

Project business case evaluation

Gippsland Line Upgrade

Location

Melbourne to Bairnsdale, Victoria

Geography

Smaller cities and regional centres



Category

National Connectivity

Capital cost

\$467.3 million (P50, nominal, undiscounted)

Indicative timeframe

Construction Start: 2018/19
Project completion by: 2022/23

Proponent

Victorian Government



Evaluation date

18 June 2020

1. Evaluation Summary

The **Gippsland Line Upgrade project** has been submitted to Infrastructure Australia for evaluation as the Victorian Government is seeking more than \$100 million in Australian Government funding to deliver this project.

As a part of the regional rail network, the Gippsland line is an important part of the state's transport network, connecting the Gippsland region to Greater Melbourne. The Gippsland region faces a range of challenges and is experiencing social, health, and economic disadvantage.

Infrastructure Australia recognises the important role that effective transport connectivity could have in facilitating new economic opportunities for the Latrobe Valley and the broader Gippsland region. We also recognise the importance of regional rail transport for the urban centres on the Gippsland line, such as Drouin, Traralgon and Bairnsdale.

However, the proposed Gippsland Line Upgrade project would only provide one additional train service every two hours in off-peak periods. The proponent has stated that the Gippsland line contains life expired assets, but the safety and reliability implications of these assets have not been detailed in the business case submitted to us for evaluation.

We recommend that the proponent revises the business case to fully consider the benefits of addressing the identified safety issues. We also recommend the proponent considers a program business case for the Gippsland line, which provides a more material improvement for passengers.

A place-based business case including other regional development and economic diversification projects may provide a more comprehensive view of the expected impacts of these projects on outcomes for the Latrobe Valley and the broader Gippsland region.

Infrastructure Australia has not added the **Gippsland Line Upgrade project** to the Infrastructure Priority List at this time.

The regional rail network in Victoria is a critical part of the state's regional transport system. Within this regional network, the Gippsland line services the Latrobe Valley and connects several growing urban centres, such as Drouin, Moe, Morwell, Traralgon and Bairnsdale. Frequent off-peak rail services are currently not available in this region and the current service has a relatively poor level of customer experience, with poor station amenity, and infrastructure limitations resulting in unreliable services.

The Latrobe Valley and broader Gippsland region face a range of economic challenges associated with changes to industry composition and employment over the past decade. The region remains disadvantaged in comparison to the rest of Victoria on a range of social, health, and economic indicators. Responding to these challenges, the Australian Government and the Victorian Government have established programs to manage the transition and diversification of the region's economy. Improving regional rail services is proposed as an opportunity to support the region.

The core objective of the Gippsland Line Upgrade is to improve the frequency of off-peak services on the Gippsland line from a train every 53 minutes to one every 40 minutes on weekdays. This would bring average off-peak frequency in line with average peak service frequency on weekdays.

There is a strategic case for improving regional rail services to the Gippsland region. However, the proponent's business case indicates that the project will not, and is not designed to, improve journey time, which is a key driver for regional rail patronage. It will also not address key constraints in the metropolitan section of the Gippsland line that are major contributors to service reliability issues. Therefore, the proposed project does not have a strong strategic fit with the identified problems.

The proponent's business case states that the proposed project would have a net present value of -\$318.9 million, and a benefit-cost ratio of 0.28 using a 7% real discount rate and P50 cost estimate over 50 years. On this basis, the project costs significantly outweigh benefits to society.

While the proposal would provide additional off-peak rail capacity, low passenger volumes and limited passenger growth during this period of the day result in low benefits. Importantly, the business case does not demonstrate that the project by itself would materially improve economic outcomes in the Latrobe Valley or broader Gippsland region. The business case identifies a number of interdependent and complementary projects as well as future projects that may interface with the Gippsland Line Upgrade. However, it does not demonstrate how the proposed project will work in conjunction with these other projects to deliver material improvements in outcomes. A revised business case including other regional development and economic diversification projects may provide a more comprehensive view of the expected impacts of these projects on outcomes for the region.

The deliverability of the project is confirmed in the business case. The proponent has extensive experience in delivering similar projects, including the Ballarat Line Upgrade. The proposed contracting model is appropriate for this type of project. As the cost estimates reported in the business case were not independently reviewed, we recommend that the proponent provide independent assurance regarding project cost estimates in the delivery phase, in the event the project proceeds.

2. Context

The Latrobe Valley and broader Gippsland region is facing a range of economic challenges as a result of the closure of the Hazelwood Power Station in 2017 and a reduction in manufacturing jobs. The region remains disadvantaged compared with the rest of Victoria, with a lower median household income, a higher unemployment rate and more mental and community health incidents.

To assist the transition and diversification of the region's economy, the Victorian Government has responded through a range of measures, including the Latrobe Valley Economic Development Program and the establishment of the Latrobe Valley Authority. The Australian Government also provided assistance to the region to support infrastructure provision, workers seeking to develop new skills, and diversify the regional economy.

The regional rail network in Victoria provides the backbone of the regional transport system. The public transport network connects those living in regional areas to jobs, education and health services, whether they are in Melbourne or other regional centres. The Gippsland line connects communities stretching over the 275 kilometres between Melbourne and Bairnsdale. At present, a rail trip between Bairnsdale Station and Melbourne CBD takes approximately 4 hours. The business

case indicates that the Gippsland line enables the operation of 105 passenger services between Traralgon and Melbourne, and 21 between Bairnsdale and Melbourne each week.

The rail network also provides regional business with access to employees, production inputs, and distribution networks. The Gippsland line services the Latrobe Valley including the regional centres of Moe and Morwell, and connects several urban centres that are forecast to have growing populations, specifically Drouin, Warragul, Traralgon and Bairnsdale. Patronage on the Gippsland line is forecast to increase at an average of 4.7% per year to 2031, which is lower than that expected for the Geelong line and the Ballarat line over the same period and is also lower than the average growth recorded for the regional rail network over the past decade.

Improvements in service frequency are expected to encourage use of the public transport system and make it easier and more convenient for regional Victorians to access jobs, education, healthcare and other services at a time that suits them. Reliable public transport services have an important role to enabling those who cannot drive or afford to use a car to access urban and local education and employment opportunities. Access to services and jobs is a persistent problem in the Latrobe Valley, and Gippsland more broadly, as smaller populations makes it difficult to support the range of services and opportunities that are available in metropolitan areas. As a result, people often need to travel further to access services and employment.

Improved rail services are also expected to attract more skilled workers into the Gippsland region, thereby widening and diversifying the employment pool for employers, creating opportunities from which businesses and workers can benefit. However, these benefits have not been included in the business case. During delivery, the project is expected to create 400 local jobs.

3. Problem description

The proponent's business case identified three problems along the Gippsland line that the proposed project is intended to address:

1. Frequency, consistency and journey times for regional services limits access to jobs, services and education opportunities:
 - **Frequency and consistency of scheduled services** – services to Traralgon and Bairnsdale do not operate at the frequency aimed for under the Regional Network Development Plan. There is also a high degree of timetable irregularity. These adversely affect passenger experience and have contributed to a 16% fall in patronage on the line between 2014-15 and 2015-16, despite population growth. Patronage on other regional Victorian lines tend to move in line with population trends.
 - **Access to jobs** – weaknesses in the frequency and consistency of public transport services on the Gippsland line undermines connectivity within the region. Connectivity could support regional growth by linking regional businesses to key markets within Victoria and beyond. It would also enable regional Victorians to commute to work in metropolitan Melbourne and other regional centres.
 - **Socioeconomic disadvantage and youth unemployment** – 57% of people in the Gippsland region experience a high level of disadvantage compared to 23% in metropolitan Melbourne. More effective and reliable public transport can help address disadvantage across Gippsland by providing greater access to services, including healthcare and education, as well as greater access to job opportunities.
 - **Access to health services** – residents of the Latrobe Valley general experience poorer health outcomes than other Victorians. Residents of the region frequently have to travel long distances to access medical services. Reliable and frequent public transport services would help support Gippsland's connectivity to health services.
 - **Access to education** – proximity to educational institutions is a key barrier to rural students' participation in education. Effective public transport links to facilitate travel to metropolitan Melbourne as well as within the Gippsland region could help reduce barriers to participation in education for rural students.
2. Poor station amenity adversely affects passenger experience:
 - Many stations on the Gippsland line are located in relatively isolated areas, with limited immediate access to services. Improvements in station amenity, including surveillance, security and lighting, are required to encourage the use of public transport.

3. Poor reliability and resilience of rail services leads to delays for passengers and freight:

- V/Line punctuality on the line requires improvement, with 69.1% of services arriving on time in March 2018. This metric is inflated in part by the increase in journey time of these services over the past decade. As a result, Traralgon and Bairnsdale services are not as dependable as other services, and have low levels of patronage.

The proponent also identified a need to carry out the remediation and upgrade of the Armco structures that function as culverts along the Gippsland Line to prevent their further decay and potential failure, which could result in a closure of the line or potential train derailment.

The business case does not include a quantified estimate of the problem costs. We strongly recommend the quantification of problem costs as set out in Stage 1 of the Infrastructure Australia Assessment Framework. This process allows the significance of the problem to be understood, and guides the identification of potential solutions to ensure solution costs align to the problem costs.

4. Options identification and assessment

The proponent developed an Investment Logic Map to identify the specific problems and benefits an option would need to address. This was followed by an assessment of five strategic intervention options to respond to the problems. The options fall under three categories: do nothing; non-asset solutions to reduce and manage demand for public transport use; and measures to increase supply, such as improvements to rail infrastructure, rail service levels, and passenger facilities.

The strategic options were combined into four response options, which were assessed for their feasibility and capacity to address the problems identified:

1. Do nothing
2. Travel demand reduction
3. Rail infrastructure and service improvements
4. Road infrastructure improvements.

The options were assessed and shortlisted using a multi-criteria analysis approach (MCA), yielding the rail infrastructure and service improvements (Option 3) as the recommended option. The proponent considered Option 3 to be the best response to the identified problems.

The proponent undertook a project scope options analysis to refine Option 3, which resulted in two rail infrastructure and service improvement sub-options:

- Project Case – the option for infrastructure and service improvements that will deliver the core Project objective of 40 minute inter-peak and off-peak services
- Future Project Case – the scope required to enable a peak service frequency of 20 minutes between Traralgon and Dandenong, with alternate trains continuing to Melbourne CBD.

The proponent identified that constraints in the Melbourne metropolitan area would inhibit the operation of a 20-minute peak service frequency without major capital investment. As a result, the proponent decided to focus on achieving 40-minute inter-peak services.

The proponent's approach to options identification and assessment does not fully comply with the guidelines set out in the Infrastructure Australia Assessment Framework. While MCA may be appropriate for short-listing options during the Options Assessment stage, we recommend using quantitative analysis, such as rapid cost-benefit analysis, to identify the options which are most likely to benefit the community. Critically, the options selection process considered only one option in detail. As a result, Infrastructure Australia cannot be confident that the proponent's proposal is the optimal option for addressing the identified problems.

Furthermore, the preferred option does not appear to effectively address the identified problems. Providing an average of one extra service every two hours is unlikely to significantly improve access to jobs, services and education opportunities.

5. Proposal

The project scope options analysis assessed options for the development of the project scope using an evaluation framework based on criteria developed with consideration of the objectives of the *Transport Integration Act 2010 (Vic)*. This process yielded the following scope for the proponent's preferred Project Case:

- The construction of a new side platform at the stations at Bunyip, Longwarry, and Morwell, and the reactivation of the existing second platform at Traralgon
- Duplication of the 5.8 kilometres of track between Bunyip and Longwarry stations and of the 1-kilometre section at Morwell
- Maintaining the existing stabling capacity at Traralgon yard
- Upgrading the signalling system in the sections of the line where the signalling is being modified as part of the Gippsland Line Upgrade
- Replacing the existing train control system with a new system that is identical to that currently in use on the Geelong and Ballarat lines
- Upgrades to 19 level crossings between Pakenham and Traralgon, and 7 level crossings protection upgrades between Traralgon and Bairnsdale
- Remediation and upgrade of the culverts (Armco structure) at Morwell River, and 14 other Armco structure locations between Traralgon and Bairnsdale.

The proponent assumes that sufficient VLocity rolling stock is available to deliver the Project Case service plan and no additional rolling stock will need to be procured.

6. Strategic fit

The Latrobe Valley and broader Gippsland region face a range of economic challenges associated with the closure of the Hazelwood Power Station in 2017 and changes to industry composition and employment over the past decade. The region remains disadvantaged in comparison to the rest of Victoria on a range of social, health, and economic indicators, with a lower median household income, a higher unemployment rate and more mental and community health incidents.

The Victorian Government is assisting the transition and diversification of the region's economy through a range of measures, including through the Latrobe Valley Economic Development Program and the establishment of the Latrobe Valley Authority. The Australian Government also provided assistance to support infrastructure provision, workers who are seeking to develop new skills, and to diversify the regional economy.

Improving transport connectivity to and within the Gippsland region is important to supporting the achievement of objectives to improve access to jobs, education and training opportunities, and services. It is also vital for improving the access of the region's businesses and industries to markets in the rest of the state and beyond.

While the proposed project is expected to improve off-peak service frequency on the Gippsland line and establishes a foundation for future improvements (that are not included within this business case), the proposed investment does not address the identified problems.

The project is consistent with the Victorian Government's *Regional Network Development Plan*, and addresses key objectives of the Plan such as improving the regional network, having a passenger-focused view and developing local transport solutions.

Similarly, the project is part of the Regional Rail Revival program, a \$1.75 billion joint initiative of the Australian Government and the Victorian Government to contribute to delivering the *Regional Network Development Plan*. The project is focused on improving passenger amenity, safety and, frequency and capacity. In addition to enabling additional services during inter-peak and off-peak periods, the project may also support future peak hour capacity enhancement projects.

The project as proposed does not respond to Challenge 51 of Infrastructure Australia's *2019 Australian Infrastructure Audit*, which highlighted the importance of improving regional rail travel times to increase their competitiveness against road and air transport. This project is not intended to improve travel time.

During the evaluation, the proponent advised Infrastructure Australia that overall service punctuality on the Gippsland line is impacted by capacity at Pakenham station and other interfaces

with the suburban lines within the Melbourne metropolitan area. These issues are not addressed by the project as proposed. The Pakenham to Traralgon section of the line, which is a focus of the proponent's business case, generally performs well on service punctuality.

On balance, while there is a strategic case for improving regional rail services to the Gippsland region, the proposed project does not have a strong strategic fit with the identified problems.

7. Economic, social and environmental value

The proponent's appraisal of the project states a net present value of -\$318.9 million, and a benefit-cost ratio of 0.28 using a 7% real discount rate and P50 cost estimate over 50 years.

Infrastructure Australia is confident that the proponent has appropriately incorporated cost estimates and demand forecasts into the economic analysis in the business case. Unit values were sourced from appropriate guidelines and applied correctly.

The project is expected to provide some benefits for Gippsland line passengers through frequency and reliability improvements, but these benefits are significantly outweighed by high lifetime costs. The up-front capital costs are more than double the monetised project benefits, and the operating and maintenance costs also exceed the benefits to the community.

As identified in the 2019 *Australian Infrastructure Audit*, past Victorian regional rail upgrade projects have shown that targeted track upgrades can reduce travel times, increase frequencies and achieve significant patronage growth for intercity services. However, the Gippsland Line Upgrade business case does not expect the project to result in significant patronage growth. The business case states that approximately 2,620 people currently use the line each day, and that 4,540 people would use the line each day in 2031. With the project, an additional 80 people are expected to use the line each day in 2031 – approximately 13 passengers per additional return service, an increase of less than 2%.

Demand forecasts for this project were prepared with reference to current land use plans in the region. Investment in the region's key industries such as natural resources, agriculture, and manufacturing may lead to the development of new economic opportunities and higher employment rates. This potential was not quantified or monetised in the business case.

The main social and economic benefits of the project are reduced wait time at stations for existing Gippsland line passengers (35% of the total benefits) and increased reliability and resilience for regional rail passengers (27% of the total benefits). Fewer trips using the road network also improves safety, travel time and vehicle operating costs for remaining road users. The level crossing improvements and the remediation and upgrade of the Armco structures also yield safety benefits. The new public transport users are expected to receive health benefits from physical activity associated with walking to and from railway stations.

Environmental benefits of the project are expected to make up 2% of the total benefits, and includes the net impacts on air, noise and water pollution, nature and landscape impacts and other associated externalities associated with the shift in passengers from road to rail.

The business case discusses the role of the proposed project in enabling future capacity expansion of the regional rail network. This project provides some enabling works that, with further infrastructure investments, would support the future introduction of 20-minute frequency peak period services between Traralgon and Dandenong. The proposed project also maintains the option for a future second freight train path on the Gippsland line. These future benefits were not included in the economic analysis. The Gippsland Line Upgrade is also needed to fully realise the benefits of interdependent projects, such as the Avon River Bridge Upgrade and the Cranbourne-Pakenham Line Upgrade. These benefits were also not included in the economic analysis.

The project may have a moderate impact on native flora and fauna such as the Gippsland Red Gum and the Southern Brown Bandicoot. There are also potential impacts on threatened communities listed under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* such as the Giant Gippsland Earthworm, Growling Grass Frog, and the Maroon Leek Orchid. Other potential minor environmental impacts were also identified. The business case also found potential moderate heritage impacts, with areas of indigenous cultural heritage sensitivity located within the project area. There is also potential for minor impacts on non-indigenous cultural heritage sites.

The costs of these potential environmental and heritage impacts were not included in the appraisal. However, the proponent advises that since the completion of the business case, additional assessments and measures have been taken to minimise and mitigate the potential impacts.

The table below presents a breakdown of the benefits and costs stated in the business case.

Benefits and costs breakdown

Proponent's stated benefits and costs	Present value (\$m, 2018) @ 7% real discount rate	% of total
Public Transport Benefits		
<i>Reduced wait time at stations</i>	\$43.9	35%
<i>Farebox resource cost correction</i>	\$6.2	5%
<i>Increased reliability/resilience</i>	\$33.2	27%
Road user benefits	\$9.7	8%
Externalities		
<i>Reduced crashes</i>	\$4.7	4%
<i>Reduced environmental externalities</i>	\$2.5	2%
<i>Health benefits</i>	\$0.4	0%
Option and non-use benefits	\$16.9	14%
Residual value of assets	\$7.7	6%
Total Benefits¹	\$125.1	(A) 100%
Total capital costs (P50)	\$297.7	67%
Operating and maintenance costs	\$146.2	33%
Total Costs¹	\$444.0	(B) 100%
Net benefits - Net present value (NPV)²	-\$318.9	(C) n/a
Benefit-cost ratio (BCR)³	0.28	(D) n/a

Source: Proponent's business case

(1) Totals may not sum due to rounding.

(2) The net present value (C) is calculated as the present value of total benefits less the present value of total costs (A – B).

(3) The benefit-cost ratio (D) is calculated as the present value of total benefits divided by the present value of total costs (A ÷ B).

An independent cost review was not included in the business case. We note that the Victorian Department of Treasury and Finance is responsible for assessing the requirement for external cost review of Victorian Government projects and had determined that it was not required for this business case. Infrastructure Australia recommends the completion of an independent peer review of project costs as an element of best practice for business case preparation.

At the time of the evaluation, the total approved funding for this project totalled \$435 million, with the Australian Government contributing \$418 million, and the Victorian Government contributing the remaining amount. The project as proposed in the business case sets out a funding request of \$499.8 million. This indicates that there is a gap of \$64.8 million between the approved total funding of \$435 million and the business case funding request of \$499.8 million.

The proponent's reported capital costs and funding is presented in the following table.

Capital costs and funding	
Total capital cost	\$467.3 million (P50, nominal, undiscounted) \$499.8 million (P90, nominal, undiscounted)
Australian Government funding contribution	\$418 million
Other funding	\$18 million (Victorian Government commitment)

8. Deliverability

The proponent's business case recommends an Alliance delivery model to best manage the brownfield project risks and integration with other *Regional Network Development Plan* projects. The proponent has already commenced procurement of the project and has shortlisted two respondents with contracts to be awarded in mid-2020. Construction is expected to begin in late 2020, subject to planning and environmental approvals.

The proponent had considered a public-private partnership delivery model but determined it to not be suitable for this project. Such a model was considered by the proponent to be best suited for projects with opportunities for genuine risk transfer and private sector innovation and synergy in whole-of-life design, costing, operation and maintenance.

Cost and timeframe risks are critical for a project of this size. Rail Projects Victoria's *Project Management Plan* and *Project Management Framework* will be applied to manage the delivery of the Gippsland Line Upgrade, including cost control. The proponent advises that there are a number of mechanisms within the Project Alliance Agreement that sets out the roles and responsibilities of the Alliance Participants to minimise risks to project costs and timelines.

Infrastructure Australia encourages the proponent to conduct an independent cost review to provide greater confidence in the estimated costs of the overall project and its components, and to further strengthen project risk management.

The key performance indicators identified to gauge the success of the project include:

1. Inter-regional patronage between metropolitan stations and Gippsland (Number of trips between metropolitan stations and Gippsland stations)
2. Intra-regional patronage within Gippsland (Number of trips between Gippsland stations)
3. Service frequency (Average off-peak interval between services)
4. Punctuality (Percentage on time services between Traralgon and metro/regional boundary)
5. Reliability (Percentage of services delivered on the corridor).

A Benefits Management Plan was included in the Business Case. The Benefits Management Plan details the benefits, investment key performance indicators, measures, baselines and targets. Infrastructure Australia encourages the proponent to conduct and publish a Post Completion Review to assess the extent to which the project benefits and costs set out in the business case were realised. This will help inform the development of future projects.

Consideration of COVID-19

The COVID-19 pandemic has significantly affected the use of infrastructure. Infrastructure Australia has been working collaboratively with the Commonwealth Government to provide advice on a staged response for managing, and recovering from, the impacts of the COVID-19 pandemic.

One critical element of our advice is to maintain a pipeline of nationally significant infrastructure investments. Nationally significant infrastructure projects are long-term investments, typically considering a 30-year view of the project's social, environmental and economic impacts. In making this recommendation, Infrastructure Australia continues to take a long-term view and has also considered the sensitivity of key planning assumptions using the best data available to us.

As noted in the 2019 Australian Infrastructure Audit, we must continue to evolve the way we plan for Australia's infrastructure to embrace uncertainty. There are still many uncertainties regarding the long-term impact of the COVID-19 pandemic on infrastructure use.

We will continue to collaborate with industry, the community and governments at all levels to understand the impacts of the COVID-19 pandemic on infrastructure decisions in Australia.