



Infrastructure Australia

Project Business Case Evaluation

Project name	Maldon-Dombarton Rail Link
Rating	Not Recommended
Date of IA Board rating	9 February 2017

Location	Illawarra / Southern Highlands region, NSW
Proponent	NSW Government
Project timeframe	The project would take around five years to deliver following a decision to proceed.

Evaluation Summary

Port Kembla is a significant international gateway for NSW, servicing the steel industry in the Illawarra region, as well as broader freight movements to and from Sydney and regional NSW. Rail access to and from Port Kembla is via the Illawarra line to Sydney, or the Moss Vale to Unanderra line, which connects to the Main South (Sydney-Melbourne) line at Moss Vale. Access to the port on the Illawarra line can be disrupted as passenger trains are given priority, while access via the Moss Vale to Unanderra line is longer and slower, and also subject to passenger train movements on approach to the port. These constraints can cause significant delays to freight movements to and from the port, which reduce freight network productivity. For this reason, the Infrastructure Priority List currently includes an Initiative to improve freight rail access to Port Kembla.

The proposed Maldon-Dombarton rail link is one of several options to address constraints in freight rail access to Port Kembla. The proposed project is to construct a single track 35 kilometre freight line connecting the Main South line at Maldon with the Moss Vale to Unanderra line at Dombarton. This would provide a faster link between the Main South line and Port Kembla than is currently available via Moss Vale.

The proponent's economic evaluation shows the project has a net present value of -\$66 million and a benefit-cost ratio of 0.9 using a real discount rate of 7% and P50 cost estimate. This indicates that the project would not justify its costs and would impose a net cost on the Australian economy.

The freight demand forecasts on which the evaluation is based do not reflect current market conditions, and are likely to be overstated. For example, the evaluation (completed in 2014) projected that coal traffic from the Tahmoor mine would account for around 22% of rail paths on the Maldon-Dombarton line from 2031. In June 2016, the operator of the Tahmoor mine announced that the mine would be closed by early 2019. Also, the projected constraint on freight rail paths on the Illawarra line in southern Sydney from 2031, which would direct additional traffic onto the Maldon-Dombarton link, is based on the potential introduction of rapid transit services to Hurstville from 2031. This possible future network change is neither committed nor funded. Taking account of these factors, Infrastructure Australia considers that the project's benefits are likely to be significantly overstated.

Given there is sufficient capacity on the existing lines to meet projected rail freight demand in the medium term and, given the project would impose a net cost on the Australian economy and not justify its costs, Infrastructure Australia

has not placed the project on the Infrastructure Priority List at this time. Infrastructure Australia encourages the proponent to explore alternative interventions to improve freight rail access to Port Kembla.

1. Strategic Context

Port Kembla is a significant international gateway for NSW and Australia, servicing the steel industry in the Illawarra, as well as broader supply chains in Sydney (cars), regional NSW (coal, grain and other bulk commodities) and other regions in Australia (steel and other bulk commodities). A significant proportion of freight to and from Port Kembla is transported by rail. Increasing demand for passenger services, as well as potential future increases in freight volumes, may result in a situation in the future where demand for train paths to Port Kembla and the Illawarra region cannot be met by the existing infrastructure.

The Maldon-Dombarton Rail Link was first considered in the late 1970s as a means to provide additional capacity to transport coal from pit to port. Construction on the line started in 1983 but was suspended in 1988 due to an economic downturn and lower than expected growth in coal traffic. By this time, around 25 kilometres of earthworks (such as major cuttings and embankments) had been completed, and preliminary bridge and tunnel works had commenced.

In September 2011, the Australian Government commissioned a feasibility study into the completion of the Maldon-Dombarton Rail Link. This study found that the project would not generate sufficient benefits to cover its costs and that rail freight services would only be capacity constrained if there was a very large increase in freight demand. In 2012, the Australian Government committed funds to NSW to undertake pre-construction activities. These included preparation of detailed design work for civil, structural, geotechnical and track work, and finalisation of a construction timetable and cost estimate for the project.

2. Problem description

The Australian Infrastructure Audit 2015 identified that Port Kembla would face capacity constraints in the absence of any rail network improvements. Port Kembla is a significant economic asset, and maintaining efficient movement of freight to and from the port is a key challenge.

Currently, 60-65% of freight moving to and from Port Kembla is transported by rail on either the Illawarra line or the Moss Vale to Unanderra line. Operations on both lines are limited by passenger rail services in the region, resulting in disruptions to freight scheduling as passenger trains are given priority. Growing train patronage on the Sydney rail network will potentially reduce the number of 'train paths' available for freight rail. The capacity of the network is also limited by geographical constraints in and out of the Illawarra which restrict train lengths, operating speeds and, in some cases, the type of cargo that can be transported by rail.

However, capacity constraints are not yet apparent. Modelling provided by the proponent indicates that there is expected to be adequate freight capacity on the Illawarra Line and Moss Vale to Unanderra Line to meet demand until 2031. From 2031, proposed changes to the operation of the Illawarra line, with the potential introduction of rapid transit services to Hurstville, may introduce new capacity constraints. The timing of these proposed future changes would be a significant factor in determining how and when future additional freight rail capacity to and from Port Kembla would be required.

3. Project overview

The proposed rail connection between Maldon and Dombarton would be a single-track 35-kilometre dedicated freight line linking the Main South line at Maldon with the Moss Vale to Unanderra Line at Dombarton (in the Illawarra region). These works would include:

- A triangle junction connection at Maldon to the existing Main South Line
- Rail bridges over the Cordeaux and Nepean Rivers and three over road bridges
- A rail crossing under the Hume Highway
- A 4-kilometre single-track tunnel
- Clearing of the corridor through regenerated and native vegetation

- Cleaning and re-installation of 10 kilometres of bottom ballast
- A new lineside signalling system and improvements to drainage and power supply
- Construction of 35 kilometres of top ballast and installation of 35 kilometres of new sleepers and rail, including for three new passing loops
- Upgrade to the rail line between Coniston Junction and Unanderra.

The objectives of the project are to:

- Meet capacity for rail freight to and from Port Kembla and the Illawarra region in the longer term and support economic development
- Improve efficiency of the rail freight supply chain to and from Port Kembla by providing greater flexibility in train arrival and departure times, improved reliability, shorter cycle times, separation of freight and passenger services and support future intermodal movement
- Maintain or improve the level of safety risks to the rail network
- Minimise impacts on the environment, surrounding land users, and the community
- Optimise overall rail network investment for the NSW freight task.

4. Options identification and assessment

The proponent assessed the following eight options:

- Option 1: Base case (a 'Do Nothing' option)
- Option 2: Completion of the Maldon-Dombarton line
- Option 3: Moss Vale to Unanderra line enhancement, increasing capacity from 24 to 28 paths per day
- Option 4: Uni-directional option – development of the Maldon-Dombarton Line with trains operating towards the coast on the Maldon-Dombarton line and away from the coast on the Moss Vale to Unanderra line
- Option 5: Same as Option 4, but with coal trains permitted to operate on the Maldon-Dombarton line in both directions
- Option 6: Electrification of the Maldon-Dombarton line, with freight trains on the Maldon-Dombarton line being hauled by electric locomotives between Port Kembla and Wilton
- Option 7: Electrification of the Maldon-Dombarton line, with electric locomotives used from each origin to destination
- Option 8: Construction of an additional track on the Illawarra Line between Hurstville and Sutherland to increase capacity between Port Kembla and the Sydney region.

The options were evaluated during the Preliminary Business Case stage. Options 1 to 4 were selected by the proponent for further quantitative analysis based on engineering, operational and costing criteria. The proponent has indicated that none of the options evaluated resulted in positive net benefits. Option 2 was selected as the preferred option as it had the highest economic returns of the shortlisted options.

5. Economic evaluation

The proponent's economic evaluation shows that the net present value (NPV) of the project is -\$66 million, and the project's stated benefit-cost ratio is 0.9 using a real discount rate of 7% and P50 cost estimate. Wider economic benefits (WEBs) were not measured. The negative NPV indicates that the project would not generate sufficient benefits to justify its costs.

Modelling and analysis presented by the proponent indicates that additional capacity at the level that would be provided by the Maldon-Dombarton Rail Link will not be required until at least 2031. Annual benefits measured by the proponent before 2031 are negligible, and sensitivity testing shows that there is significant merit in delaying the project until the freight rail demand is capacity constrained on the Illawarra and Moss Vale to Unanderra lines. The actual timing of these lines reaching capacity is highly uncertain and depends on the future demand for freight services, and the timing of possible future changes to the Illawarra line such as the introduction of rapid transit services to Hurstville.

There are also a number of risks to the economic analysis, which indicate that benefits reported by the proponent may be overstated:

- There is significant uncertainty around forecast future freight demand, particularly from 2031 onwards. Freight throughputs were estimated for 2014, 2021 and 2031. Beyond 2031, demand was assumed to remain constant at 2031 levels. The business case assumed coal would represent 58% of projected freight tonnage using the line in 2031. However, a number of coal mines which were projected to use the Maldon-Dombarton Rail Link over the entire 50-year evaluation period are expected to be exhausted within the next 20 years. For example, the Tahmoor coal mine – which was expected to account for around 22% of rail paths on the Maldon-Dombarton Rail Link from 2031 – is expected to close by early 2019. This lost freight demand is unlikely to be replaced, and lower freight demand would lower project benefits.
- The base case is not a ‘do-minimum’ base case because it assumes uncommitted future network changes to the Sydney rail system, including the potential introduction of rapid transit services to Hurstville by 2031. This would affect freight rail capacity on the Illawarra line. However, these changes have not been committed or funded, so it is not certain that the related project benefits would be realised.

The proponent has measured a range of standard benefits for transport projects. Travel time and operating cost savings are only measured for freight traffic because the project is not expected to have any direct impacts on passenger trips, although road passenger trips benefit indirectly from reduced congestion due to fewer heavy vehicle movements. Because passenger trains are already given priority over freight trains, the project would not increase capacity for passenger services. Infrastructure Australia considers that, in the short to medium term, there is no clear economic basis for the project to proceed, as there is sufficient capacity on the existing lines to meet projected rail freight demand. Infrastructure Australia encourages the proponent to explore alternative interventions to enhance freight rail access to Port Kembla.

Benefits and Costs breakdown

Proponent's Stated Benefits and Costs	Present Value (\$m, 2013-14) @ 7% real discount rate	% of total
Benefits		
Freight travel time savings	\$106	20%
Freight operating cost savings	\$271	51%
Externality cost reductions	\$51	9%
Crash cost savings	\$21	4%
Road congestion cost savings	\$35	7%
Road damage cost savings	\$41	8%
Residual value	\$7	1%
Total Benefits³	\$532 (A)	100%
Costs		
Capital costs (P50)	\$514	86%
Recurrent costs	\$84	14%
Total Costs³	\$598 (B)	100%
Net Benefits - Net Present Value (NPV)¹ without WEBs	-\$66 (C)	n/a
Benefit-Cost Ratio (BCR)² without WEBs	0.9 (D)	n/a

Source: Proponent's Business Case

Notes:

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

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

(3) Totals may not sum due to rounding.

Capital cost and funding

Total capital cost (nominal, undiscounted)	\$805.9 million (P90, \$2013-14, undiscounted) \$766.1 million (P50, \$2013-14, undiscounted)
Proponent's proposed Australian Government funding contribution (nominal, undiscounted)	\$805.9 million
Other funding (source / amount / cash flow) (nominal, undiscounted)	Ongoing access charges would be payable by rail operators using the line.

6. Deliverability

While project delivery has been progressed to a reasonable level of detail, significant uncertainty still exists on the scope of project, capital and operational costs, risks and funding arrangements. Further assessment of these areas would be required if the project were to proceed, particularly given the proposed reliance on Australian Government funding and policy support.

The risk analysis conducted by the proponent identified six high-level risks relating to site accessibility, environmental impacts during construction and operation phases, rail freight demand uncertainty and timing uncertainty around when freight rail will be capacity constrained. The proponent has proposed to mitigate uncertainty around rail freight demand and capacity by delaying the project until demand increases or the network is capacity constrained. This approach maintains the option of constructing the Maldon-Dombarton Rail Link sometime in the future, and will maximise net benefits of the project if it is to proceed.

Capital cost estimates provided by the proponent were probabilistically adjusted. However, there remain uncertainties in the cost estimates due to the difficult terrain and tunnelling works required.

Although funding arrangements have not been evaluated, the proponent has proposed the Australian Government fund the entire \$805.9 million capital cost of the project. The proponent also states that recurrent costs will be met through access charges. However, subsequent financial analysis indicates that these revenues would not be sufficient to cover expected maintenance and operating costs.

In 2014 and 2015, Transport for NSW conducted a Registration of Interest process for the Maldon-Dombarton project, inviting the private sector to propose how they would construct, operate and maintain the line. Two proposals were evaluated in detail; however, neither proposal met the Registration of Interest evaluation criteria. This confirmed that the Maldon-Dombarton Rail Link would require substantial ongoing government funding and policy support to maintain operations.