



Maldon-Dombarton Rail Link Feasibility Study

Final Report

Prepared for the
Department of Infrastructure and Transport

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Contents

Glossary	viii
Organisations consulted	ix
Key points	x
Executive summary	xii
1 Introduction	1
1.1 The feasibility study	1
1.2 Background	2
1.3 Reasons for considering completion of the line	5
1.4 Structure of this report	5
2 Demand	7
2.1 Coal	8
2.1.1 Southern Coalfield	8
2.1.2 Western Coalfield	10
2.2 Gold, copper	13
2.3 Iron ore	13
2.4 Cement and limestone	15
2.5 Paper	15
2.6 Grain	16
2.7 Kaolin	16
2.8 Biofuel	17
2.9 Steel	17
2.10 Cars	17
2.11 Containers	18
2.12 Overall demand	20
3 Capacity	23
3.1 Train operations and capacity analysis	23
3.2 Capacity on the Illawarra line	26
3.3 Capacity on the Moss Vale-Unanderra line	26
3.4 Capacity – roads	28
3.5 Capacity - conclusions	30
4 Engineering assessment	31
4.1 Introduction	31
4.2 Rail alignment and track	33
4.3 Water runoff and drainage	34

4.4	Bridges	35
4.5	Avon tunnel	37
4.6	Rail route options	38
5	Environmental investigation	39
5.1	Key issues	39
5.2	Drainage	41
5.3	Catchment authority requirements	41
5.4	Groundwater	42
5.5	Further assessment	42
5.6	Conclusion and next steps	43
6	Cost Benefit Analysis	44
6.1	Methodology	44
6.2	Costs of a Maldon –Dombarton rail line	45
6.2.1	Direct costs	45
6.2.2	Indirect costs	50
6.3	Benefits of a Maldon-Dombarton rail line	53
6.3.1	Possible relaxation of capacity constraints	53
6.3.2	Diversion to a less urbanised rail route	54
6.3.3	Train operating cost savings	54
6.3.4	External cost savings	55
6.3.5	Other benefits	55
6.3.6	Residual value	56
6.4	Net present value and benefit-cost ratio	59
6.5	Sensitivities	60
6.5.1	How much demand is needed to make a Maldon-Dombarton line viable?	60
6.5.2	Other sensitivities	61
7	Downside and upside scenarios	63
7.1	Scenario 1 - ACIL Tasman's central demand forecast	66
7.2	Scenario 2 - P90 Construction cost estimate	66
7.3	Scenario 3 - Half the NSW auto logistics market shifts to rail	66
7.4	Scenario 4 - A shipping company shifts to Port Kembla	67
7.5	Scenario – 5 Port Botany's planning constraint remains at 3.2 Million TEUs	67
7.6	Bulli Seam output moves to a Maldon-Dombarton line	68
7.7	Scenario 7 - Bulli Seam output moves to the Illawarra line	68
7.8	Scenario 8 - 2% per annum growth in the Western Coalfield mines	69
7.9	Scenario 9 - Extra 5Mtpa from East Bargo/Tahmoor from 2020	70
7.10	Scenario 10 - Iron ore exports of 2-3 million tonnes	70
7.11	Scenario 11 - Iron ore exports of 20 million tonnes	71

7.12	Impact of a carbon price	72
7.13	Combinations of upside scenarios	73
8	Financial analysis	74
8.1	Financial costs	74
8.2	Financial revenue	75
8.3	Project financing	76
9	Interpretation and implications	78
9.1	Is there enough capacity?	78
9.2	The nature of future demand for the line	80
9.3	Option to build a Maldon-Dombarton line	80
9.4	Encouragement of investment	81
9.5	National port and freight strategies	83
9.5.1	National Ports Strategy	83
9.5.2	National Land Freight Strategy Discussion Paper	84
9.6	Implications for NSW port strategy	84
9.7	Implications for rail governance arrangements	85
9.8	Employment effects	86
9.9	Reducing the growth in truck numbers	86
9.10	Consequences of not building the line	88
10	Conclusions	90
A	Terms of Reference	93
B	Respondents to the Maldon-Dombarton rail link issues paper	98
C	Summary of submissions	100
D	Membership of PSC and PRG	108
E	NSW Department of Transport Statement	109
F	Australian Rail Track Corporation Statement	115

List of charts

Chart 1	Expected demand for a Maldon-Dombarton rail line	8
Chart 2	Projected volume of coal to Port Kembla relevant to a Maldon-Dombarton rail line, by coalfield, 2010 to 2030	13
Chart 3	Potential freight for Maldon-Dombarton line if higher volume iron ore scenario eventuates	15
Chart 4	NSW container throughput, estimated by port	19
Chart 5	Costs of a Maldon-Dombarton rail line (\$ million, present value)	52
Chart 6	Net costs of a Maldon-Dombarton line (\$ million, present value)	53
Chart 7	Net Benefits of a Maldon-Dombarton rail line (\$ million, present value)	58
Chart 8	Comparison of net costs and benefits (\$ million, present value)	59

List of figures

Figure 1	Maldon-Dombarton and related lines	xiii
Figure 2	Maldon-Dombarton rail line – terrain	xix
Figure 3	A section of a Maldon-Dombarton alignment	4
Figure 4	Western portal of the Avon tunnel	4
Figure 5	NSW coalfields	11
Figure 6	Major coal tenements	12
Figure 7	Freight flows in the Base Case (2015)	21
Figure 8	Potential freight flows with a Maldon-Dombarton line (2015)	22
Figure 9	Sydney rail network	25
Figure 10	Part of existing alignment, and Eastern portal of the Avon tunnel	31
Figure 11	Completed and uncompleted works	32
Figure 12	Partly completed Nepean Bridge	36
Figure 13	Balanced Cantilever Bridge Option (Cordeaux River)	36
Figure 14	B and F type tunnel and loading gauge cross sections	37
Figure 15	Land use and conservation areas	40

List of tables

Table 1	Organisations consulted	ix
Table 2	Possible upgrades and indicative costs for the Moss-Vale Unanderra line	xvii
Table 3	Freight relevant to a Maldon-Dombarton rail line (Base Case)	20
Table 4	Possible upgrades and indicative costs for the Moss-Vale Unanderra line	28
Table 5	Design and performance standards	34
Table 6	Direct costs of a Maldon-Dombarton rail line	45
Table 7	Comparison with pre-feasibility costs	47
Table 8	Indirect costs	48
Table 9	Unit values for external costs (December 2010 prices)	51
Table 10	Maldon-Dombarton railway asset lives	57
Table 11	Sensitivity to capital costs	61
Table 12	Sensitivity to discount rates	61
Table 13	Impact of changes in discount rate of NPV components	62
Table 14	Summary of upside scenarios (\$ million, present values)	64
Table 15	Present Value of costs and revenue and cost-recovering price	75
Table 16	Costs and revenues if priced at the same rate as the Moss Vale-Unanderra line	76
Table 17	Financial profitability of a Maldon-Dombarton line	76

Glossary

ATC	Australian Transport Council
ARTC	Australian Rail Track Corporation
Base case	Retain existing infrastructure as is
BITRE	Bureau of Infrastructure, Transport and Regional Economics
Central case	ACIL Tasman's forecast of expected demand relevant to a Maldon-Dombarton rail line
COAG	Council of Australian Governments
CPI	Consumer Price Index
CRRP	COAG Road Reform Plan
DIT	Department of Infrastructure and Transport, formerly called Department of Infrastructure, Transport, Regional Development and Local Government
DITRDLG	Department of Infrastructure, Transport, Regional Development and Local Government, now called Department of Infrastructure and Transport
GHG	Greenhouse Gas
GTK	Gross Tonne Kilometre – a measure of weight (including the locomotive and rolling stock) and distance
IRR	Internal rate of return
Km	Kilometre
MTEU	Million TEUs
Mtpa	Million tonnes Per Annum
NPC	Net Present Cost – the sum of future costs discounted to reflect the time value of money
NPV	Net Present Value – the sum of future benefits discounted to reflect the time value of money
NSWI&I	NSW Department of Industry and Investment, now called NSW Department of Trade and Investment, Regional Infrastructure and Services
NSWTIRIS	NSW Department of Trade and Investment, Regional Infrastructure and Services, formerly called NSW Department of Industry and Investment
NTK	Net Tonne Kilometre - a measure of weight (payload only) and distance
P50 or P ₅₀	An estimate (of construction costs) for which it is estimated that there is a 50 percent probability that the actual cost of the construction will be lower than the estimate
P90 or P ₉₀	An estimate (of construction costs) for which it is estimated that there is a 90 percent probability that the actual cost of the construction will be lower than the estimate
PKCT	Port Kembla Coal Terminal
PN	Pacific National
PPI	Producer Price Index
PSC	Project Steering Committee
PRG	Project Reference Group
PUD	Pickup and Delivery
SPV	Special purpose vehicle
TEU	Twenty-foot equivalent unit – a standard shipping container
Upside scenarios	Possible demand scenarios which generate additional demand which could use a Maldon-Dombarton rail line
WACC	Weighted Average Cost of Capital

Organisations consulted

In addition to comments received in relation to the Issues Paper (a list of respondents can be found at Appendix B), which sought comment from all parties interested in a Maldon-Dombarton rail line, ACIL Tasman has consulted in person or by telephone with representatives from the following organisations:

Table 1 **Organisations consulted**

ARTC	Macarthur Intermodal Shipping Terminal
Auto nexus	Newcrest mining
AWB	Newnes Kaolin
BHP Billiton	NRE Gujarat
Blue Circle Southern	NSW Department of Trade and Investment, Regional Infrastructure and Services
Bureau of Infrastructure, Transport and Regional Economics (BITRE)	NSW Department of Transport
BlueScope Steel	NSW Maritime
Boral (Timber)	NSW Roads & Traffic Authority
Cement Australia	NYK Line Shipping
Centennial	Pacific National
CEVA	Patrick Auto care
Coolac	Peabody Energy
Coal works	Port Kembla Coal Terminal
Cusco	Port Kembla Grain Terminal
Eastern Iron	Port Kembla Port Corporation
El Zorro	Pixar
FRID Resources	Qube Logistics
Graincorp	RailCorp
Hamburg Süd	Standard Iron
Hudson Resources	Swire Shipping
Independent Railways of Australia (subsidiary of MIST)	Sydney Ports Corporation
K-Line	University of Wollongong
Maersk	VISY
Manildra	Xstrata

Key points

- This is a feasibility study of a potential freight rail link between Maldon (near Picton on the Main South railway line south of Sydney) and Dombarton (near Port Kembla). The Terms of Reference for the study (Appendix A) cover economic and engineering analysis, design, cost, environmental and social viability, cost-benefit evaluation, pre-construction requirements and the implications of not proceeding.
- Construction of a line was begun, then abandoned, by the NSW Government in the 1980s. It would provide an alternative to the two existing lines for the transport of freight to and from Port Kembla.
- Reasons given for completion of a line included potential increases in freight, road and rail congestion and encouragement of investment.
- Most of the ground work for a 35km Maldon-Dombarton line has been constructed, but the expensive elements – a major bridge, part of another major bridge, and a tunnel – have not been constructed.
- With advances in technology, the study has found more cost effective structures for a major bridge and for road under passes.
- A 4 km long tunnel would have a steep gradient of 1:30, but this is considered to be operationally viable. A line would include up to three passing loops, allowing up to 60 trains per day.
- The environmental impacts are attenuated because much of the line has already been built. The remaining impacts would require mitigation. None of the environmental issues present significant barriers to construction.
- Construction would take around 3-4 years for a financial cost between \$624-667 million. Operating and maintenance costs are relatively minor.
- Allowance has been made, using standard values, for external costs (i.e. those met by other parties) compared with the alternatives. These include congestion, accidents; air pollution, noise pollution, water pollution costs, nature and landscape, urban separation, and greenhouse gases. Allowance has also been made for higher fuel prices and a carbon charge.
- The main type of freight is coal from mines near Lithgow and from the Port Kembla hinterland. Other freight includes grain, copper concentrates, limestone, kaolin, cement and potentially iron ore, containers and cars.
- Bulk freight relevant to a Maldon-Dombarton line is expected to grow from 11.6Mtpa in 2010 to 15.5Mtpa in 2030 (coal is respectively 10.4Mtpa and 12.3Mtpa).
- Cars imported through Port Kembla are expected to continue to use road freight to avoid double handling costs. Most container freight growth through Port Kembla is required by the NSW Government to move by rail.
- Container freight could also increase, especially towards the end of the study period if there is overflow from Port Botany.

- The existing transport system can handle this expected demand, and one of the existing lines (Moss Vale-Unanderra) can be expanded if necessary.
- Demand could be higher than expected, due to increased coal production (though major expansion is more likely elsewhere in NSW or Queensland), possible iron ore exports, or earlier overflow of containers from Port Botany and a shift of some car freight to rail. The study considers these possibilities, as well as high oil prices and a carbon charge.
- One of the existing lines is the RailCorp-owned Illawarra line from Sydney to Wollongong and beyond. It is congested with passenger and freight trains, which affect reliability. There is little scope to increase capacity.
- The other line is between Moss Vale (on the Main South line) and Unanderra (near Port Kembla). It has spare capacity and could be upgraded to handle more frequent and longer trains for well below the cost of constructing a Maldon-Dombarton line. There would be higher operating costs associated with the use of this line.
- The potential to upgrade the Moss Vale-Unanderra line means there is not a capacity problem unless there is an extremely large increase in freight demand. However some trains might have to divert from the Illawarra line, and this might need a new governance arrangement to allocate paths.
- The main benefits of a line relate to increased efficiency for train operators, a net reduction in noise and pollution impacts.
- Arterial roads in the Port Kembla area are congested; however a Maldon-Dombarton line would have little effect on the number of trucks. BHP, a major transporter of coal by truck, has advised that it would not use a Maldon-Dombarton line. Imported cars are transported by truck to avoid double handling costs, and a significant portion of this market is not expected to shift to rail.
- The net present value using a 7% real discount rate is estimated as negative \$206 million – that is, constructing a Maldon-Dombarton line would not generate sufficient benefits to cover its costs. The benefit cost ratio is 0.56 – that is, estimated economic benefits are only 56% of the costs. The reasons for this result are the high cost of construction because of the terrain, and the existence of spare capacity on the Moss Vale-Unanderra line which can be increased if necessary.
- There is still a negative result under all upside scenarios modelled, except for major iron ore exports.
- Project cash flows are expected to support the funding of only around 20% of project costs. The remainder would be required from governments.
- It would not be prudent to build extra rail capacity for demand that might not eventuate, or that might eventuate many years later. However, it would be prudent to preserve the existing easement to maintain the option of constructing a Maldon-Dombarton line. Should it be required in future years the line could be approved and constructed within three or four years.

Executive summary

A feasibility study of a potential freight rail link between Maldon (near Picton on the Main South railway line south of Sydney) and Dombarton (near Port Kembla) was announced by the Minister for Infrastructure and Transport on 8 July 2009. This followed a prefeasibility study which found that a Maldon-Dombarton line was not economically viable, but that it may have long term economic merit. The study has been undertaken for the Department of Infrastructure and Transport and the Terms of Reference for the study (Appendix A) cover economic and engineering analysis, design, cost, environmental and social viability, cost-benefit evaluation, pre-construction requirements and the implications of not proceeding with the rail line.

The study first considers the case for the line, which relates to potential freight demand relative to capacity on existing lines. It then provides engineering and environmental assessments. These are followed by cost estimates, cost benefit analyses related to expected demand and to possible higher demand, and financial analysis. The results are then interpreted and their implications explored, and are also compared to issues raised by stakeholders. The study concludes with a discussion of next steps, including investment sequencing and related trigger points for investment.

The Maldon-Dombarton project

Construction of the Maldon-Dombarton line was begun, then abandoned by the NSW Government, in the 1980s. It would provide an alternative to the existing Illawarra and Moss Vale-Unanderra lines for the transport of freight to and from Port Kembla. The proposed line, the other relevant lines and the main sources of freight are shown in Figure 1.

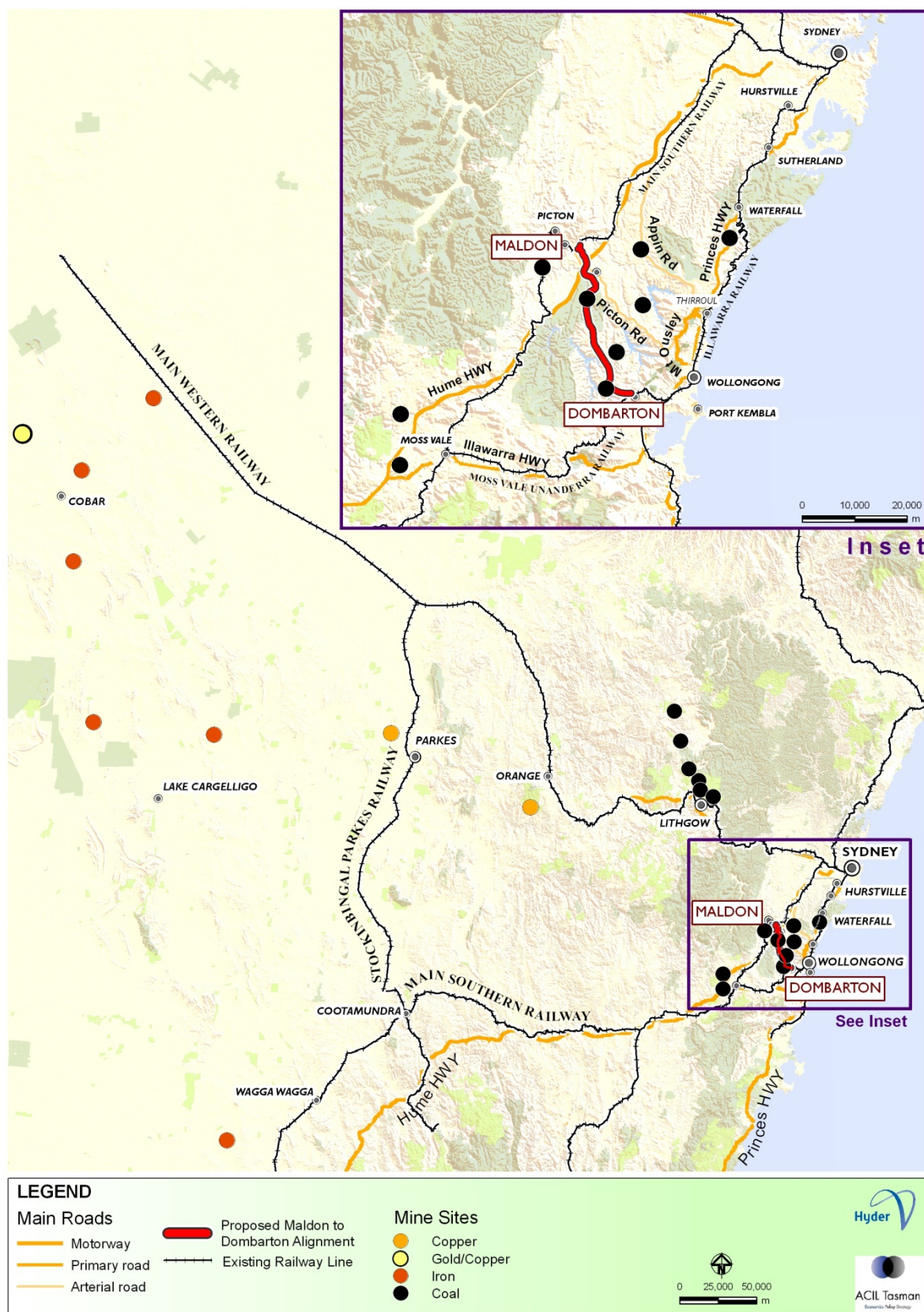
The study considers claims that advocates for the line have referred to (in submissions to the Issues Paper and through consultations) and reports the evidence in support of the claims and quantifies the benefits which a line could provide. The following are reasons given for completion of the line:

- scenarios for potential increases in coal and other freight
- increasing congestion on the Illawarra line
- heavy truck traffic on Mt Ousley and other roads near Port Kembla
- encouragement of investment in the Port Kembla area
- indirect benefits such as reduced noise and pollution in urban areas south of Sydney.

The study finds that construction of the line is technically possible; it would take around 3-4 years to construct for a financial cost between \$624-667 million.



Figure 1 Maldon-Dombarton and related lines



Demand

Bulk goods including coal

The main type of freight moving by road or rail to Port Kembla is coal. Other types of freight include bulk freight such as grain, copper concentrates, limestone, kaolin, cement and potentially iron ore, plus import and export containers and cars. Future demand for a potential Maldon-Dombarton line depends on overall freight demand, new demand induced by the line, constraints on other lines in the area and elsewhere in the network, preferred mode (road or rail) and NSW port capacities and developments.

The coal mainly comes from mines near Lithgow, and also from the Port Kembla hinterland. A Maldon-Dombarton line is unlikely to be used by some mines near Port Kembla that use other rail lines or whose owners prefer road, but it would provide a much more direct route for coal from the Tahmoor colliery (for which expansion is at the pre-feasibility study stage).

Initial growth is expected from the Lithgow area as mines expand, followed by decline as other mines close. Coal from this area travels on the congested Illawarra line and could switch to a Maldon-Dombarton line.

Gold and copper freight tonnages are much lower but expected to expand and kaolin (a fine clay) may be exported from Lithgow via Port Kembla. This freight could use a Maldon-Dombarton line. Grain and limestone freight have a more direct route to Port Kembla via the Moss Vale-Unanderra line while steel is expected to stay on the Illawarra line because it is less steep in the loaded direction than a Maldon-Dombarton line would be.

Cars and containers

Cars, imported through Port Kembla, are expected to continue to use road freight to avoid double handling costs (e.g. from train to truck for the last part of the journey to the dealer).

If there is container freight growth through Port Kembla's newly developed Outer Harbour (from organic growth or from an overflow from Port Botany), the NSW Government requires that the Port generally does not exceed 120,000 Twenty Foot Equivalents (TEUs) per annum by road¹. This is the equivalent of 10 per cent of forecast Outer Harbour container capacity moving by road. This means that any container throughput in excess of this amount must move by rail, whether on a Maldon-Dombarton rail line, the Illawarra line or the Moss Vale-Unanderra line.

¹ Concept Approval issued by the Minister for Planning on 3 March 2011

Overall demand

Overall, bulk freight relevant to a Maldon-Dombarton line is expected to grow from 11.6Mtpa in 2010 to 15.5Mtpa in 2030 (of which coal is respectively 10.4Mtpa and 12.3Mtpa) as a result of continuing export demand. Relevant container movements increase from 24,000 to an estimated 177,000 in 2025 and 486,000 by 2030. This assumes an increase in the current maximum throughput of 3.2 million TEUs allowed at Port Botany to 5 million TEUs, so there is overflow to Port Kembla only towards 2030.

The existing transport system can handle this expected demand, and one of the existing lines (Moss Vale-Unanderra) can be expanded if necessary.

Demand could be higher than the level expected by ACIL Tasman, and the possibilities are examined in scenarios related to each of the underlying drivers. The upside demand scenarios, of uncertain timing and probability, include:

- increased coal production – a possibility at some of the mines, though major expansion is considered to be more likely in the Gunnedah basin or Queensland, which are outside the catchment area for a Maldon-Dombarton line
- possible iron ore exports that are currently being investigated, though the likely route is via the Moss Vale-Unanderra line provided it has enough capacity and is technically adequate
- an earlier overflow of containers from Port Botany, for example if there was not enough easing of Port Botany Road and rail constraints, if the current maximum throughput at the port is not increased, if there was a shift in NSW policy (currently Newcastle is the designated overflow port), or if a major shipping company shifts from Port Botany to Port Kembla
- a shift of Bulli Seam coal from road to conveyor-plus-rail, though it is not certain that Maldon-Dombarton would be the preferred line.

The upside scenarios are independent – that is, do not have a common cause – but combinations of them are considered. Other factors which have been considered include a continuation of, or increase in, high oil prices and/or a price on carbon which is levied on transport fuels.

Scenarios with less demand are also possible – in particular if favourable world coal prices did not continue through the study period (to 2030) output could decline, removing any need for a Maldon-Dombarton line.

Should mass-distance-location based road user charges for trucks be introduced in the future there might be a modal shift to rail. No policies have been announced to date to enable analysis of the impact on a Maldon-Dombarton line.

Carbon price

ACIL Tasman anticipated a carbon tax and included it in the modelling. The impact of the recently announced carbon tax on a Maldon-Dombarton rail line is varied. It is expected to increase the cost of diesel by at least 5.5%. Freight from the Western Coalfield travels a slightly longer distance via a Maldon-Dombarton line compared to the Illawarra line and this diversion increases fuel costs and carbon taxes. Freight diverted from road to rail is likely to save carbon taxes on the assumption that the excise rebate is phased out by the time a Maldon-Dombarton line is built.

Capacity

This section of the study considers whether there will be enough capacity on existing rail lines and roads to cope with future demand for freight to and from Port Kembla, and hence whether a Maldon-Dombarton line is needed. Potential customers need to know whether they can get permanent reliable train paths before they will commit to investment.

One of the two existing lines is the RailCorp-owned Illawarra line from Sydney to Wollongong and beyond. It is congested with passenger and freight trains, aggravated by physical constraints and peak-period restrictions. The congestion affects reliability and often causes delays or cancellations. There are approximately five spare train paths between midnight and 5am, and additional ad hoc paths can be found during the day, but capacity will become very tight (even without upside demand scenarios) over the study period. There is little scope to increase capacity on the Illawarra line without expenditure of a much higher order of magnitude than building a Maldon-Dombarton line.

The other line is between Moss Vale (on the Main South line) and Unanderra (near Port Kembla). It is used for bulk freight such as grain, limestone from southern New South Wales and coal from Tahmoor. It offers an alternative to the Illawarra line for freight that is not time sensitive (the distance from Sydney being longer, and the steep downhill gradient in the loaded direction requires a slow descent).

The Moss Vale-Unanderra line has spare capacity and could be upgraded to handle more frequent and longer trains, though with cost and time penalties for freight from the north (e.g. Lithgow) due to the longer distance. Table 2 shows a summary of these upgrades and preliminary cost estimates. The initial upgrades, mainly longer passing loops, are relatively straightforward and would double the spare capacity in tonnes (from 6.5Mtpa to 13.8Mtpa), well ahead of expected demand. Further upgrades might be needed under upside scenarios. They would add 4.7Mtpa (or possibly up to 17Mtpa) further capacity but are more technically challenging. They would require detailed engineering and

geotechnical assessment, after which a fresh comparison with a Maldon-Dombarton alternative would be appropriate. ARTC estimates, based on recent experience elsewhere on their network, are for a total financial cost (all upgrades except 30 tonne axle loads) of \$176 million. This is well below the cost of constructing a Maldon-Dombarton line, allowing room for higher actual costs if conditions prove difficult.

If some coal trains had to use the Moss Vale-Unanderra line to free up paths on the Illawarra line (e.g. for container trains), a new governance arrangement involving the two track owners, RailCorp and ARTC, may be needed to handle the decisions.

Table 2 **Possible upgrades and indicative costs for the Moss-Vale Unanderra line**

	Spare capacity (saleable paths/day)	Spare capacity (Mtpa)	Incremental capital cost (\$m)	Total capital cost (\$m)
Current. Trains limited to 669 metres,	7.0	6.5	\$-	\$-
Extend loops to allow trains up to 850 metres	7.0	8.6	20	20
Extend loops to 1350m, plus road bridge at Robertson plus 1350 m area to break up trains. Allows 72 wagon trains.	7.0	13.8	103	123
Extend Summit Tank loop	8.1	15.9	15	126
Extend the Summit Tank loop further	9.4	18.5	50	176
AC traction locos, ECP braking, 30 tonne axles	11.1	32.9	See note 2	

Notes: 1) Current services consume an average of 5.3 paths per day.

2) AC traction locomotives and electronically controlled braking are both expected to be standard in all new generation rolling stock. The capital costs to enable 30 tonne axles are unknown. See Chapter 3.3 for details and caveats.

Arterial roads in the Port Kembla area are congested, especially Mt Ousley Road. However, a Maldon-Dombarton line would have little effect on the number of trucks on these roads. BHP has advised that it would continue to cart coal to Port Kembla by truck even if the new line was built. Most auto logistics firms are expected to continue to carry cars by truck to avoid double handling costs. Potential growth in container trade beyond 120,000 TEUs per annum is obliged to use rail for Port Kembla to keep within its planning concept approval.

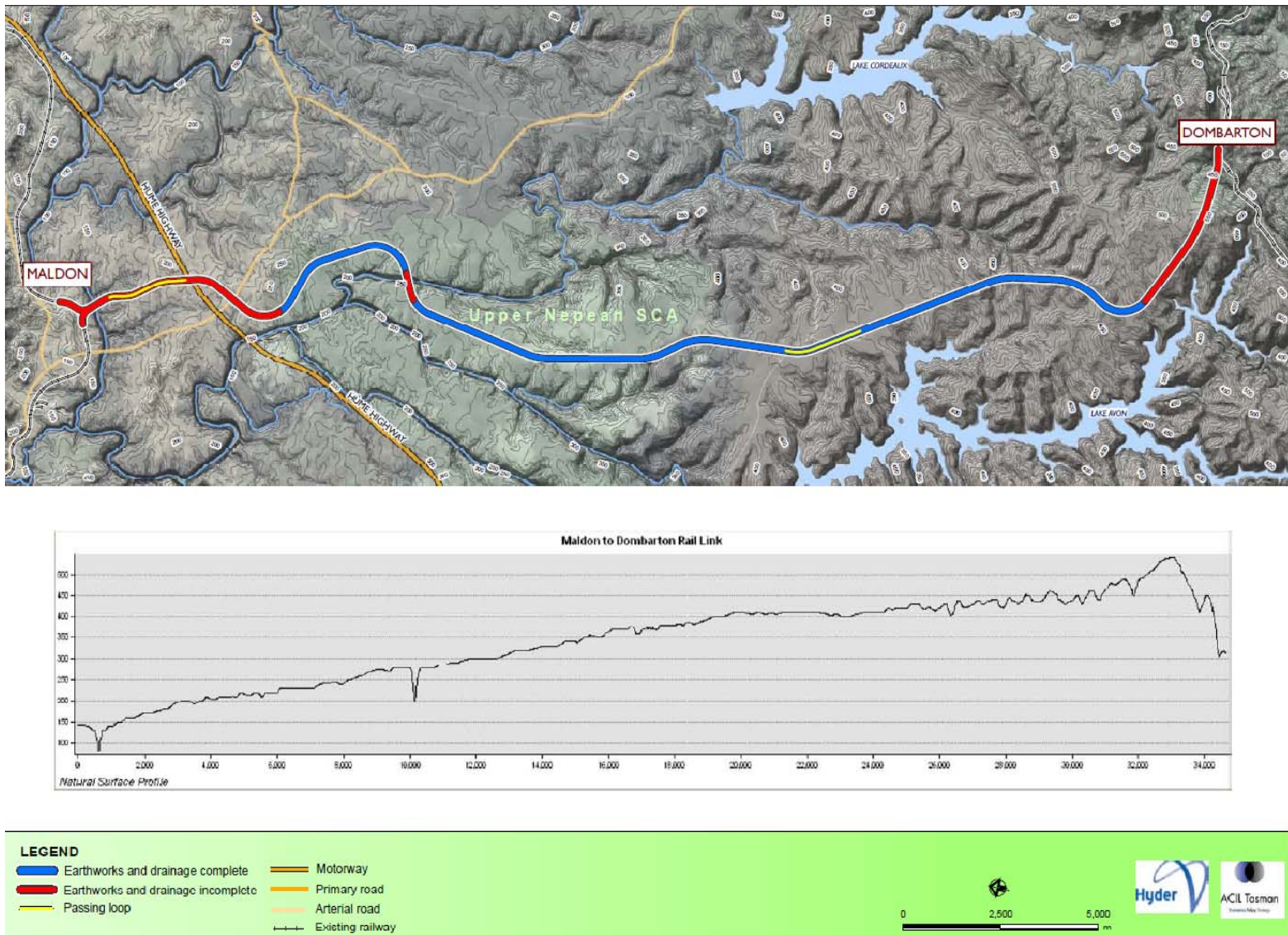
Overall, the potential to upgrade the Moss Vale-Unanderra line means there is not a capacity problem unless there is a very large increase in freight demand. However some trains might have to divert from the Illawarra line, for example if there is strong growth in container numbers.

Engineering assessment

The 35 km route of a Maldon-Dombarton line mainly follows contour lines of hills south of Maldon, with a steep tunnel at the southern end near Dombarton. Most of the ground work has been constructed, but the expensive elements – a major bridge, part of another major bridge, and the tunnel – have not been constructed. Figure 2 shows this route:



Figure 2 Maldon-Dombarton rail line – terrain



After considering four alternatives, Hyder concludes that the original alignment is viable in terms of track design and cost. The partly completed (Nepean) bridge is confirmed as theoretically adequate to support the current design loading. With advances in technology a balanced cantilever design would be more cost-effective for the other (Cordeaux River) bridge than the arch structure proposed earlier. More cost-effective structures are also available for road underpasses.

The 4 km long tunnel alignment proposed in the original design has also been confirmed, after considering alternatives. The tunnel would have a steep gradient of 1:30, however this is considered to be operationally viable. Two sizes of cross-section were considered, one similar to many existing tunnels and one meeting ARTC standards that would allow larger US-type locomotives and double container stacking. Both have been costed but the larger one ("Plate F") is preferred. It would have fan ventilation (the line would not be electrified – diesel locomotives would be used).

In terms of track work, the track would have concrete sleepers, on ballast that is already in place for 70% of the line and the tunnel would have concrete slab in place of ballast. There are 12 level crossings, mainly for minor roads and fire tracks.

The line would include two 1500m passing loops, with scope for a third to be added later if required. This would enable the line to allow 25 trains per day, increasing to 60 trains per day with construction of the third loop. The minimum freight train transit time would be 55 minutes, maximum loaded operating speed 80 km/hour, and a maximum axle load of 30 tonnes.

Environmental investigation

The environmental impacts of completing the line are attenuated by the fact that much of its length has already been built. The remaining impacts would require mitigation (e.g. water treatment) or appropriate treatment (e.g. Indigenous consultation). None of the environmental issues appear to present significant barriers to construction of a Maldon-Dombarton line. The most significant environmental impacts to be assessed related to the line crossing Sydney Catchment Authority land, the tunnel, works within riparian zones, and the building of bridges.

Drainage is important as the soils in the area are highly erodible. An effective soil conservation management plan is needed with good surface drainage, minimum vegetation clearing and vegetation stabilisation. Catch drains are needed at the top of cuttings and protection of the cutting face is required to reduce the risk of erosion and provide stability.

Other issues considered included flora and fauna, noise, indigenous heritage sites, safety and fire road level crossings, land contamination and risks.

Developments within the catchment must produce a neutral or beneficial effect on water quality, so runoff will need to be fed through water quality treatment features. An effective soil conservation management plan would need to be implemented to minimise erosion and maintain water quality.

A full environmental approval process would probably take 12 to 18 months.

Cost benefit analysis

Costs

The construction cost is estimated to be between \$624 and \$667 million in December 2010 dollars, assuming the larger of the alternative tunnel cross section sizes and allowing for measures to mitigate environmental impacts. Removing the profit element of estimated construction costs yields the resource cost of the line, which is the relevant economic cost – estimates of the resource costs are between \$557 million to \$596 million in December 2010 dollars.

Ongoing operating and maintenance costs would be relatively minor. The main cost risks relate to a lack of geotechnical information for the tunnel and the need to carry out different sections of work simultaneously.

The study has recognised lower operating and maintenance costs for a Maldon-Dombarton rail line compared with other rail alternatives and roads, because a newly built railway with head-hardened rail and concrete sleepers will have a substantially reduced maintenance requirement. This produces a net benefit for this aspect of a Maldon-Dombarton line.

Allowance has been made, using standard values, for external costs (i.e. those met by other parties) compared with the alternatives. These include congestion, accidents; air pollution, noise pollution, water pollution costs, nature and landscape, urban separation, and greenhouse gases (GHG).

Benefits

Estimates were made of the economic benefits of a Maldon-Dombarton line – the main elements related to capacity and to increased efficiency for train operators, i.e. lowering the resource cost of certain freight tasks. Allowance was also made for the external benefits from a reduction in the urban residential kilometres which the freight trains will pass through if trains switched from the Illawarra line.

The calculations included a relatively large residual value reflecting net benefits that arise beyond the study period. Assumed asset lives range from 30 years for electrical to 100 years for civil works.

Net present value

A net present value was calculated consistent with Infrastructure Australia guidelines, using a 7% real discount rate. It is estimated as negative \$206 million – that is, constructing a Maldon-Dombarton line would not generate sufficient benefits to cover its costs. The benefit cost ratio is 0.56 – that is, estimated economic benefits are only 56% of the costs.

The reasons for the negative result are the high cost of constructing the line because of the terrain, and the existence of spare capacity – which can be increased for a much lower estimated cost than constructing a new line – on the Moss Vale-Unanderra line.

Sensitivity analysis with alternative capital costs, discount rates, fuel prices and a carbon charge still produce negative results.

Upside scenarios

The study considered a range of scenarios under which demand for the line would be greater than that estimated in the base case. An extra 5Mtpa of coal from Tahmoor would improve the economics of the line from negative \$206 million to negative \$105 million. More modest improvements are achieved from a transfer of Appin/West Cliff coal from road to a Maldon-Dombarton line, 2% per annum growth in Lithgow area coalmines, or a shipping company shifting its container trade from Port Botany to Port Kembla. However major iron ore exports (up to 20Mtpa) could produce a positive result of up to \$2 billion subject to assumptions about alternative transport routes and the net value of the ore. A major reason for negative economic results is the ability to upgrade capacity on the Moss Vale-Unanderra line in stages at lower cost than constructing a Maldon-Dombarton line (the more challenging stages would need further study).

Financial analysis

Given that the estimated economic results of a Maldon-Dombarton rail line are negative, it is not currently worth undertaking the project from a national economic viewpoint. From a project financing viewpoint:

- project cash flows are expected to support the funding of only around 20% of project costs
- private finance under a Public Private Partnership arrangement is likely to be available to meet this proportion of costs

- regular government payments for the line being available would support higher levels of private sector funding.

With private financing potentially available for only a small portion of the total cost, the remainder would be required from governments. However if there were major iron ore or other developments (for example at Port Kembla, or the Tahmoor or East Bargo coal deposits), equity participation in the line by the developer(s) should be considered.

Interpretation and implications

Is there enough capacity? There are two existing lines between Sydney and Port Kembla – do they have enough capacity to cope with future freight growth? The Illawarra line has limited spare capacity and improvements would be prohibitively expensive. The Moss Vale-Unanderra line has some spare paths now and its capacity could be augmented to cater for expected growth although some freight would have to travel further with higher costs if using the Moss Vale line. It could be further augmented – for less than the cost of a Maldon-Dombarton line – to cope with all but the more extreme combinations of possible upside growth scenarios.

Distance, price and ruling gradient are the deciding factors when choosing the preferred line. The Moss Vale-Unanderra line is the more direct route for freight from Southern NSW, and the Illawarra line is shorter for freight that passes through Sydney. The Illawarra line is more suitable for steel because of the steepness of the ruling gradient from Port Kembla to Sydney, and for containers (which are time sensitive) because of the shorter distance. If container train paths are needed in future, a new governance arrangement may be needed to move some coal trains to the Moss Vale-Unanderra line.

Future demand. Future demand could be higher than ACIL Tasman's estimates e.g. from additional coal, containers or iron ore. These scenarios are uncertain but plausible. It would not be prudent to build extra rail capacity for demand that might not eventuate, or that might eventuate many years later – but it would be prudent to maintain the option of constructing a Maldon-Dombarton line when needed.

Option to build a Maldon-Dombarton line. This can be maintained by preserving the existing easement. The cost of keeping the option open is low – no maintenance is required, and most of the land has no alternative economic use. If a Maldon-Dombarton rail line demonstrated its feasibility it could be approved and constructed within three to four years.

Beneficiaries and contributors. The main beneficiaries from a Maldon-Dombarton line would be Port Kembla Port Corporation, rail operators (from

reduced congestion and delays), intermodal terminals in southwest Sydney, Xstrata (the owner of Tahmoor colliery) and the Port Kembla Coal Terminal company (from less bunching in train arrivals).

There would also be a temporary improvement to the local economy and employment during construction, and noise and pollution reduction benefits from diverting freight trains from residential urban areas south of Sydney.

Most of the costs would fall on governments (taxpayers). Railcorp would also lose revenue from a decline in freight on the Illawarra line.

Encouragement of investment. Uncertainty around rail capacity to and from Port Kembla discourages potential investment, for example in mine expansion or container trade. This report, by clarifying the rail capacity situation – in particular, the scope for improving the Moss Vale-Unanderra line – should improve the investment climate.

National port and freight strategies. This study is compatible with the recently released Australian Government draft national strategy documents. Planning and corridor reservation is considered in these documents and also supports development of ports master plans and state and regional freight strategies by providing an information base.

Implications for NSW ports strategy. Stakeholders have suggested that it would be cheaper to facilitate growth in container trade at Port Kembla, through construction of a Maldon-Dombarton line, than to make the major investments that are being proposed to improve rail and road links to Port Botany. However the existence of rail capacity does not ensure that container trade will move to Port Kembla from Port Botany; other factors such as cost, convenience, location and service are also relevant. Furthermore, the comparison with Port Botany is not straightforward. Throughput demand at Port Botany will continue to grow, which will require landside improvements at the Port.

However, should a change to NSW Government ports policy or a shift in shipping line operations significantly alter Port Kembla container throughput, the NSW Government will need to revisit the feasibility of a Maldon Dombarton line.

Truck numbers. There is a strong local interest in reducing the number of trucks, or at least in reducing their growth, on the major arterial roads serving Port Kembla, and a view that a Maldon-Dombarton line would help do that.

The evidence does not support this view. The owner of the colliery that is expected to provide the most significant growth of trucks, BHP, has stated that “it is neither economically feasible nor environmentally sound to consider a rail

connection to the Maldon to Dombarton rail link at this time.” It is unlikely that autologistics companies would switch to rail because of double handling costs. From Australian and international experience rail has not proved to be economic for carriage of general freight (containers) over short distances such as Port Kembla to Sydney. To reduce truck numbers, other policies would be required such as restrictions on mining licences and changes to road user charges.

ACIL Tasman’s modelling shows that this conclusion is not affected by assumptions of large fuel price increases or a carbon charge.

Consequences of not building the line. With the expected moderate freight growth, the consequences would be continuing congestion and noise on the Illawarra line, use of its few remaining paths at night, and increased use of the alternative via Moss Vale which could require relatively modest expenditure on upgrading that line.

If future freight is higher than expected, and with no Maldon-Dombarton line, Moss Vale-Unanderra line capacity would need to be increased more. If some of the successive increments proved difficult, or if multiple upside scenarios coincided, there would not be enough capacity in the absence of a Maldon to Dombarton line. Some of the possible freight would have to be exported through another port (e.g. iron ore through a Victorian or a South Australian port).

Next steps and “trigger events”

While the Maldon-Dombarton line is technically feasible there is insufficient demand to warrant its construction in the near future. Smaller investments in the upgrades to the Moss Vale-Unanderra line would enable capacity enhancements and could be considered as demand rises. However there are scenarios in which a Maldon-Dombarton line could become more viable.

A Maldon-Dombarton line could be justified later if there was a very large increase in freight demand. The current easement should be retained in order to preserve the option to build the line. Events that should trigger a review of whether to build the line are:

- increases in firm freight demand that are beyond the combined capacity of the Illawarra line and an enhanced Moss Vale-Unanderra line. The question then should be whether the freight overflow was enough to justify the construction cost, whether there were routes for it through other ports and an economic comparison of the alternatives.

- any developments in NSW port related policies that increased the likelihood of a substantial part of Port Botany's container trade moving to Port Kembla. Some freight would have to be diverted from the Illawarra line to free up capacity for this.
- increases in off-peak passenger train frequency on the Illawarra line (not expected in the foreseeable future) that significantly reduced freight capacity.

As the easement is already in place it would be possible to build the line quickly. Funding decisions, environmental approvals, consolidation of land holdings and engineering design work could proceed in parallel and be completed in around 12 to 24 months. Construction would take a further two years.