existing proven designs or is to be of a substantially new design. In the former case, in ideal circumstances when manufacturing capacity is available, lead time for delivery of new rolling stock can be as short as two years from placement of orders.

New design rolling stock must pass a rigorous process of tendering, design approval, safety approval by the Rail Safety Regulator and a reasonably long acceptance, testing and commissioning process for the initial deliveries. The lead time for new design rolling stock from order to trouble-free introduction to regular service typically ranges from four to seven years.

For the purposes of this Report, we have assumed that two-carriage DMUs will be provided for Ararat, Horsham and Hamilton services to operate on standard gauge and that these trains will have the same capital and operating costs as a two carriage version of the current VLocity DMUs. These services would operate in consists of four or six carriages when necessary. This would normally only apply between Ararat and Ballarat.

A further issue of critical importance will be the availability and location of the specialised maintenance and servicing facilities required to support the operation of DMUs. Currently, no such facilities exist with standard gauge access. The existing VLocity fleet is principally maintained at Ballarat East, West Melbourne and at the Bombardier plant at Dandenong where these units are manufactured. A further new maintenance facility to cater for the expanded VLocity fleet (which will comprise 225 carriages on completion of current orders) is to be constructed within the next two years at Waurn Ponds, west of Geelong.

For the proposed operation of Horsham and Hamilton services on standard gauge, it is almost certain that new maintenance capacity will be needed. This could either take the form of modification of an existing facility to provide standard gauge access, such as that at Ballarat East, and provision of replacement capacity elsewhere, or by provision of a new facility at another location with standard gauge access.

Plans exist for a further new train maintenance facility to be constructed at Ballarat West, adjacent to the Ballarat–Ararat line, on land which has recently been acquired for that purpose, and for train stabling. Given the increased significance of Ballarat as a major rail node upon implementation of this proposal, the approach for this project would be for the existing Ballarat East maintenance, servicing and stabling facilities to be modified to provide standard gauge access. The relevant infrastructure capital costs have been assumed on this basis. Concurrently, new facilities would be provided for the expanded VLocity fleet and continuing broad gauge operations between Ballarat and Melbourne on the new site at Ballarat West. This arrangement would also have significant operational benefits.

An aerial photograph of the existing Ballarat East maintenance, servicing and stabling facilities is shown below.

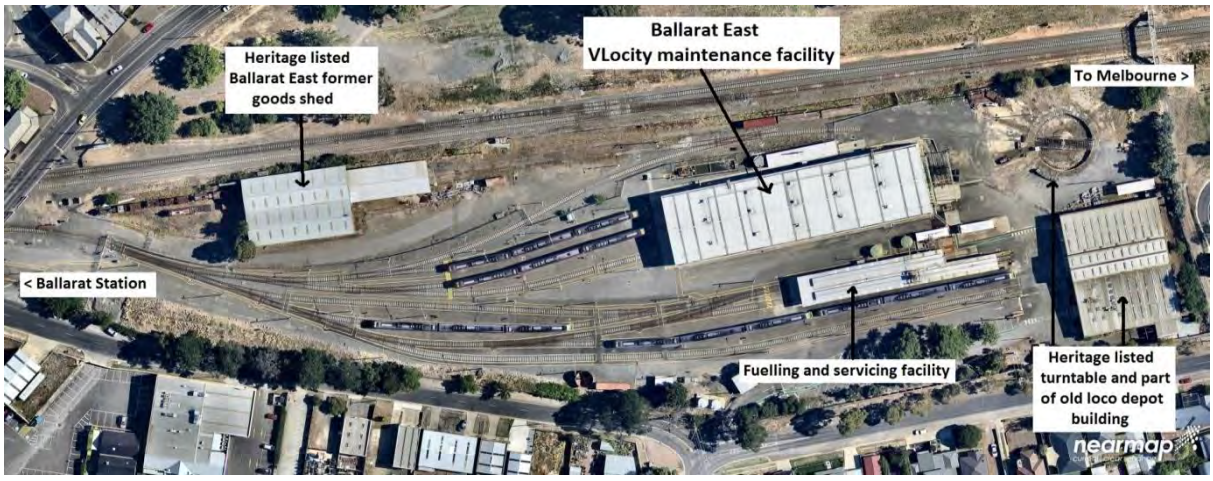


Figure 26: Ballarat East VLocity maintenance, servicing and train stabling facilities

6.2.4 Stage 2 service plan

An initial service plan has been developed to illustrate the type of service that could be introduced on the Ballarat-Ararat-Horsham and Hamilton corridors once the necessary supporting infrastructure is in place. There are variants of this plan that could be developed depending upon feedback from community consultation which should be undertaken before major timetable changes are introduced. The main features of a Stage 2 service plan are likely to be as under:

- Four services Horsham - Ballarat and return on weekdays, three services on weekends, with connections at Ballarat
- Two supplementary coach services Horsham to Ararat daily, with connections at Ararat
- Three services Hamilton to Ballarat and return on weekdays and weekends, with connections at Ballarat
- Enhanced coach services Hamilton to Ballarat and return (see Section 6.4)
- One service in each direction Horsham to Hamilton on weekdays with change of trains at Ararat
- Most Horsham and Hamilton services combine or split at Ararat
- Six services Ararat to Ballarat and five services Ballarat to Ararat on weekdays and weekends, with connections at Ballarat
- Requires four train sets to cover all services and routine maintenance

This service plan is relatively straightforward operationally and should work reliably in conjunction with the required supporting infrastructure (see Section 7). Connections between standard and broad gauge trains at Ballarat have been planned to be as seamless as possible and, under normal circumstances, would not require passengers to change platforms. Indicative Stage 2 timetables for Ararat, Horsham and Hamilton are set out below.

Table 30: Indicative Stage2 timetables for Ararat and Horsham

To Melbourne (Up)					From Melbourne (Down)				
Ararat/Horsham services			**Connecting service**		**Connecting service**		**Ararat/Horsham services**		
Horsham depart	Ararat depart	Ballarat arrive	Ballarat depart	Melbourne arrive	Melbne. depart	Ballarat arrive	Ballarat depart	Ararat arrive	Horsham arrive
Weekdays									
05.30	06.40	07.35	07.45	08.59	06.09	07.43	07.50	08.55	To Stawell
06.37	07.51	08.44	08.54	10.22	07.26	09.13	09.20	10.12	11.22
08.55	10.30	11.25	11.34	13.02	10.57	12.18	12.23	13.15	14.30
12.05	13.18	14.08	14.15	15.42	14.17	15.41	16.00	17.05	18.30
14.25	15.57	16.51	16.59	18.27	16.33	17.38	17.53	18.55	20.05
16.40	17.50	18.45	18.59	20.27	18.26	19.35	19.45	20.37	21.47
					19.15	20.33	20.45	22.00	To Stawell (Mon-Thur) To Horsham at 2320 (Fri)
Saturdays and Sundays									
Ex Stawell	07.11	08.06	08.16	09.38	08.14	09.33	09.42	10.35	11.45
06.50	08.11	09.06	09.16	10.38	12.14	13.33	13.42	14.36	15.48
09.50	11.15	12.08	12.16	13.38	15.14	16.33	16.41	17.35	19.00
14.00	15.14	16.07	16.16	17.38	18.14	19.33	19.43	20.36	21.45
16.50	18.10	19.05	19.16	20.38	19.14	20.33	20.41	21.35	To Stawell
Standard Gauge Train shown in BLUE, Broad Gauge Trains shown in BLACK, Road coaches in RED									

Table 31: Indicative Stage 2 timetables for Ararat and Hamilton

To Melbourne (Up)					From Melbourne (Down)				
Ararat/Hamilton services			**Connecting service**		**Connecting service**		**Ararat/Hamilton services**		
Hamilton depart	Ararat depart	Ballarat arrive	Ballarat depart	Melbourne arrive	Melbourne depart	Ballarat arrive	Ballarat depart	Ararat arrive	Hamilton arrive
Weekdays									
06.25	07.51	08.44	08.54	10.22	07.26	09.13	09.20	10.12	11.28
11.55	13.18	14.10	14.15	15.42	10.57	12.17	12.23	13.15	14.30
14.42	15.57	16.51	16.59	18.27	18.26	19.35	19.45	20.37	21.59
Saturdays and Sundays									
06.40	08.11	09.06	09.16	10.38	08.14	09.33	09.42	10.35	11.56
13.20	15.14	16.07	16.16	17.38	12.14	13.33	13.42	14.36	16.20
16.35	18.10	19.05	19.16	20.38	18.14	19.33	19.43	20.36	21.58
Standard Gauge Trains shown in BLUE, Broad Gauge Trains shown in BLACK									

6.2.5 Estimated Stage 2 capital and operating costs

The estimated additional capital and operating costs **for Stage 2 over and above those for Stage 1B** are as under:

- Estimated additional train operating costs - $5.1 million per annum
- Estimated ARTC access charges - $1.7 million per annum
- less offsetting reduction in road coach operating costs - $0.7 million per annum
- **Estimated total additional operating costs - $6.1 million per annum**
- Estimated rolling stock capital cost - $60 million for 4 x 2-car DMUs
- Estimated infrastructure capital cost - $309 million (see detail in Section 7)
- **Estimated total capital cost - $369 million.**

6.2.6 Stage 2 timelines

A significant improvement in rail service to the study area, as proposed for Stage 2 , will require investment in rail infrastructure and rolling stock, involving reasonable lead times. The first milestone will be to achieve in principle support from Government followed in turn by a Ministerial decision to authorise preparation of a detailed business case by PTV or the Department. Subject to the business case showing an acceptable outcome, this would (hopefully) be followed by a commitment to funding the project. Only at that stage do the normal project implementation processes kick in.

An optimistic view would have achievement of in principle support from Government later in 2017 although completion of a sufficiently detailed business case for the May 2018 State Budget would require that work to be finalised by January 2018. A more realistic expectation could be to achieve in principle support during the first half of 2018 and for the business case to be finalised by January 2019 for consideration in the lead up to the May 2019 State Budget.

Should the project be approved and announced in the May 2019 State Budget, this would likely involve a capital allocation over at least a 3-year period from 2019/20 to 2021/22. For a project of this type, this would generally provide sufficient lead time for infrastructure design, tendering, construction and commissioning and provide for commencement of operational funding from mid-2022.

However, lead times for new and/or additional rolling stock would be far less certain depending, as explained above, upon the nature of actual decisions taken in this regard. This could therefore extend the duration of the implementation process. However, the physical scope, conceptual design and procurement arrangements for new rolling stock would have to be resolved either as part of, or at least prior to acceptance of, the business case.

6.3 Proposed Coach Service Improvements

As rail services are progressively changed, coach services can be revised to develop a completely integrated train/coach network and to eliminate parallel running, where practicable. In addition, new and expanded routes are required to provide intra-regional connectivity and improved service levels from smaller towns to regional centres, Ballarat, Geelong and Melbourne.

6.3.1 Stage 1 and 2 Road Coach Improvements

As Phase 1A and 1B rail improvements are made to Ararat services, it is recommended that Ararat becomes increasingly the focal point for coach/train connections to western Victoria. This will support continued investment in the quality of passenger interchange facilities at Ararat (including facilities for disabled travellers), and optimise the use of train and coach resources and minimise overall journey times for travellers. Concurrently with the Ararat (and Warrnambool) train improvements, connections to South Australian destinations, including Mt Gambier, Naracoorte and Adelaide should be improved.

The study has identified the need for additional services that should be introduced on the following routes in Stage 1:

- An additional weekday mid-morning service to operate Hamilton to Ballarat and mid-afternoon Ballarat to Hamilton. This would provide Hamilton with three daily return services to Ballarat and Melbourne (see Table 32 below). Hamilton would then enjoy service levels more appropriate to its size while the surrounding towns could access a coach at a more convenient time than at present. Introduction of this additional service would require an additional coach and is estimated to cost around $350,000 pa.
- Ballarat-Mount Gambier (via Hamilton) and Casterton-Warrnambool services to operate 7 days instead of weekdays only. This would offset current weekend isolation in Casterton and Coleraine and support further tourist development in the region. This service increase could be operated by utilising existing coach fleet and is estimated to cost about $150,000 pa.
- New coach service to operate weekdays Horsham to Hamilton via Balmoral and Cavendish and return, coordinated with Hamilton to Portland services. Including an additional vehicle cost, this service would cost in the order of $400,000 pa
- Saturday service Casterton to Warrnambool. This service is estimated to cost in order of $50,000 pa.
- Reorganisation of coach services to Halls Gap and Grampians to improve access by tourists and residents, including providing better access to additional accommodation houses and walking tracks.

Table 32: Proposed Stage 1 Melbourne-Hamilton road coach/rail services via Ballarat

To Melbourne (Up)			From Melbourne (Down)		
Hamilton depart	Ballarat arrive	Melbourne arrive	Melbourne depart	Ballarat depart	Hamilton arrive
Weekdays					
06.10	08.40	10.22	08.17	09.55	12.15
08.10	**10.40**	**12.22**	**12.17**	**13.55**	**16.25**
16.25	18.45	20.27	18.26	19.50	22.10
Saturdays and Sundays					
06.30	09.00	10.38	08.14	09.55	12.15
13.40	**16.00**	**17.38**	**15.14**	**17.00**	**19.20**
16.40	19.00	20.38	18.14	19.50	22.10
Trains shown in BLACK, Road coaches in RED, New services shown in BOLD					

The study found that that services to some smaller towns and intra-town services that operate infrequently have low patronage but nevertheless perform important roles in providing some level of accessibility to remote communities and suburbs of the larger towns. It is recommended that a more detailed review be undertaken of these local bus services to assess suitability of current routing, timings and options including demand responsive services and greater use of school buses.

In total, a broad estimate of the operating costs for these new and additional regional and town services, including allowance for new vehicles is in the order of $1-2 million per annum.

The quality of road coach infrastructure generally requires upgrading to improve customer waiting conditions and to meet DDA requirements. It is envisaged that the importance of both Horsham and Hamilton as transport hubs will increase and there is a need for significantly upgraded facilities for passengers. In the longer term the location and requirement for facilities at larger towns, including Stawell, Hamilton and Horsham will depend on decisions regarding future re-instatement of train services.

It is also recommended that PTV works with Councils to improve coach stops in smaller towns to maximise safety and comfort including good lighting, seating and passenger information. Options to combine coach stops with local facilities, e.g. shops, tourist information or community centres should be pursued.

Tourist authorities and V/Line should undertake a review of scheduled coach services to tourist destinations, particularly coach connections, to permit weekend and public holiday visits to key tourist destinations including the Little Desert, Wartook Valley, northern and southern Grampians and the Pyrenees wine region. It will also be important to provide coach access to the Grampians Peak Trail when it is completed in 2019. (Also see Table 11 on page 30).

Tourist authorities, Councils, PTV and operators should jointly investigate opportunities for demand-responsive or other improved coach access to tourist destinations, such as the Mount Arapiles phone booking arrangement, and the Wangaratta approach to the carriage of bicycles and access to rail trails, for walkers, climbers, cyclists and sightseers to the region.

6.3.2 Coach changes with reintroduction of trains to Horsham and Hamilton

As trains are reintroduced to Hamilton and Horsham there will be an opportunity to reorganise and rationalise the entire public transport network and quality of public transport in the study region.

Horsham and Hamilton could be developed as regional transport hubs. Most regional coaches would serve these hubs with travellers enjoying fast and comfortable trains for the greater part of their journey. Total travel times would be significantly reduced for all travellers to and from Ballarat and Melbourne

7. A Phased program of recommended infrastructure investments

7.1 Short term improvements to support services to 2021

Minimal infrastructure investment is needed to support Stages 1A and 1B for improved broad gauge services to Ararat as set out in Sections 6.1.1 and 6.1.2. The only required infrastructure investment is a 90 metre extension to the existing train stabling facility at Ararat in order that it can accommodate a second 3-car VLocity unit. The estimated cost of this work is $0.2 million.

7.2 Medium term improvements to support services 2021 to 2026

7.2.1 Infrastructure investment overview and cost estimates

The required infrastructure changes and preliminary capital cost estimates to support Stage 2 services are summarised in the following table.

Table 33: Stage 2 required infrastructure changes and preliminary capital cost estimates

Location	Scope of work – high level description	Preliminary cost estimate
Wendouree-Ararat	Convert 84km of plain Class 2 track on predominantly timber sleepers to standard gauge	$35.0m
Wendouree-Ararat	Replace Staff and Ticket safeworking with automatic block signalling	$8.0m
Ararat	Re-arrange track layout and signalling	$8.0m
Trawalla	Install 1500m crossing loop at Trawalla	$15.0m
Ballarat Station	Dual gauge Ballarat platform tracks and related changes	$10.0m
Ballarat N. Junction-Wendouree	Provide second standard gauge track Ballarat North Junction to Wendouree and associated signalling changes	$20.0m
Ballarat East	Convert stabling sidings and maintenance depot tracks to standard or dual gauge	$14.0m
	Sub-total Ballarat to Ararat	**$110.0m**
Ararat-Horsham	Upgrade 49 level crossings to RFR standards	$32.0m
Ararat-Horsham	Track upgrade (116 km) for 160km/h DMU operation	$15.0m
Ararat-Horsham	Signalling upgrade for 160 km/h operation including install TPWS at 75 signals	$35.0m
Ararat, Stawell, Murtoa, Horsham	Upgrade stations to meet current passenger standards and conform with DDA requirements	$16.0m
Horsham	Train Stabling and Servicing facility including signalling	$9.0m
	Sub-total Ararat to Horsham	**$107.0m**
Ararat-Hamilton	Upgrade 28 level crossings to RFR standard	$18.0m
Ararat-Maroona	Track upgrade (21 km) for 160km/h DMU operation	$3.0m
Ararat-Maroona	Signalling upgrade for 160 km/h operation including Install TPWS at 10 signals	$6.0m
Maroona-Hamilton	Track upgrade (86 km) for 130-km/h DMU operation	$20.0m
Maroona-Hamilton	Replace Train Order safeworking with automatic block signalling	$8.0m
Maroona-Hamilton	Install signalling at Glenthompson and Grampians Loops including motorised points	$8.0m
Willaura, Glenthompson, Dunkeld, Hamilton	Upgrade stations to meet current passenger standards and conform with DDA requirements	$20.0m
Hamilton	Train Stabling and Servicing facility including signalling	$9.0m
	Sub-total Ararat to Hamilton	**$92.0m**
Total infrastructure Ballarat to Horsham and Hamilton (Stage 2))		**$309.0m**

The major aspects of these changes are detailed below.

7.2.2 Ballarat to Ararat

The underlying pre-requisite for Horsham and Hamilton to take a major step towards provision of high quality rail service is for removal of the break of rail gauge created at Ararat in 1995 by the Melbourne-Adelaide standardisation project. This requires gauge conversion between Ballarat and Ararat which should generally align with standardisation of the Warrenheip to Gheringhap rail corridor currently planned for completion in 2019 as part of the Murray Basin Rail Project (MBRP).

Compared with the present mixture of broad and standard gauge in western Victoria (see diagram in Section 5.1.1), the combined changes brought about by the MBRP and proposals in this Report will restore full rail connectivity between Ballarat and the entire north and west of the State, as shown below. These are critical steps towards the ultimate restoration of a uniform rail gauge throughout regional Victoria.

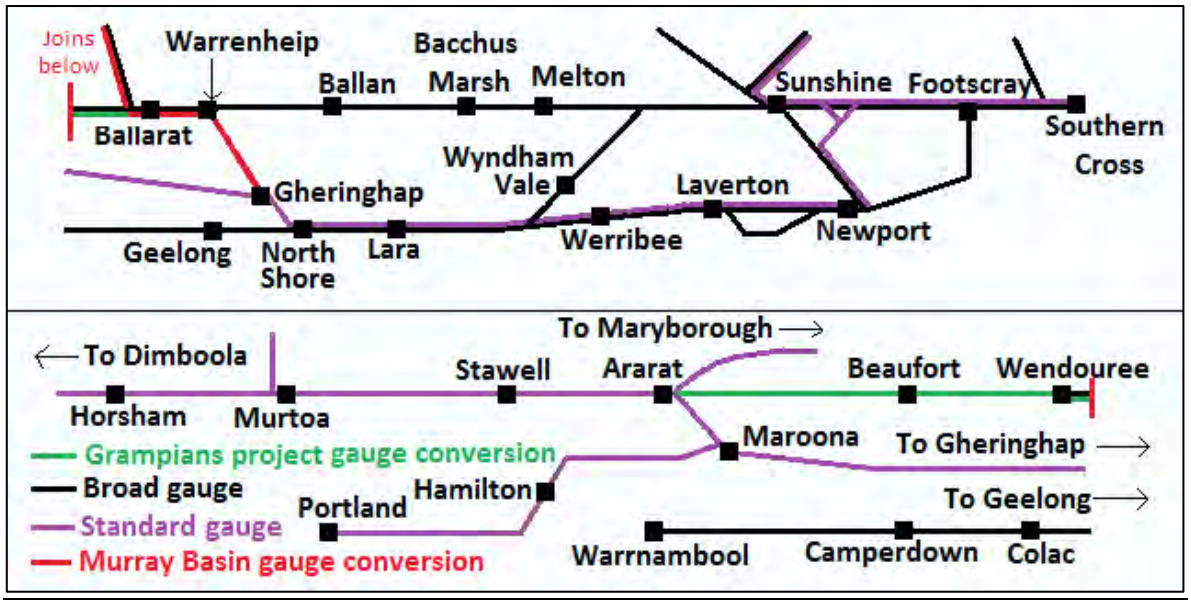


Figure 27: Diagram showing broad and standard gauge rail networks following Murray Basin Rail Project and proposed Ballarat to Ararat gauge conversion

Concurrent with gauge conversion of the Ballarat to Ararat line section, it is proposed to replace the existing very basic Staff and Ticket system of train safeworking between Wendouree and Ararat with automatic block signalling and to provide a new crossing loop at Trawalla (8 km east of Beaufort). These works will significantly improve the efficiency of the operation and provide for additional services (including the possibility of some regional freight services) being operated on the Ballarat to Ararat line in future. This possibility is influenced by the proposed intermodal freight hub to be constructed west of Wendouree as part of the West Ballarat Employment Precinct development.

Other proposed changes in the Ballarat area are largely a necessary consequence of operating standard gauge passenger services into or through Ballarat. These include the need for dual gauge track to enable standard gauge trains to access each of the main Ballarat platforms, provision of separate broad and standard gauge tracks between Ballarat North Junction and Wendouree so that the present services to and from Wendouree can continue to operate with minimal impact, and provision of standard gauge access to the Ballarat East train stabling and maintenance facility. These changes are shown on the following simplified diagram.

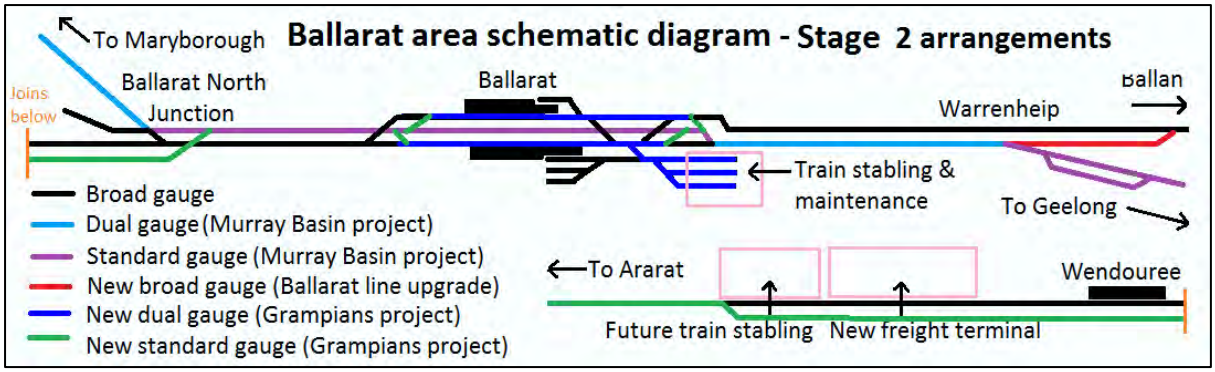


Figure 28: Diagram showing proposed track and gauge configuration in the Ballarat area

Other consequential changes will be required at Ararat to enable both the dock (dead-end) and main platforms to be used as necessary for Horsham and Hamilton passenger services as well as for some that will still terminate at Ararat. These include changes to signalling arrangements that will be needed to allow Hamilton and Horsham services to amalgamate or divide at Ararat when required. The proposed track layout changes, together with those for the Murray Basin Rail project, are shown in the following diagram.

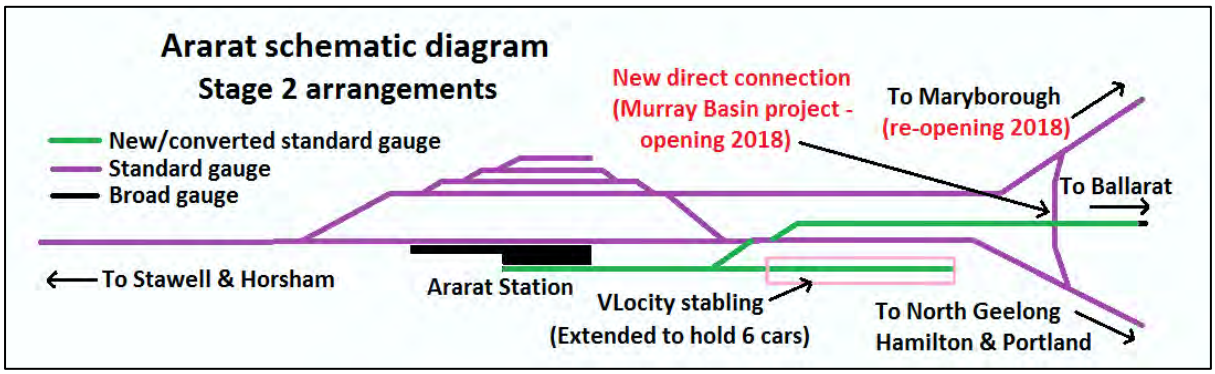


Figure 29: Diagram shown proposed track configuration changes at Ararat

7.2.3 Ararat to Horsham

The principal work in this line section will be to align ARTC and V/Line safety standards and to undertake modest track improvements to enable the operation of diesel multiple unit (DMU) type trains to operate at up to 160 km/h. The main changes required are to upgrade all level crossings to comply with V/Line Regional Fast Rail (RFR) standards and to modify the existing ARTC signalling for faster running including installing the TPWS train protection system. TPWS (Train protection and Warning System) provides automated remote oversight of V/Line passenger train movements on all 160 km/h lines and will automatically intervene to maintain safe speeds should a train not fully comply with all signal indications and permanent speed restrictions.

Other works will include provision of a secure train stabling facility at Horsham for overnight train stabling and servicing and for upgrading of stations and passenger facilities at Ararat, Stawell, Murtoa and Horsham to meet current standards and especially to comply with DDA (Disability Discrimination Act) requirements.

7.2.4 Ararat to Hamilton

Passenger trains last regularly operated to Hamilton over 35 years ago, hence stations and some other facilities require deeper restoration to meet current standards, including DDA requirements. This will apply at Willaura, Glenthompson, Dunkeld and Hamilton which are proposed as stopping locations for restored Hamilton rail passenger services.

As noted previously, it is understood that the Willaura station building and goods shed, both built in 1877, are on the Victorian Heritage Register. Likewise, the station buildings at Glenthompson and Dunkeld are regarded as having important heritage value. That may impose an obligation on government (most likely through

VicTrack) to provide additional funding for authentic restoration purposes, possibly in conjunction with the stations reopening, if not undertaken previously.

It is not feasible to upgrade the Maroona to Hamilton line section for train speeds in excess of 130 km/h without major capital investment, however with general improvement to sleeper, ballast and drainage condition and track re-surfacing, the existing track structure should prove to be quite suitable for DMU operation at 130 km/h. This conforms with normal Class 2 Victorian track standards.

As with the Ararat to Horsham line, there will be a need to upgrade all level crossings to comply with V/Line Regional Fast Rail (RFR) standards before DMU type trains can operate on the line. Crossing loops at Glenthompson and Grampians Loop (located approximately 10 km south of Dunkeld) are presently un-signalled and require various changes to meet current operational and safety standards for rail passenger service operations.

8. Improving Passenger Experience

8.1 Introduction

The study team has gained an insight into the level of service experienced by travellers through undertaking numerous train and road journeys in the region, discussions with operators and local people, and review of the community and stakeholder engagement program undertaken by the Victorian Government in 2015.

The study team also has extensive experience with trains and road coaches in Australia and overseas and is familiar with international best practices.

The study team concluded that if public transport is to play a more significant role in the study region the operators must strive to provide more than a basic service and must aim to grow and diversify their customer base by providing a more extensive, convenient, attractive and comfortable travel experience. All forms of public transport need to pay increasing attention to the experience that they are providing their customers.

In recent years, the travel experiences have improved in parts of the Wimmera with the re-instatement of trains to Ararat, introduction of VLocity trains on the Melbourne – Ballarat- Ararat route and new road coaches but future services throughout the region must at least achieve parity with the private motoring experience if they are to be genuine competitors and motivators for population growth and regional development

This chapter outlines some general principles for improving traveller experience with regional public transport services with some specific references to issues and opportunities in the study area.

8.2 Trip planning starts when a Journey is contemplated

With choices now available to many travellers, transport providers must design their services with an understanding of the travel markets and characteristics of potential users, (as discussed in Chapter 4), and include:

- the characteristics of the individual traveller - age, sex, degree of physical mobility, locals, visitors, tourists (Australians and overseas)
- the purpose of the trip – work, education, shopping, tourism, visiting friends and relatives
- the options available to the traveller. Each of the above factors influences a traveller's requirements, expectations and choices. Travel decisions will also be strongly influenced by the "passenger experience" associated with journeys previously undertaken and perceptions of the service that will be provided by the transport provider. These factors come into play at an early stage when an individual is considering a journey.

8.3 Awareness of Public Transport Options

8.3.1 Marketing the Public Transport Brand- Promotion and Advertising

Effective marketing of public transport is required to improve the overall image of services in the study area and to Melbourne and other major regional centres. Citizens who consider riding public transport, particularly those who have the option to drive, can be deterred by the unfamiliarity with the services — where and when they go, timetables, quality of vehicles, fares and ticketing, the boarding process — basically many aspects of using public transport are not familiar skills for many potential users.

The level of public understanding of the public transport system and how to use it is often quite low and a significant information and marketing campaign should be implemented. Ideally this campaign should coincide with the implementation of service improvements recommended in this Report.

8.3.2 Communicating with customers

Providing good information about the availability of services is an essential aspect of successful public transport systems. Potential users can be deterred by poor information about routes and timetables, so providing them with easily accessible, trustful sources which show relevant information can attract and retain users. The type of information provided can be divided into the following categories: pre-trip and in vehicle.

Pre-trip information Pre-trip information is particularly crucial for people making multi-modal trips and trips to Melbourne where unfamiliarity with the metropolitan transport network can be daunting. Each of the different travel markets has different requirements for information. Elderly people have a substantially greater need for information at all stages of a trip to save on physical effort and anxiety.

To plan their trip, public transport customers want information about services, overall travel times including access and egress issues, transfers, route alternatives and irregular events that may disrupt a journey. Some also want to know about park and ride facilities, availability of taxis, trams, local and airport buses, facilities for handicapped travellers, and provisions for carrying bicycles. Assisting customers in trip planning is a major service of transport agencies, helping people get the best use out of the system is critical, not only for those who use the system regularly, but also for visitors to a region. Overseas visitors may require information in a language other than English.

The style and types of maps and timetables available in the region should be constantly reviewed. Every means of distribution should be used including publications, media advertising, printed timetables and maps, electronic resources such as websites and mobile applications should be produced and widely distributed.

Regional maps and timetables should generally include all route and town services irrespective of whether they are managed directly by PTV or contracted though V/Line. A single “one stop” facility that can provide information on all train, road coaches, town buses, taxis and hire cars is essential.

The ways in which people access information have undergone a huge transformation in the last decade, with more people going online to find information. With technical progress and widespread use of the Internet, Facebook and Twitter, there are now much more means of information dissemination available to public transport operators. Establishing a sophisticated online presence can have a large impact on potential travellers.

Information during the journey: Ensuring that customers are well informed during their journey as well as any disruptions is vital but often done badly. Information for customers who are underway is most useful when it is in real time. Ways to deliver this information include via mobile devices (mobile phones, smart phones), announcements and visual displays within carriages, at Southern Cross and at junction stations such as Ballarat and Ararat. Announcements and visual displays can be critically important for passengers whose hearing or sight is impaired. For customers without real time information perceived wait times are greater than measured wait time, and lack of information can cause anxiety and result in missed trains or connections.

Mobile phone applications and text updates can be used to great advantage to provide information before and during travel.

While the recent advances in in communications have been dramatic, particularly regarding mobile technologies, it must be recognised that that simple communications strategies that do not require access to mobile devices are still very important particularly for older people in rural areas. The experience projected by staff is also crucial. Interactions with staff are less and less frequent, but therefore more important to get right. In addition to V/Line and bus company employees, numerous other personnel, including employees and volunteers with tourism, health and social service organisations, have contact with the travelling public and should be made familiar with public transport options.

Social media such as Twitter can allow interactive, personal feedback that provides information to a broader audience. Sharing information and a more proactive approach can help leverage communication activities and foster creativity leading to richer experiences for customers.

As internet access becomes more essential in customer's lives, customers must be able to use their cell phones at stations, on platforms and inside trains. A major complaint from travellers on V/Line trains is extent of area where internet and mobile phone coverage is not available. This problem is currently exacerbated by discontinuous mobile tower coverage along the Ararat and other rail lines, and the design of VLocity carriages which shields and weakens signals within the cars. Access to these services is an important selling point of rail services, as travellers can use on-train computer time for work, study or social communication, which is not generally possible for bus or car users.

Improved and more current information and communications on services was identified as a priority in the community workshops held in the Grampians and Barwon South West regions and reported in the *Conversations Report* issued by the Victorian Government.

8.3.3 It is the total journey from origin to destination that matters

Customers' trips don't begin when they enter the station or arrive at a bus stop and they don't end when they exit. The customer must be helped navigate throughout their entire trip, which often begins at home and may terminate at an office, school, shopping centre or medical facility. For many people, particularly newcomers, entering a public transport system can be an intimidating experience. One of the main tasks is to make the system more customer service friendly.

Journeys often require change of vehicle and/or mode of transport. The aim must always be to create a seamless and integrated total journey. This may include the regularly scheduled modes (trains and coaches) but could also involve taxis, hire cars, community buses or private cars. It is a critical issue for the elderly and disabled but it is also important for other travellers such as business people arriving in a regional centre such as Ararat to attend a meeting or tourists visiting a regional feature such as the Grampians.

Wayfinding provides guidance and the means for people to navigate the systems from their trip origin to their destination, as well as feel comfortable in their surroundings. In this sense wayfinding can be thought of on two levels:

- **System wide level**- finding the way not only to a final station or bus stop but to an ultimate destination
- **Station or Interchange level** –as in finding the way to the station platform or bus/coach loading area. While this applies mainly to travellers to Melbourne or metropolitan stations it is also a relevant consideration at regional interchange stations such as Ballarat, Ararat and Warrnambool.

For both system-wide wayfinding and more localised wayfinding it is important to provide adequate information about connecting services, local attractions, etc.

8.4 The Customer Experience at Stations, Coach Stops and Interchanges

8.4.1 Access, Egress and Transfers

The path a customer takes from the home, office, school, shop, and tourists' facility to a station or coach stop is fundamental to his or her experience of the system. In rural areas, this access and egress can be a significant distance and may involve a difficult route. It is desirable that transport operators work with local councils in locating regional coach terminals and local stops where access is easiest for most potential travellers with attention given to convenient, well-lit and safe access pathways.

There is a need to facilitate movement especially for people with special needs – the elderly, people with children (and strollers) luggage, bikes, bulky items, wheel chair users. Spaces need to be uncluttered, easy to navigate, with clear aesthetics to help customers feel at ease. Some specific comments about facilities in or serving the study area follow.

8.4.2 Stations

V/line Stations

- Warrnambool (staffed) - the hub for south-western coach services and park and ride users from the south-west
- Ballarat (staffed)- the hub for western coach services and park and ride users from the Wimmera and Grampians
- Ararat – (staffed) serves local area and the main interchange location for train / coach travel for Wimmera cities and towns. Park and ride is also significant
- Wendouree (staffed) and Ballan (staffed) are park and ride stations used by residents from western Victoria

Non-V/Line stations

Stawell, Horsham, Nhill, Dimboola and Kaniva stations are stopping places (on request) for the bi weekly *The Overland* train. Stawell and Dimboola stations are also stopping places for road coach services

Although the stations in the study area are relatively small when compared to Melbourne city and larger metropolitan stations, attention still needs to focus on the customer experience and care needs to be taken to provide a comfortable environment that is easy to access. Ease of transfer is particularly important at inter modal hubs such as Warrnambool, Ballarat and Ararat and park and ride sites at Warrnambool, Wendouree, Ballarat and Ballan.

Major features influencing the travel experience at stations serving the study area are:

– ***Ease of ticket buying at the station*;**

Purchasing V/line tickets at staffed stations is easy. A significant concern among users is that the myki ticketing system does not extend beyond Waurn Ponds on the Warrnambool line and beyond Wendouree on the Ararat line. The inconsistent ticketing across regional Victoria is frustrating. Some places use myki and others use paper tickets. Sometimes passengers are required to purchase two tickets. Purchasing tickets at agencies and on coaches is considered reasonable although in some towns the signage is not particularly obvious. Purchasing tickets for *The Overland* is generally most unsatisfactory. Such purchases must be made 48 hours in advance of travel and the information about how and where to purchase a ticket is not obvious in most towns.

– ***Provision of information about train times***;

Information provision about train times is generally considered satisfactory (except for *The Overland* train) but as noted in previous comments about marketing public transport. (8.2) there are more opportunities, particularly in the provision of real time information.

– Upkeep/repair of the station buildings and platforms;

V/Line Ararat line stations are generally in good condition.

– ***Facilities and services available at the station***

Ballarat – generally good, apart from non-DDA compliance, although Ballarat station precinct is about to be redeveloped and will be made DDA-compliant through the renovations.

Ararat – clean and comfortable with good tourist information centre. Improved refreshment service is desirable as this is a major interchange that will become more important in future.

Conditions at non-V/Line stations currently served by *The Overland* are at best basic (Stawell and Dimboola) or unsatisfactory (Horsham). Any restoration of more frequent services will require significant improvements to passenger facilities at these stations.

– ***Attitude and helpfulness of the staff at the station***

V/Line staff are generally courteous and helpful but overall service levels could be improved with more active involvement of staff with passengers' transferring between modes, luggage handling and information and assistance to elderly and disabled travellers.

– ***Ease of connection with other forms of public transport***

Transfer distances at key stations are relatively short but road coach passenger boarding/alighting conditions are often not particularly easy or compliant with DDA standards. If the investments recommended in this Report are undertaken, it will be important that connections and interchanges with coaches, buses and taxis throughout the region are reviewed and made as seamless as possible for travellers.

8.4.3 Road Coach Stops

Waiting for road coaches on the street is very different to waiting for a train. Designers of these facilities need to locate coach stops in safe, visible locations, with paved connections from footpaths to the shelter area.

Within the study area the size and quality of stops varies considerably even on the same route. Extensive booking, information and waiting areas are provided at Hamilton (former rail station), Horsham (former police station), and Nhill (custom built bus and tourist centre). While these facilities offer a reasonable level of passenger comfort, conditions at each individual site need to be reviewed to optimise the customer experience. There are problems at some sites in boarding and alighting particularly for elderly and disabled travellers. Few locations currently meet DDA standards.

The presence of staff at major stops is highly desirable and appreciated. Opportunities should be taken to combine the coach stop with other functions such as tourist information (Nhill) or community activities. These create a safer and more vibrant environment for travellers.

At smaller sites, facilities range from simple sign on a pole or a relatively large glass shelter with a roof and bench. Maps are usually located on a pole outside. in inclement weather a customer must walk out into the rain to see where the bus goes to or when it is going to arrive. Only a few shelters have displays with real time information.

8.4.4 Interchanges

Good design is critical for transport interchanges. The objective must be to make the experience seamless, so that interchanging is straightforward, and not a cause of anxiety, delay or confusion.

In the study area, the main interchanging sites are Ararat (Train/Road coach) and Horsham (Coach/Coach), and outside the study area Ballarat and Warrnambool are important interchanges for travellers between the region and Melbourne. Some interchanging also occurs at Hamilton and at Stawell for Grampians buses.

In addition to previous comments about requirements at railway stations and bus stops, specific attention at interchanges must be given to:

- Information about fares, ticketing and train/coach times
  Co-ordination of timetables to minimise waiting time
- Safe and under cover transfers between connecting vehicles (Changing buses at Horsham is not satisfactory with no direct cover for passengers and buses sometimes double parked – see Figure 9.
- Clear directions for passengers with both static and dynamic information about connections and about local town wayfinding and facilities. This signage should include multi- lingual signage where tourist traffic is expected, such as at Ballarat and Stawell (for Grampians visitors)
- Personnel to help those needing advice or help with luggage, such as elderly and disabled people
- Refreshment facilities

8.5 The Customer Experience on Trains and Road Coaches

Some of the key factors influencing the overall experience of the "in-vehicle" component of a public transport journey are listed below with comments about how current services are performing against these factors:

- ***The frequency of the trains and coaches***

Train frequencies on both Warrnambool and Ararat routes and on Hamilton road coach services are considered inadequate. Although there are additional road coach services to and from Ararat (and beyond) these are often not realistic alternatives to additional train services, particularly for business travellers.

The frequency of coach services (or complete lack of a service) between regional centres, such as between Horsham and Hamilton, is a common complaint in the region.

- ***Waiting and transfer times***

Waiting times are generally related to service frequency. Excessive waiting times for travellers at Melbourne are a major deterrent particularly for business travellers. There are 22 services in each direction on weekdays between Melbourne and Ballarat but only 3 trains in each direction (and a coach) between Ballarat and Ararat, so it is not surprising that some users drive to Ballarat or Ballan to access the more frequent services.

Transfer times for some coach services connecting with trains are often excessive. Attention needs to be given to transfer times for Hamilton services at Ballarat

- ***Scheduled journey times***

Ararat train travel times are competitive with car travel with rail speed limits of 160 km/h between Melbourne and Ballarat and 130 km/h beyond Ararat. The journey times for Ararat trains could be reduced by elimination of unnecessary stops in Melbourne metropolitan area. The current upgrade of the Ballarat line should enable reduction in travel times and improved reliability.

Acceleration of Warrnambool line trains is desirable. They now take up to 40 minutes longer than 1985 schedules, and the service frequency of 4 trains per weekday needs to be increased.

- ***Connections with other services,***

Some improvements to scheduled connectivity are recommended in this study. Real time information improvements and information about availability of connecting services- local buses, availability of taxis, transferring procedures would assist travellers

- ***Punctuality/reliability***

During the implementation of new services on the Regional Rail Link, service punctuality on the Ballarat line was adversely impacted for some time but appears to have now stabilised. The implementation of the Ballarat line improvements should allow good punctuality and reliability on the Ballarat and Ararat lines as infrastructure is improved. Additional crossing loops and duplicated sections of track all assist in improving punctuality and avoiding cascade effects if a train in one direction is delayed.

- ***Helpfulness/attitude of on-board staff***

The staff on trains and road coaches are generally considered favourably by travellers. The relative roles of station and on board train staff at terminals and interchanges sometimes appeared unclear particularly in relation to assisting with luggage and helping elderly and disabled transfer at interchanges.

- ***The toilet facilities on the vehicle;***

The cleanliness of toilets on train varied considerably with toilets on the older carriages on Warrnambool trains unsatisfactory.

- ***Whether there was sufficient room for all the passengers to sit/stand on the train/coach;***

Overcrowding is a factor on some Ballarat trains, and Warrnambool trains in the section between Melbourne and Geelong where these trains currently serve nine suburban stops in Melbourne and Geelong. More express

running through suburban stations is required if Warrnambool journey times are to be reduced and the overcrowding of long distance trains by suburban passengers is to be avoided.

- ***The comfort, ride quality and ambience in the vehicle***

VLocity trains are appreciated by travellers for comfort and ride quality but old carriages on the Warrnambool services are not considered appropriate for modern long distance travel. Economy carriages have cramped seating and do not meet modern long distance train standards.

While the quality of road coaches in the region is generally good, ride quality for passengers can be uncomfortable due to road conditions. This was particularly noticeable on the Glenelg and Henty Highways.

Travellers have expressed definite preference for travelling on trains to road coach travel. For some markets, the road coach service is not considered an option when a car is available.

- ***The ease of being able to get on and off the vehicle***;

It is important that it is as easy as possible for passengers to board or alight from vehicles. At stations the gap between the platform and the height of the train carriage needs to be managed. In the case of coaches, care is needed to assist passengers with mobility limitations in boarding and alighting, but even then, the relatively narrow aisles of some coaches are difficult to negotiate for some passengers.

- ***The availability of catering (food/drinks) on the service.***

Currently only Warrnambool trains have on-board catering and the standard offering has been subject to some criticism. Buffets are not always open, and when open, are not always adequately stocked or able to provide hot drinks if equipment is defective. Opportunities for alternative ways for providing refreshments such as trolley services should be explored if long distance services to Horsham and Hamilton are introduced.

Ability to Use travel time

Most criticism related to the limited mobile phone coverage and associated inability to effectively access the internet. It is vital that all V/Line trains, road coaches and major stations be Wi-Fi enabled, as passengers expect to be able to use devices during their journeys, and the capacity to do so is a major potential advantage of rail travel. Numerous overseas rail and coach systems are now Wi-Fi enabled (as are parts of the Queensland passenger rail system) and this issue needs to be progressed urgently. A range of technologies tailored to the needs of rail and coach travel is available.

– The space for bikes

Limitations on conveyance of bikes on trains and trains is a significant issue.

The Overland

The Overland train provides reasonably comfortable service for tourists, but it is an outdated train with unacceptable travel times for Victorian towns. A significant issue is the relative difficulty in purchasing tickets (48 hours notification) and lack of reasonable facilities at stations in Victoria, including lack of information, lack of facilities to buy tickets, lack of toilets etc.

9. Access for Aged and Disabled Users

9.1 Overview

The Terms of Reference of this Study require recommendations as to: -

- Identify accessibility improvements to existing passenger service infrastructure with a focus on wheelchair and mobility scooter users
- Examine implications for passenger services in relation to the impending introduction of the NDIS to the study area

These are important issues. While much has been done to apply the requirements of the *Disability Discrimination Act* and the *State Disability Plan* to Victorian train and coach rolling stock and infrastructure, there is much more to be done. The rollout of the National Disability Insurance Scheme will further highlight this requirement by providing greater freedom of choice in travel to recipients, who will reasonably expect that they can use our public transport system in an efficient way without encountering obstacles or barriers that impinge on their mobility or dignity.

In this Report, we consider three aspects of this problem:

- The status of infrastructure and rolling stock in relation to DDA compliance and ease of use for travellers with disability. Disability includes all those aspects referenced in the legislation and the State Disability Plan, which covers-
    - Wheelchair users
    - Vision impaired
    - Hearing impaired
- Key difficulties in the current infrastructure faced by disabled or aged travellers
    - Service or infrastructure improvements that should form part of the overall public passenger service improvements for the region recommended in this Report. These should include key innovations currently being trialled and how they may apply to the region, e.g.
        - Travellers Aid support at junction stations
        - Strategically located “Changing Places” toilet facilities
        - “Last mile” services to aid seamless travel such as travel companion and or taxi booking services.

9.2 Current status of the infrastructure and rolling stock DDA compliance

The compliance of public transport infrastructure in the region is regularly audited, and the following information has been supplied by Public Transport Victoria as to the DDA compliance of V/Line stations in the region

- Beaufort – not fully compliant
- Ararat – not fully compliant

PTV has not provided Disability Audit information on stations beyond Ararat and it is likely that the Audit did not extend to stations beyond the existing V/Line passenger train network. Most stations between Ararat and Horsham and Hamilton will need to be upgraded to comply with DDA standards if passenger trains are reintroduced. A similar audit of coach stops in the region was proceeding at the time of writing but no results are to hand. Informal observations during the review noted several areas of concern. These included:

- Coach stops offering no protection against inclement weather
- Poor coach stop locations in some cases
- Absence of signage, incomplete information on signage and lack of legibility as to services and connections (In some instances entire routes not mentioned in signage at significant coach pick up points, such as Horsham and Stawell)

- Inadequate signage for visually impaired people.

If the improved rail and coach services recommended elsewhere in this Report are introduced, we recommend that part of the implementation task should be to review station signage, including legibility for aged and disabled persons, hard stand for wheelchair pickup, and capacity to change modes (e.g. taxi, coach to train and vice versa) protected from adverse weather.

9.3 Key Difficulties faced by Aged and Disabled Travellers

The Australian Bureau of Statistics regularly conducts a Survey of Disabled People and their Carers that reports on the difficulties they face in using public transport. The most recent published results are from 2015, and they note the following as key areas of concern:

Table 34: Difficulties Experienced by Disabled Public Transport users in the Region

ISSUE	PROPORTION OF MILDLY DISABLED TRAVELLERS EXPERIENING DIFFICULTY 2015	ISSUES IN THE REGIONS
Getting to the Stop or Station	**13.7%**	• Few wheelchair taxis in region • No taxis in some towns, e.g. Warracknabeal
Getting on or off vehicles or carriages: • **Steps** • **Doors**	 **7.5%** **23.4%**	• V Line coaches are generally lift equipped but not all coach stops have hard stand or paved links between hard stand at coach stop and footpath network • Some newer mobility scooters are too wide for doors on some coaches and rail carriages
Inadequate Toilets	**39.2%**	• V/Line rail cars and key stations are generally DDA compliant • 4 stations served by *The Overland* are not compliant • Toilet provision minimal at coach stops and not DDA compliant on toilet equipped coaches • Government's proposed "Changing Places" toilets could assist if provided at Ballarat, Ararat or Grampians
Lack of space	**13.8%**	• Mainly applies to peak period travel

In addition to the impediments derived from the above ABS national survey, the Study Team observed or was advised by those consulted of the following additional impediments faced by aged and disabled travellers: -

Table 35: Difficulties Experienced by Disabled Public Transport users in the Regions – based on observations and consultations

ISSUE	ISSUES IN THE REGIONS NOTED BY THE STUDY TEAM AND/OR RAISED BY THOSE CONSULTED:
Poor signage and direction finding at Southern Cross station	• A specific problem relates to signage for the 08.17 Ararat train, which supports many coach connections into the regions. The Visual Display Units for Platform 16B show Traralgon for the quarter hour before the Ararat train departs because a Traralgon train departs Platform 16A (the southern end of the same platform) at 08.13. This regularly causes anxiety among older and less experienced users.
Ticketing complexity	• Concerns were raised about the difficulty faced by disabled and elderly travellers who may have to book and pay for a succession of tickets for their journey • The ultimate extension of myki to the regions may assist
Stations served by *The Overland* not included in DDA audit and evidently not compliant	• Stawell, Horsham, Dimboola and Nhill stations are not included in the regular DDA audit of V Line stations and do not have DDA compliant facilities such as toilets, tactile markings, adequate signage etc.
Inadequate coach stops	• V/Line rail cars and key stations are generally DDA compliant • Toilet provision minimal at coach stops and not DDA compliant on toilet equipped coaches • Government's proposed "Changing Places toilets could assist if provided at Ballarat, Ararat, or Grampians
Unco-ordinated connections between rail, coach and bus services	• Urban bus services in the region operate at Portland, Hamilton, Ararat, Stawell and Horsham • Urban buses do not always appear to connect with or serve rail stations or main coach stops
Private long distance coach services do not always provide DDA compliant coaches	• There are important private long distance coach services in the region, such as the Horsham-Ouyen Henty Highway bus, and the Naracoorte to Horsham bus. Some older equipment used on these services may not be DDA compliant

10. Future Options

This Section of the Report concerns future possibilities and is included for completeness. The options outlined here are not part of the core recommendations of the Report.

10.1 Possible extension of some services from Ballarat to Melbourne or Geelong

10.1.1 Future options overview

The option exists for some passenger train services from Horsham and Hamilton to be later extended to run via Ballarat and Melbourne on standard gauge, using the V/Line corridor from Warrenheip to Gheringhap and then the ARTC interstate line from Gheringhap to Melbourne via North Geelong. These services could stop en route at North Shore (near Geelong) for connection with frequent services into Geelong. However, travel between Ballarat and Melbourne via this route would be relatively unattractive as it would involve between 30 minutes and one hour additional journey time by comparison with a change of trains at Ballarat to connect with direct broad gauge services via Ballan.

From a passenger train viewpoint, the corridor between Gheringhap and Melbourne suffers from two primary drawbacks – the very slow and circuitous exit from or entry into Melbourne and the potential for operational conflict with long and heavy interstate freight trains, including those operating between Melbourne, Adelaide and Perth. However, following Ballarat to Ararat gauge conversion, for at least the medium term, this would be the only available route for standard gauge passenger trains travelling between Ballarat and Melbourne.

The entire ARTC corridor between Melbourne and Gheringhap, which continues to Maroona, Ararat, Horsham and Adelaide, is primarily a freight railway and its only regular passenger service, the twice weekly *The Overland* train between Melbourne and Adelaide is not necessarily given priority over freight services. This is reflected in its current timetable which allows around 3½ hours for its journey between Southern Cross and Ararat with a stop only at North Shore – around one hour slower than the existing V/Line VLocity service to Ararat via Ballarat. This is only partly attributable to the 59km extra distance via this route.

When considered overall, it seems unlikely that the 162km long section of line which traverses sparsely populated country between Gheringhap and Maroona is a suitable corridor for any form of regular passenger service between Melbourne and Horsham, hence the option considered above for any future Melbourne-Horsham service to be routed via Ballarat. Apart from its extra length, there are no potential generators of travel demand on that section of line.

Standard gauge passenger trains travelling from Ballarat to Melbourne would use the connecting line from Warrenheip to Gheringhap, at which point it diverges from the broad gauge direct line to Melbourne via Ballan. This line is used by grain trains travelling to and from Geelong and by the three times weekly Mildura intermodal train which carries export containers from the Sunraysia region. Crossing loops are provided at Warrenheip and Gheringhap while another presently unused loop is at Meredith. Train movements on the line are controlled by a Train Orders system of safe-working, in this instance managed by V/Line from Melbourne.

An alternative option is that some services could be extended to operate between Ballarat and Geelong on standard gauge, operating via Warrenheip, Gheringhap and the ARTC interstate line for a short distance between Gheringhap and North Geelong, before diverting into Geelong proper. In addition to connections at Ballarat with direct broad gauge trains to Melbourne via Ballan, these services would also connect at Geelong with broad gauge services towards Warrnambool and with frequent direct services to Melbourne. They would terminate at Geelong station, rather than service Geelong via a change of trains at North Shore.

10.1.2 Infrastructure issues – Melbourne to Gheringhap

The distance from Melbourne to Ballarat via Gheringhap, including use of the somewhat complicated ARTC standard gauge corridor, is 42km longer than the direct route via Ballan and Ballarat. It can be broadly described, section by section, as under:

- Dual gauge double line Southern Cross station to Flyover Junction (near North Melbourne)
- Standard gauge single line Flyover Junction to South Dynon Junction
- Dual gauge double line South Dynon Junction to Tottenham Junction (where the line to Albury and Sydney diverges)
- Dual gauge single line Tottenham Junction to Newport
- Standard gauge single line Newport to North Geelong
- One standard, one dual gauge line North Geelong to Moorabool
- Dual gauge single line Moorabool to Gheringhap

Consistent with the rest of the Melbourne-Adelaide standard gauge corridor, most of this line as far as Gheringhap has heavy duty 60kg/metre rail and concrete sleepers, the main exceptions being the dual gauge sections between North Geelong and Gheringhap which can only accommodate a maximum of 50kg/metre rail. Train movements are regulated by remotely controlled signalling, operated from Adelaide.

The circuitous nature of the line between Southern Cross and Newport limits all train speeds to between 40km/h and 60km/h, thus ensuring a slow trip over the 16km at the Melbourne end. Beyond Newport, most of the line is currently rated at 115 km/h capability for passenger trains and up to 110 km/h for freight trains, except approximately 1.5km through North Geelong which is limited to 40km/h due to tight curvature and complicated track work.

The only passenger platforms on the entire corridor are at Southern Cross and North Shore.

Three crossing loops, all of which are at least 1500 metres in length, are located at Laverton, Manor and Elders (near Corio), together with the 5km double line section between North Geelong and Moorabool.

All level crossings on the line between Melbourne, North Geelong and Gheringhap are equipped with full active protection, i.e. flashing lights and boom barriers to a standard that would allow for the operation of non-locomotive hauled trains, e.g. VLocity or similar railcars.

Gheringhap is a junction station with the broad-gauge line to Warrenheip and Ballarat diverging to the north-west while the main interstate line continues in a westerly direction towards Ararat. The remotely controlled signalling includes operation of the Ballarat line junction. Conversion of the line to Warrenheip and Ballarat to standard gauge during 2018/19 as part of the Murray Basin Rail Project should render redundant the dual gauge component of the line between North Geelong and Gheringhap.

10.1.3 Infrastructure issues - Gheringhap to Warrenheip

This 66km broad gauge line section was part of the original rail route from Melbourne to Ballarat, having pre-dated the present direct route via Ballan by 27 years. The shortest distance from Melbourne to Ballarat via North Geelong and Gheringhap is 37km greater than the direct route, although as noted above, the ARTC corridor is 5 km longer. This line was originally constructed with a double track and to a very high standard throughout, similarly to the Melbourne-Bendigo line, both of which were opened in 1862.

Once the direct Ballarat line was fully opened in 1889, usage of this line diminished and the second track was removed during the 1930's Great Depression. However, this route has continued in operation, being particularly useful for broad gauge grain and other freight trains running to and from Geelong. Regular passenger services between Geelong and Ballarat ceased in March 1981 however several through passenger trains between Melbourne and Dimboola continued to regularly use the route until their withdrawal in 1994.

This line branches from the ARTC interstate line at Gheringhap and runs to Warrenheip (7 km east of Ballarat) where it merges with the main Melbourne-Ballarat line. It will only come into contention for regular passenger services from Ararat if the Ballarat to Ararat line section is converted to standard gauge and Ararat/Horsham services are extended to run through to Geelong or to Melbourne via North Geelong. In addition, medium term, there is likely to be a demand for re-introduction of regular rail passenger services between Ballarat and Geelong.

In addition to grain trains travelling to and from Geelong, the line is used by the three times weekly Mildura intermodal train which carries export containers from the Sunraysia region to Melbourne. Active crossing loops are provided at Gheringhap and Warrenheip while three others which are not currently used remain in situ at Lethbridge, Meredith and Lal Lal. Passenger platforms remain intact at Bannockburn, Lethbridge, Meredith and Lal Lal.

The line comprises 47kg/metre continuously welded rail and was fully maintained to passenger standards until 1994 with passenger trains permitted to operate at 115km/h. Freight trains continue to operate on the line at 80km/h which is currently also the default permitted speed for passenger trains.

Train movements on the line are controlled by the Train Order system of safe working, involving the verbal transmission of authorities to proceed between Train Controllers located in Melbourne and train drivers.

10.2 Network capacity changes if services are extended to Melbourne or Geelong

10.2.1 Melbourne to Gheringhap via North Geelong

The line suffers congestion at the Melbourne end at certain times, particularly between Southern Cross station and Tottenham Junction which also carries passenger and freight trains running to and from Albury, Sydney and Brisbane, together with various regional freight services.

To accommodate Horsham and Hamilton services at Southern Cross station, track and signalling alterations would be required as presently only platforms 1 and 2 can accommodate standard gauge trains. These platforms are regularly used by V/Line Albury trains and the XPT to Sydney, as well as the twice-weekly *The Overland* train to and from Adelaide. Track configuration changes would be required to enable standard gauge trains to also operate from platform 3.

To ease conflicts with Adelaide and Perth freight services, it would be desirable to duplicate the short section of line between Brooklyn and Newport to provide an additional facility for passenger and freight trains to pass in this area which can become congested at times with multiple train movements. This would be done by the simple conversion of the adjacent little used broad gauge line to standard gauge and transferring its lease from V/Line to ARTC.

To provide reasonable journey times for a passenger service using VLocity or similar railcars on this corridor, the permitted line speed for such trains would need to be raised to 160 km/h on the reasonably straight and level section of line between Newport and North Shore. This may require some track upgrading and likely modifications to the existing signalling system. To comply with current safety standards for trains operating at this speed, it would also likely require a Train Protection and Warning System (TPWS) overlay on the signalling system, or an alternative technology providing at least equivalent functionality.

10.2.2 Gheringhap to Warrenheip

Although currently maintained to Class 3 standard which is adequate to support normal freight train operations, this was previously a Class 2 line used for Dimboola trains until 1994, and should only require modest rehabilitation to achieve that standard. Restoration to Class 2 standard would require general improvement to sleeper, ballast and drainage condition and track re-surfacing. In turn, that should enable the track condition to support the operation of VLocity railcars at 130km/h.

This line does not have a large number of level crossings however 13 crossings will require upgrading to RFR standards should DMU-type trains be required to use the line when carrying passengers. Only one level crossing between Gheringhap and Warrenheip is currently equipped with full active protection, i.e. flashing lights and boom barriers. The overall situation is shown in the following table:

Table 36: Level crossings between Gheringhap and Warrenheip – current protection

Line section	RFR standard (flashing lights and booms)	Flashing lights only	Passive only (Stop or Give Way signs)	Occupation crossings (no protection)	Total number
Gheringhap-Lethbridge	nil	3	1	n/a	4
Lethbridge-Meredith	nil	1	3	n/a	4
Meredith-Lal Lal	1	1	2	n/a	4
Lal Lal-Warrenheip	nil	1	1		2
Totals	**1**	**6**	**7**	**n/a**	**14**

It is questionable whether the existing track arrangements using trailable points and no fixed signals at the Gheringhap and Warrenheip crossing loops would meet current safety expectations for regular passenger train operations. If not, these crossing loops would likely be converted to a more conventional loop configuration with an appropriate remotely controlled signalling system. Concurrently, this could replace the existing Train Orders safe working system currently used on the line between Gheringhap and Warrenheip.

In addition, as this line can be quite busy at times when large quantities of export grain are being moved to Geelong or Melbourne, restoration of the presently unused crossing loop at Meredith would be required to help protect the reliability of passenger train services. This would entail new signalling, rehabilitation of the existing loop track and its extension to provide 1200 metres clear standing room which is necessary to accommodate regional freight trains.

Station facilities and passenger platforms at intermediate stations on this line section are unlikely to be needed for through services between Melbourne and Horsham as these would likely run non-stop between North Shore and Ballarat. That would almost certainly change if regular services are operated between Horsham and Hamilton to Geelong or if local services are restored between Geelong and Ballarat.

In this case, the assumption has been made that these trains would also stop at Meredith and Bannockburn. While the passenger platforms and other facilities are nominally intact at these stations, they have not been used for this purpose for many years and the station buildings are privately leased. Considerable rectification and other works would be required at each location so that they could once again become usable.

10.2.3 Geelong area

Should Horsham/Hamilton services be directed from North Geelong into Geelong rather than continuing towards Melbourne on the ARTC interstate corridor, changes of some significance would be required in the Geelong area. The most important of these would be the construction of a separate third track for the standard gauge connection between North Geelong and Geelong to avoid risking interference with the present intensive Geelong line service by seeking to dual gauge the existing broad gauge tracks. This would also involve construction of a third (back) platform at North Geelong and substantial reconstruction of that entire station which presently is certainly not DDA compliant. In Section 10.5.2 below, we have assumed that only 50% of the cost would be attributable to this project as some of these changes will be necessary in any event.

Other complementary changes would include the need for track and signalling alterations in the North Geelong Yard area between the Separation Street level crossing and North Geelong station, partly in order to accommodate standard gauge track but also to change the method of operation in that area so that trains heading to and from Geelong could pass through that area at a suitable speed. Finally, the track leading into platform 3 at Geelong station would need to be converted to dual gauge for use there by terminating trains from Ballarat.

10.3 Operational risks

Operational risks are significantly magnified if services are extended beyond Ballarat to Melbourne on standard gauge because the route via Gheringhap is 42 km longer than the direct route via Ballan and use of the 88 km ARTC interstate corridor between Gheringhap and Melbourne involves interaction with considerable numbers of interstate and regional freight trains and other passenger trains, particularly at the Melbourne end. This can be particularly problematic and cause delays where the Adelaide and Sydney corridors merge at Tottenham Junction and a mix of freight and passenger trains (including Sydney XPT and V/Line Albury passenger services) use a common pair of tracks between South Dynon Junction and Tottenham Junction.

The ARTC corridor between Gheringhap and Melbourne is mainly single line, other than a 5 km section of double line in the Geelong area and a similar 7 km section in the Footscray-Tottenham area. The line has four long crossing loops between Tottenham Junction and Gheringhap. Signalling on this line section is also controlled remotely from Adelaide.

The option of introducing direct rail services between Horsham, Hamilton, Ararat, Ballarat and Geelong has lower operational risks than operating through to Melbourne. This is largely because use of the ARTC interstate corridor is restricted to a 14 km section between North Geelong and Gheringhap, of which 5 km is duplicated. At present, there is no standard gauge infrastructure between North Geelong and Geelong and this would have to be provided were the Geelong option to be adopted. Because of the intensity of normal broad gauge passenger services through Geelong, this would require provision of a third separate standard gauge track between North Geelong and Geelong, as described above.

It will be apparent that each of the above options involves different levels of capital and operating cost and each comes with varying levels of complexity, hence operational risk and related achievable service reliability. An important contributor to operational risk is the extent to which there would be organisational interfaces between different rail infrastructure managers across the entirety of the proposed services. ARTC and V/Line are very different organisations with differing objectives and priorities. These interfaces, while considered readily manageable on the light to moderately trafficked lines to the west and south of Ararat, are more likely to be problematic in the more densely trafficked areas nearer Melbourne. These physical interfaces are illustrated in the following diagram.

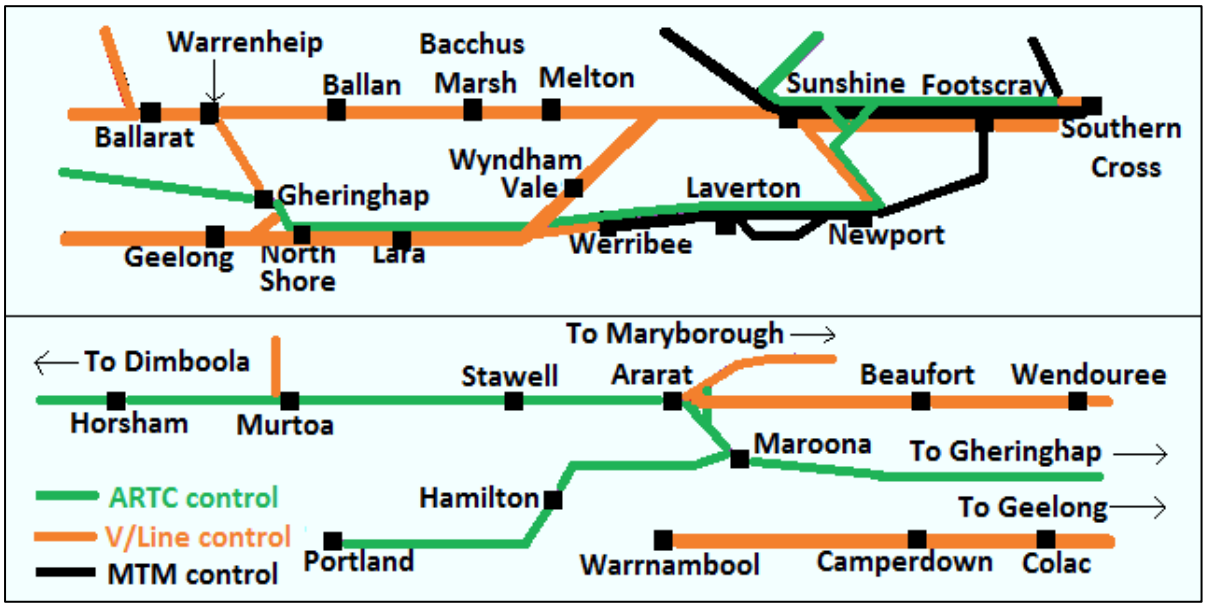


Figure 30: Diagram showing operational control responsibilities between Melbourne, Gheringhap, Ararat, Horsham and Hamilton

10.4 Longer term service options to Melbourne or Geelong

10.4.1 Services extended to Melbourne

Preliminary assessment has shown the possibility that, of four services from Horsham to Ballarat and return on weekdays, three could continue through to Melbourne. Similarly, of three services from Hamilton to Ballarat and return on weekdays, all could continue through to Melbourne, however one service from Melbourne would require a change of trains at Ballarat. Of six services from Ararat to Ballarat on weekdays and five services Ballarat to Ararat on weekends, three could continue through to Melbourne on weekdays and two on weekends.

On weekends, two services Horsham to Ballarat and return on weekends could continue through to Melbourne, as could two services from Hamilton to Melbourne.

Most Horsham and Hamilton services would still combine or split at Ararat. Six train sets would be required to cover all services and routine maintenance.

In most cases, it would still be considerably quicker for passengers to change at Ballarat to and from a direct broad gauge Melbourne service via Ballan. However, due to the complexity of train operating arrangements in the Ballarat area under this option, some connections with direct services cannot be made as efficient as under the indicative Stage 2 service plan described in Section 6.2.4.

10.4.2 Services extended to Geelong

Preliminary assessment of this option has shown that of four services from Horsham to Ballarat and return on weekdays, two could continue through to Geelong. Similarly, of three services from Hamilton to Ballarat and return on weekdays, two could connect through to Geelong, one of which requires a change of trains at Ballarat.

Of six services from Ararat to Ballarat and return on weekdays and five services from Ballarat to Ararat on weekends, three could continue through to Geelong.

At weekends, two services from Horsham to Ballarat and return could continue through to Geelong, however the two services from Hamilton at weekends would require a change of trains at Ballarat.

As with the Melbourne option, most Horsham and Hamilton services would combine or split at Ararat.

Five train sets would be required to cover all services and routine maintenance.

10.5 Additional capital and operating costs of service extensions to Melbourne or Geelong

10.5.1 Services extended to Melbourne

The estimated additional capital and operating costs for extension of Horsham and Hamilton services from Ballarat to Melbourne, **over and above those for Stage 2** are as under:

- Estimated additional train operating costs - $2.7 million per annum
- Estimated ARTC access charges - $0.7 million per annum
- Estimated total additional operating costs - $3.4 million per annum
- Estimated rolling stock capital cost - $30 million for an additional 2 x 2-car DMUs
- Estimated infrastructure capital cost - $108 million (see details in Table 37 below)
- **Estimated total additional capital cost $138 million.**

Table 37: Estimated additional capital costs to extend some Horsham/Hamilton services to Melbourne

Location	Scope of work – high level description	Preliminary cost estimate
Gheringhap-Warrenheip	Upgrade 6 level crossings to RFR standards	$4.0m
Gheringhap-Warrenheip	Track restoration (66 km) to Class 2 standard for 130 km/h DMU operation	$20.0m
Gheringhap -Warrenheip	Install signalling at Gheringhap and Warrenheip Loops including motorised points	$8.0m
Meredith	Restore, upgrade, extend and re-signal Meredith Loop	$12.0m
	Sub-total Gheringhap to Warrenheip	**$44.0m**
Newport-North Shore	Track and signalling upgrade (57 km) for 160 km/h DMU operations	$28.0m
South Dynon-Gheringhap	Install TPWS at 84 signals	$17.0m
Brooklyn-Newport	Convert West Line to dual gauge	$10.0m
Southern Cross Station	Convert Platform 3 and siding tracks to dual gauge	$9.0m
	Sub-total Southern Cross to Gheringhap	**$64.0m**
	Total infrastructure Melbourne to Warrenheip	**$108.0m**

10.5.2 Services extended to Geelong

The estimated additional capital and operating costs for extension of Horsham and Hamilton services from Ballarat to Geelong, **over and above those for Stage 2** are as under:

- Estimated additional train operating costs - $2.3 million per annum
- Estimated ARTC access charges - $0.2 million per annum
- Estimated total additional operating costs - $2.5 million per annum
- Estimated rolling stock capital cost - $15 million for one additional 2-car DMU
- Estimated infrastructure capital cost - $112 million (see details in Table 38 below)
- **Estimated total additional capital cost $127 million.**

Table 38: Estimated additional capital costs to extend some Horsham/Hamilton services to Geelong

Location	Scope of work – high level description	Preliminary cost estimate
Gheringhap-Warrenheip	Upgrade 6 level crossings to RFR standards	$4.0m
Gheringhap-Warrenheip	Track restoration (66 km) to Class 2 standard for 130 km/h DMU operation	$20.0m
Gheringhap -Warrenheip	Install signalling at Gheringhap and Warrenheip Loops including motorised points	$8.0m
Meredith	Restore, upgrade, extend and re-signal Meredith Loop	$12.0m
Bannockburn, Meredith	Upgrade stations to meet current passenger standards and conform with DDA requirements	$10.0m
	Sub-total Gheringhap to Warrenheip	**$54.0m**
North Geelong-Gheringhap	Install TPWS at 13 signals	$2.0m
North Geelong Yard	Convert running lines to dual gauge and associated track and signalling re-arrangement	$15.0m
North Geelong Station	Install standard gauge back platform track and upgrade station to meet current passenger standards and conform with DDA requirements (charge 50% to this project)	$20.0m
North Geelong-Geelong	Install 3rd standard gauge track for 3 km	$18.0m
Geelong Station	Convert Platform 3 track to dual gauge	$3.0m
	Sub-total Geelong area	**$58.0m**
	Total infrastructure Geelong to Warrenheip	**$112.0m**

11. The Future Western Railway

Significant changes lie ahead for both the Melbourne-Ballarat and Melbourne-Geelong rail corridors, largely driven by rapid population growth in Melbourne's west and in the major regional centres.

Between 2024 and 2026, as an integral part of the Melbourne Metro project operational plan, the Ballarat line will be electrified at least to Melton, and possibly to Bacchus Marsh, to support critically needed frequent metropolitan services. Well before 2031, pressures will emerge to complete duplication of the line beyond Melton to Ballarat and to extend quadruplication of the line beyond Caroline Springs to Melton in order that Ballarat trains are not impeded by metropolitan trains stopping at all stations. This will allow most Ballarat trains to run express for the greater part of their journey and allow routine 60-minute travel times from Melbourne to Ballarat to be finally realised.

The option of constructing a direct line from Parwan to beyond Rowsley to bypass the circuitous and sharply curved route through Bacchus Marsh would enable a further reduction in travel time of approximately 5 minutes for trains that do not need to stop at Bacchus Marsh, thus enabling Melbourne-Ballarat journey times to come down to around 55 minutes for express services.

These changes will be of significance for services beyond Ballarat and Ararat as the removal of all remaining single line constraints as far as Ballarat will enable the regular operation of express services between Melbourne and Ballarat with journey times effectively 5 to 25 minutes faster than at present. These improvements should automatically flow through to services operating beyond Ballarat.

Similar pressures to those on the Ballarat corridor are already impacting the Melbourne to Geelong line, principally due to burgeoning growth in Melbourne's western and south-western suburbs and especially in the City of Wyndham. Within a few years, this will force the physical separation of tracks on the recently constructed RRL corridor between Deer Park and Wyndham Vale so that Geelong trains can also operate unimpeded by stopping all stations metropolitan trains.

By the early 2030s, and probably earlier, the combination of Geelong, Ballarat and Bendigo regional trains and Wyndham Vale line metropolitan trains will have exceeded the capacity of the RRL lines between Southern Cross and Sunshine. Bendigo line trains are likely to be removed from the RRL corridor around this time to travel on a new line via Melbourne Airport.

The need to adequately service ongoing Wyndham area growth and the anticipated new link from Wyndham Vale to Werribee will necessitate an additional track pair between Southern Cross, Sunshine and Deer Park for the dedicated use of Geelong and Ballarat line trains. This would need to be in tunnel between Southern Cross and West Footscray and also through Sunshine. It would provide the opportunity to overcome the slow exit from Southern Cross via the existing sharply curved tracks in the North Melbourne area and streamline train movements through Sunshine and Deer Park with further trip time savings of around 7 minutes.

These and other network changes will facilitate the slow but inexorable march towards standardisation of all regional lines, well beyond the stage proposed in this Report. Full operational separation between the metropolitan and regional rail networks is the only basis on which this can feasibly occur, there being no foreseeable justification for changing the extensive broad gauge infrastructure within the metropolitan electrified network.

The direct rail corridor via Ballan will also become a candidate for gauge conversion over the longer term, as will other regional lines including to Geelong and Bendigo. The further stages of the major works described above and associated gauge standardisation will progressively unlock the full potential of the railway beyond Ballarat to have fast, reliable and frequent direct services to both Geelong and Melbourne, the latter underpinned by high quality rail infrastructure between Melbourne and Ballarat.

Sources

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Glossary of Terms

Access Agreement: a form of contract that specifies the conditions and pricing under which an accredited rail operator can operate trains over rail track controlled by a rail infrastructure manager such as ARTC, Metro (MTM) or V/Line.

ARTC: Australian Rail Track Corporation – a wholly Commonwealth Government owned corporation which controls most of the rail infrastructure on the interstate corridors linking Melbourne with Adelaide, Kalgoorlie, Sydney and Brisbane.

BG: broad gauge rail track.

Broad gauge: rail track laid with 1600mm between the inside edges of the rails and which applies to most rail track in metropolitan Melbourne and the majority of Victorian regional lines.

Control: the Train Control centre managed by V/Line which supervises all train movements on designated regional rail corridors.

Crossing loop: a second or loop line provided on a single line rail corridor, primarily provided to allow trains operating in opposing directions to safely pass each other.

DDA – Disability Discrimination Act: Commonwealth legislation designed to provide uniform laws for preventing discrimination against disabled persons including requirements for reasonable access by disabled persons to all public facilities, including public transport.

DG: dual gauge rail track.

Down line: a rail line that normally only carries Down trains.

Down side: the left hand side of a railway when facing away from central Melbourne.

Down trains: trains proceeding away from the central Melbourne area and/or Port precinct.

DMU – Diesel Multiple Unit: self-propelled trains that do not require haulage by a conventional locomotive and which can be coupled together to form a multiple unit train under the control of one driver.

Dual Gauge: rail track laid with a third rail in order to allow the operation of both broad and standard gauge trains on a given rail line.

HSR – High Speed Rail: generally refers to a dedicated, segregated railway constructed to very high standards to allow the operation of passenger trains at (presently) commercial speeds of between 250 km/h and 350 km/h.

Melbourne Metro project: a multi-billion project to construct 9km of new rail tunnel between South Kensington and South Yarra and five new underground stations at Arden, Parkville, CBD North, CBD South and Domain.

MTM - Metro Trains Melbourne: A joint venture company which has been granted a long-term franchise to operate all metropolitan trains in Melbourne and control all rail infrastructure on the metropolitan electrified network.

Metrol: the Train Control centre managed by MTM which supervises all train movements on Melbourne's electrified rail

Murray Basin Rail Project: a major project to convert approximately 1,000 kilometres of broad gauge line in north-western Victoria from broad to standard gauge, upgrade permissible axle loads and to rehabilitate and reopen the standard gauge line between Maryborough and Ararat which had been unused since 2004.

myki: a smartcard based ticketing system used on all public transport in the Melbourne metropolitan area and on designated regional lines, generally within daily commuting distance from Melbourne.

NDIS – National Disability Insurance Scheme: a national no fault insurance scheme being progressively introduced from mid-2016 designed to provide enhanced support and service delivery to persons with disabilities.

Passing lane: terminology adopted by the ARTC to describe a very long rail crossing loop, usually several kilometres or more in length.

PTV – Public Transport Victoria: a Victorian Government Statutory Authority established to manage public transport operating franchises and infrastructure leases and to contribute to the planning and marketing of all Victorian public transport services.

Push-pull train consist: a unit train that has locomotives or other forms of powered units at each end of its consist so that the run-around of locomotives to the opposite end of the consist at terminals can be avoided.

RFR – Regional Fast Rail: a major project undertaken during 2003-2006 to upgrade significant parts of the Geelong, Ballarat, Bendigo and Gippsland lines and to introduce new VLocity railcars capable of operating at 160 km/h.

RRL – Regional Rail Link: a $4 billion project completed in 2015 to provide separate tracks for regional and metropolitan trains operating between Southern Cross and Sunshine and to provide a new corridor for Geelong line trains via Deer Park and Wyndham Vale.

SG: standard gauge rail track.

Standard gauge: rail track laid with 1435mm between the inside edges of the rails and which applies to all rail track on the main interstate lines between mainland capital cities and on some Victorian regional lines.

The Overland – a private sector operated train service operating a limited daylight service (currently twice weekly) between Melbourne and Adelaide by Great Southern Rail (GSR) Pty Ltd and which is partially subsidised by the Victorian and South Australian Governments.

Train consist: the detailed composition and formation of a complete train which is made up of individual rolling stock and motive power units, including self-propelled rolling stock such as Diesel Multiple Units.

Train Control: a supervisory function which oversees all train movements on a given corridor and, when necessary, provides direction regarding train priorities and various operational and safety procedures.

Train Path: a feasible timetable slot that provides capacity for a train to operate between two defined locations on a given rail corridor.

Up line: a rail line that normally only carries Up trains.

Up side: the left hand side of a railway when facing towards central Melbourne.

Up trains: trains proceeding towards the central Melbourne area and/or Port precinct.

V/Line: a wholly Victorian Government owned statutory corporation which controls all Victorian regional passenger trains and most of the rail infrastructure in regional Victoria other than the designated interstate corridors controlled by ARTC.

VicTrack: a Victorian Government owned corporation which is the ultimate owner of all Victorian rail infrastructure, other than private sidings. All operational rail corridors are leased by VicTrack to PTV which, in turn, sub-leases the infrastructure to ARTC, MTM or V/Line, depending upon the specific corridor concerned.

Appendices

Cities and Towns in the Study Area – Aging, Unemployed, Remoteness

City or Town	Population 2011 Census	Popln. Town 2014 DHHS	Population Catchment 2014 DHHS	Aged >65	Unemployed %	Remoteness	Travel Time to GPO (mins)
RURAL CITY OF HORSHAM							
Horsham	15292	15568	3519	19.1	3.8	ORA	224
Natimuk	659	417		31.8	3.3	ORA	246
RURAL CITY OF ARARAT							
Ararat	8076	7128	4446	21.3	4.5	IRA	204
Willaura	585	273	0	34.8	12.3	ORA	175
GLENELG SHIRE							
Dartmoor	263	262	0	24.7	5.4	ORA	311
Heywood	1745	1267	2418	25	8	ORA	283
Nelson	311	NA	NA	NA	8.4		
Portland	9950	10149		17.1	5.2	ORA	299
HINDMARSH SHIRE							
Dimboola	1662	1385	626	27.1	5.3	ORA	255
Jeparit	632	385		28.9	7.5	ORA	300
Nhill	2178	1887	2281	NA	2.5	ORA	286
Rainbow	525	523	456	28.8	4.2		
NORTHERN GRAMPIANS SHIRE							
Hall's Gap	613	307		16	4.3	ORA	206
Stawell	6150	5765	2552	22.7	5.4	IRA	173
St Arnaud	2619	2226		25.4	4.3	ORA	173
SOUTHERN GRAMPIANS SHIRE							
Branxholme	386	0	0	NA	NA	NA	NA
Casterton	1445	1434	1485	33.3	6.8	ORA	286
Coleraine	1243	907	1430	33	6.0	ORA	334
Dunkeld	461	461	0	23.8	3.7	ORA	204
Hamilton	10,104	9373	5748	19.5	4.3	IRA	230
WEST WIMMERA SHIRE							
Edenhope	976	705		35.1	4.4	ORA	394
Kaniva	1061	758		24	2.9	ORA	319
YARRIAMBIACK SHIRE							
Hopetoun	555	554	1266	32	0	RA	399
Murtoa	991	795	991	26.4	4.2	ORA	228
Rupanyup	549	375		26.3	4.0	ORA	214
Warracknabeal	2745	2326	1746	27.3	4.9	ORA	256

Remoteness Index: IRA= Inner Regional Australia; ORA = Outer Regional Australia;

RA=Remote Australia