RAIL REVIVAL STUDY
An Alternative Proposal

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Introduction

The Rail Revival Study was released by the Minister for Transport on 3 June 2013 following a $2 million study of the feasibility of restoring passenger rail services between Bendigo, Maryborough, Ballarat and Geelong. This follows a commitment made by the coalition prior to the 2010 State election. The summary report with appendices can be viewed on the Public Transport Victoria website.

The study sought to identify the cost and feasibility of providing a passenger service joining Victoria’s regional cities, by returning passenger trains to the Geelong to Ballarat and the Maryborough to Castlemaine sections of track, and adding to existing services between Bendigo and Castlemaine, and from Maryborough to Ballarat. Some works were proposed on those corridors that currently have passenger rail services. An indicative service plan was proposed, allowing direct travel between Bendigo and Geelong, at speeds up to 160 km/hr where possible.
The Study addressed the issue of the earthworks, track, bridges, drainage, signaling, stations and a number of other matters relating to the restoration of passenger services. The overall cost of the project was estimated to be $760-$935 million. Table 8 in the Rail Revival Study sets out the work and costs in slightly more detail.

<table>
<thead>
<tr>
<th>Section</th>
<th>Capital expense (Smillion)</th>
<th>Annual operating expense (Smillion)</th>
<th>Summary of scope</th>
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<tbody>
<tr>
<td>Geelong - Ballarat</td>
<td>$250 to $320</td>
<td>$6 to $8</td>
<td>&gt; 2.7 km bypass track through North Geelong Stabling Yard</td>
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<td></td>
<td></td>
<td></td>
<td>&gt; Duplicate up to 9 km of ARTC track</td>
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<td></td>
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<td>&gt; 1 new station</td>
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<td></td>
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<td>&gt; Level crossing upgrades</td>
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<td></td>
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<td></td>
<td>&gt; Signaling / train control</td>
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<td></td>
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<td></td>
<td>&gt; Passing loop at Lethbridge</td>
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<td></td>
<td></td>
<td></td>
<td>&gt; Warrenheip Junction reinstatement</td>
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<td></td>
<td></td>
<td></td>
<td>&gt; 4 reactivated stations</td>
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<td>Ballarat - Maryborough</td>
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<td>&gt; Passing loop at Tourello</td>
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<td>&gt; Minor bridge and culvert works</td>
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<td>Maryborough - Castlemaine</td>
<td>$230 to $290</td>
<td>plus $4 to $6</td>
<td>&gt; 55 km track and formation renewal</td>
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<td>&gt; Track bypass at Maldon Junction</td>
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<td>&gt; Holding road at Castlemaine Station</td>
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<td></td>
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<td>&gt; Level crossing upgrades</td>
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<td></td>
<td>&gt; Passing loop near Newstead</td>
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<td></td>
<td>&gt; Passing facility at Maryborough Station</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>&gt; 2 reactivated stations</td>
</tr>
<tr>
<td>Castlemaine - Bendigo</td>
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<td>plus $1 to $3</td>
<td>&gt; 12 km track duplication between Castlemaine and Ravenswood Loop</td>
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<td></td>
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<td></td>
<td>&gt; Second bridge over Calder Freeway at Harcourt</td>
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<td></td>
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<td>&gt; 2 reactivated stations</td>
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<td>Rolling stock</td>
<td>$50 to $75</td>
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<td>&gt; 3 x 3-car V/Locity units - Geelong to Maryborough service</td>
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<tr>
<td>Total ($2012)</td>
<td>$760 to $935</td>
<td>$11 to $17</td>
<td>&gt; 4 x 3-car V/Locity units - Geelong to Castlemaine service</td>
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</tbody>
</table>

Figure 2. Costing of works (Source: Rail Revival - Feasibility Study Summary).

Included in the proposed works were a series of improvements that are currently being planned as network upgrades, irrespective of the outcome of the Rail Revival Project, such as re-instatement of the Tourello Passing Loop and extra passing loops on the Castlemaine to Bendigo section.

The study also includes costing for the restoration of heritage stations which are currently inactive.

Also included in the works were a series of measures that would be necessary for some future but undefined needs, such as the provision of double track widths on the decking of bridges where the proposal only calls for a single deck at this stage. Additional passing loops between Castlemaine and Geelong were also put forward, although these would have no direct relevance to the Rail Revival Project or the passenger services to be implemented.
In short, a number of additional and desirable, but non-essential works have been included that have the effect of substantially increasing the costs of the project.

The consultants’ estimate of a minimum of $760 million to provide this service is difficult to justify by a cost-benefit analysis. It is highly unlikely to be approved, considering the competing requirements for financial allocations for transport from the Victorian Government. In a climate of increasing public demand on much higher patronised corridors, the call on the public purse for $760 million, let alone $935 million for a project such as this is quite unrealistic.

**A lower cost alternative**

However, following a thorough review of the Rail Revival Study documents, I have concluded that the objective of providing a Geelong to Bendigo passenger rail service could be achieved at a far lower cost than estimated.

There are at least two reasons for this conclusion. Firstly, the cost estimates in the study are highly inflated (in the order of 30 to 60 percent). Secondly, the aim of providing a 160km/hr service exceeds community expectations and therefore, demands and imposes substantial needless extra cost.

A more modest scheme should be considered where instead of the proposed 160 km/hr service, a 100 km/hr service would be the design standard. The following alternative would be more cost-effective and should be considered instead of the high cost option proposed by the consultants.

A redesigned 100 km/hr service could be based on the following parameters:

1. That line speed design should be engineered to 100 km/hr, or in some circumstances 115 km/hr, if this latter speed can be achieved without major capital works;
2. Only works that are directly linked to the Rail Revival Project are being proposed and costed in the budget;
3. Those stations along the line with a surrounding population of less than 800 persons would not be reopened at this stage, but depending on anticipated growth, may be reopened in the future;
4. That new low cost platforms similar to those built on the Maryborough Line be constructed rather than undertaking major heritage works on existing decommissioned stations. These platforms need only be 75 metres in length, with modest ancillary facilities such as gravel car parks, which would significantly reduce the overall cost of each station. The possible exception may be the use of the existing Newstead Station due to it being in a comparatively good state of repair. There would be some additional costs required to alter the

Rail Revival Study
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platform height to comply with the Disability Discrimination Act standards;

5. Level crossings would be protected but with revised cost estimates and lower cost technology;

6. Similarly, the costings on the repairs nominated in the Rail Revival Study to bridges, culverts and other drainage works would be re-evaluated;

7. That none of the work proposed by the consultants on the Castlemaine to Bendigo section of the line should be undertaken. Instead, passengers would change trains to the existing Regional Fast Rail service at Castlemaine on the Bendigo to Melbourne Line. There is ample passenger carrying capacity on existing services in this section;

8. The line between Castlemaine and Maldon Junction would be duplicated and the new line placed under V/Line train control. This would mean that there would be a physical separation between the Rail Revival trains and the Victorian Goldfields Railway which operates the heritage train to Maldon. Rail Revival train services would have no impact or interface on VGR operation and would use the existing facilities on Platforms 1 or 2 at Castlemaine. The existing short siding on the Bendigo side of Castlemaine Station on the East Line would be used to hold Rail Revival trains between services;

9. Certain other works to be staged over a period following the re-introduction of passenger trains which will provide for enhanced services on an ongoing basis and slightly improved travel times.

Such an approach would provide a rail service to the current standard of the Ballarat to Maryborough service. This service provides for up to 100 km/hr running with a trip time of 52 minutes and represents an overall, average speed of approximately 80km/hr over the whole journey. Experience has shown that this is an extremely popular service and compares favorably with car travel between the two locations. It is much faster than the bus travel time of 69 minutes.

A costing of this proposal has been provided at the end of this document. It is in line with current Australian Rail Track Corporation (ARTC) actual costs, as well as those derived from the Regional Fast Rail works (with indexation adjustments). Some calculations will be estimated from first principals.

**Reactivated stations**

I propose that the following stations be reactivated. This list does not include stations currently in service on the route such as Castlemaine, Maryborough, Talbot and Ballarat.

1. **Bannockburn**
2. **Meredith**
3. **Carisbrook**

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4. Newstead (existing station to be used)
5. Guildford (new platform required)

Apart from Newstead, it is not proposed that the existing heritage stations would form part of these works. A new platform would be built adjacent to the existing heritage structures as with the newly constructed platforms at Creswick and Talbot but limited to 75 metres in length, and with less associated infrastructure. The low cost station model would provide a platform, shelter, lighting, fencing and car parking. The cost of these facilities would be in the order of $2 million per station.

Crossing Loops

To provide for both a suitable service plan for the passenger trains, as well as adding flexibility in the movement of freight trains in the sections, at least one crossing loop should be provided between Maryborough and Ballarat (Tourello) and between Ballarat and Geelong (Lethbridge). Both of these projects are on the current program of works for V/Line and are necessary for the efficient movement of grain trains. As such their costs should not be totally ascribed to the Rail Revival Project. The other loops proposed in the Rail Revival Study are unnecessary for the current or projected traffic volumes on these lines for the foreseeable future.

Re-Instatement of Warrenheip Junction

The construction of a crossover at Warrenheip Junction will effectively provide a 6 km long passing loop between Warrenheip and Ballarat. This project also has merit for grain traffic but is not a high priority for the Rail Revival Project. This should be instituted as part of the overall upgrading of the Melbourne to Ballarat Line as part of the proposed additional services on that line in the future.

Geelong to Gheringhap

The section of line between Geelong and Gheringhap presents a slightly different challenge to much of the rest of the lines in question. The ARTC interstate standard gauge line and the existing Ballarat to Geelong Line share a section of dual gauge track from Gheringhap Junction into the North Geelong Yard. The yard involves a complicated series of turnouts, crossovers and sidings, and suffers from a major speed restriction as low as 20 km/hr in some places. The broad gauge track then enters V/Line’s Geelong to Melbourne corridor at North Geelong Station.

The proposal to duplicate the ARTC line between North Geelong Yard and Gheringhap Junction would add additional capacity, although present ARTC and broad gauge freight use of the section is very low over the dual gauge section of track. It is possible to add another six or eight passenger trains
per day running between Geelong and Ballarat without seriously compromising the running of this section. The proposal to add an additional parallel nine kilometre line beside the existing dual gauge track would only be necessary should the highly improbable enhanced service proposal of an additional fourteen trains be implemented.

The North Geelong Yard, with a current speed restriction of 25 km/hr does restrict passenger operation somewhat. The proposal to add a bypass of these yards for the passenger services to provide for high speed operations is unnecessary for the six trains per day basic service. The investment of a comparatively modest amount on the North Geelong Yard would allow for 50 km/hr running, and considering the relative short distance involved, would account for very little additional travel time for passenger services.

The financial burden of the building either the 9 km parallel track or the 2.7 km North Geelong bypass involves not only the track itself, but bridges, crossings and other ancillary works directly related to the construction of the additional lines.

**Gheringhap to Ballarat**

The existing track between Gheringhap and Warrenheip requires very little work to be performed to allow for 100 km/hr passenger operations. With a minimum of extra work, this could be increased to 130 km/hr running with cant adjustment on some curves and level crossing upgrades. This line has been recently refurbished for 80 km/hr freight services. Current Train Order Working between Gheringhap and Ballarat would be sufficient at this stage, although the progressive resignaling of the line is proposed over time.

Specifically, this section would require:

- Upgrades on twelve level crossings as per VicTrack recommendations;
- Upgrade of four occupation crossings to boom barriers;
- Closure of two level crossings;
- Construction of a passing loop at Lethbridge;
- Construction of new platforms and associated works at Bannockburn and Meredith.

Virtually no work would be required at the existing V/Line stations of Geelong, North Geelong and Ballarat.

The above work would allow passenger traffic to operate in this section at an average speed over the journey of 80 km/hr. This would provide a travel time between Ballarat and Geelong of 65 minutes.

**Ballarat to Maryborough**
Little work is required in this section, apart from the ongoing maintenance of the line which is performed by V/Line.

The deactivated Tourello Loop requires reinstatement. For the purpose of Rail Revival, this loop should be limited to 800 metres rather than the proposed 1,100 metres. This will significantly reduce the cost of the project because the shorter loop will not include a four span bridge on the southern end of the loop. An 800 metre loop would accommodate any Rail Revival passing requirements and the majority of freight trains that would have the occasion to require a crossing between Maryborough and Ballarat. The loop could be extended the additional 300 metres at any time once separate funding for the four span bridge and associated earthworks was funded. I have budgeted for the 800 metre loop from the Rail Revival program. The full 1,100 metre loop could be completed when required from funding sourced outside this project.

Travel times for the Ballarat to Maryborough section would remain at 52 minutes with an average speed for the section of 80 km/hr.

**Maryborough to Castlemaine**

This line is in a state of disrepair with ballast, rails and sleepers in need of renewal. Some of the existing rail could be reused, specifically the 47 kg/m rail where possible. Some bridgework will be required although the major bridges at Deep Creek and Joyce’s Creek have been examined and pronounced fit for purpose.

Safeworking between Maryborough and Castlemaine could be by Train Order Working with entry and operations on the main line under the existing Sunbury to Bendigo V/Line train control.

Specifically, the project would entail:

- Reconstruction of the 55 kilometres of track using timber sleepers, primarily new ballast and a mixture of new and recycled 47 kg/m rail;
- Repair of the 33 bridges along the line;
- Clearing of drains and culverts and where necessary, remedial earthworks;
- Construction, upgrading and in some locations, closure of crossings;
- Construction of platforms and associated works at Carisbrook and Guildford;
- Refurbishment of Newstead Station;
- Removal of the Maldon Junction connection and the laying of approximately 800 metres of new track beside the existing VGR line;
- Signaling and turnouts onto the Bendigo to Melbourne Line.
This would provide for a 45 minute transit time between Maryborough and Castlemaine.

### Indicative Costing

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<thead>
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<th>SECTION</th>
<th>ITEM</th>
<th>DETAILS</th>
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<tbody>
<tr>
<td>Castlemaine to Maryborough</td>
<td>Restoration of track between Castlemaine and Maryborough</td>
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<td></td>
<td>Level crossings</td>
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<td>Maintenance work on bridges, culverts and other earthworks</td>
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**TOTAL $85,500,000**

Figure 3. Indicative Costing for the alternative proposal

To this actual cost should be added 10% for engineering, administration, contract supervision and similar. This would bring the total to approximately $94 million for the project.
It would provide:

- An 80 km/hr average speed passenger rail service between Geelong and Bendigo;
- Additional passenger rail access to Melbourne, particularly for stations on the Geelong to Ballarat, and Maryborough to Castlemaine sections of the route;
- Improved access to a number of locations from Melbourne by passenger rail;
- Reopening of the Moolort grain handling facility (which has been closed since the 2010 floods). This siding has also been extensively used in the past for the loading of ballast from the adjacent Moolort Quarry;
- Additional freight capacity between Maryborough and Geelong through the installation of the new crossing loops;
- An alternative freight path to Geelong from the very busy Bendigo Line, and specifically, grain traffic from the Swan Hill and Deniliquin Lines which is currently routed through the highly congested metropolitan rail system. These trains would be sent through to Geelong via Maryborough without the necessity of going through the Melbourne Metro system.

### Indicative Timetable

<table>
<thead>
<tr>
<th>Location</th>
<th>Departure Time</th>
<th>Arrival Time</th>
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<tbody>
<tr>
<td>Geelong (dep)</td>
<td>08 00</td>
<td>12 05</td>
</tr>
<tr>
<td>Ballarat (dep)</td>
<td>06 00</td>
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<tr>
<td></td>
<td>12 05</td>
<td>15 03</td>
</tr>
<tr>
<td></td>
<td>17 20</td>
<td>18 05</td>
</tr>
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<td>Maryborough (dep)</td>
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<td>10 02</td>
</tr>
<tr>
<td>Castlemaine (arr)</td>
<td>07 38</td>
<td>10 47</td>
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<tr>
<td>C</td>
<td>07 54</td>
<td>10 54</td>
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<td>Castlemaine (dep)</td>
<td>08 15</td>
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<td>Bendigo (arr)</td>
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<td>11 00</td>
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<tr>
<td></td>
<td>15 00</td>
<td>18 00</td>
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</table>

*C* indicates changing trains at Castlemaine Station. Bendigo to Castlemaine services are shown in *italics*

Current service to connect with Melbourne train

Figure 4. Indicative timetable for the alternative proposal
The integration of the service between the existing Regional Fast Rail and the new service may require some alternations to this timetable.

This service requires only two rail motors. They are shown in the timetable as the bold and non-bold times. The times in italics are the current services, either between Ballarat and Maryborough or the existing RFR trains between Castlemaine and Bendigo.

**Rolling Stock**

This plan does not provide for the acquisition of additional rolling stock. In the two years which would be the likely timeframe for the completion of the works to allow this service to be introduced, an additional 43 *Velocity* DMUs which are on order, will be in service. Initially, two of the existing 88-seat *Sprinters* could be released from their current service and allocated to this project.

**Conclusion**

It is the writers contention that the study commissioned by the Department of Transport in 2011 and presented in 2013 for the re-introduction of passenger rail services between Geelong and Bendigo recommended a service that was well in excess of community desires and expectations. The report which provided indicative costings of between $760M and $935M was for a largely 160km/hr service between these regional cities. In addition, many of the indicated costs were very high and associated works for an overall network upgrades were also included in the budget.

I have proposed an 80km/hr passenger train, based largely on the current Maryborough to Ballarat service. In accepting these modest nature of my proposal, it would appear that the project could be completed at a price of less than $100M.

Footnote: In May 2014, the State government announced a standardisation of the Mildura to Geelong rail line which would run via Ararat. It is proposed to take place by 2018. The implication of this proposal and the overall reduction of broad gauge freight using the Gheringhap to Ballarat and the Ballarat to Maryborough broad gauge lines may well mean the elimination to two crossing loops in this paper. This may well lead to a saving of an additional $16M in the implementation of this project.