

Submission to Infrastructure Australia re the North South Corridor

The North South Corridor is regarded as comprising:

1. Sydney-Melbourne,
2. Melbourne-Brisbane, and,
3. Sydney-Brisbane.

The accompanying submissions to the AusLink draft corridor strategies were made during 2006-07 and were based on research conducted at the University of Wollongong. This research was supported, in part, by the former Cooperative Research Centre in Railway Engineering and Technologies (Rail CRC Project 24; rail transport energy efficiency and sustainability). However, the views and research findings are the responsibility of the writer.

In 2008 the Rudd government released the 2007 revised corridor strategies. In some cases, the revised strategies address certain issues raised in submissions in the draft strategies. By way of example, for the Sydney-Melbourne corridor, more attention has been given to terminals and rail deviations have been placed as a longer term priority.

It is suggested however that three issues warrant more attention than given in the strategies in consideration of all candidates for Building Australia funding. These are:

- * external costs
- * reduction of carbon pollution, and
- * reduction of dependence upon imported oil.

In many cases there is a need for long overdue 'catch - up' rail track investment to be made to facilitate more efficient interstate rail freight operations.

External costs are conspicuous by their absence in many of the 2007 draft reports. This is despite the attention given to external costs as part of AusLink project assessment in the *National Guidelines for Transport System Management In Australia* released in 2004 by the Australian Transport Council. A second edition was issued in 2006. As these guidelines (at auslink.gov.au) "*focus on land transport and provide a standard framework, including processes, methods and tools to assist and guide transport planning and decision-making across Australia*" it is reasonable that external costs be fully taken into account in formulating recommendations for the funding of major projects.

Since 2006-07, the case for reducing dependence on imported oil has been strengthened due to oil prices trending upwards. The lack of attention to oil vulnerability is perhaps the major deficiency in the revised 2007 corridor strategies. It is even harder to understand given the recommendations of the February 2007 report of the Senate Rural and Regional Affairs and Transport Committee from its Inquiry into Australia's future oil supply and alternative transport fuels.

Given rail's superior energy efficiency over trucks in moving line haul freight, it is suggested that more attention should be given to rail proposals that have demonstrated capacity to reduce dependence on imported oil. This will have the added benefit of not only reducing air pollution but also greenhouse gas emissions.

In respect of interstate rail freight, a 2008 paper *"East coast mainline rail track: options for 2014"* presented at the Conference on Railway Engineering Perth (Proceedings pp 357-368) by this writer shows that Brisbane-Cairns is working better than either the Melbourne-Sydney or Sydney-Brisbane corridors from the point of view of avoiding undue dependence on line haul road transport with its high external costs. The paper can easily be provided on request and an abstract follows:

On each of the Melbourne - Sydney and Sydney - Brisbane corridors, rail moves about 1 million tonnes per annum (mtpa) of intercapital city intermodal land freight, giving rail now less than 12 per cent of market share. On the Brisbane - Cairns corridor, total intermodal rail freight is now about 3.7 mtpa, with much of this traffic made possible by Queensland Rail's MainLine Upgrade. This paper looks at potential 2009-2014 track upgrades to give faster transit times and lower train operating and track maintenance costs on all three corridors. Reference is also made to the relevant AusLink corridor strategies and highway upgrading.

Due to 'steam age' alignment, trains moving between Melbourne and Sydney traverse some 72 circles of curvature, and trains between Sydney and Brisbane traverse 177 circles. Trains between Brisbane and Townsville traverse 82 circles. Within New South Wales, construction of about 196 km of rail deviations in five locations between Menangle and Junee would eliminate some 256 km of track with substandard alignment; and a 67 km rail deviation could replace the existing 91 km Hexham - Stroud Road section. This would result in appreciable reductions in diesel use along with greenhouse gas emissions and external costs.

1 Summary of response to the Sydney Melbourne Corridor draft strategy

[The full submission is available on request]

The draft is somewhat 'Business as usual' which gives more priority to ongoing Hume Highway improvements (including pavement strengthening) than building rail deviations of the Sydney - Melbourne railway to replace track with substandard alignment.

The strategy is noted as a collaborative initiative developed by DOTARS, the NSW Department of Planning, the Roads and Traffic Authority (NSW), the NSW Ministry of Transport, the Department of Infrastructure (Vic), VicRoads, and the Department of Urban Services (ACT). It appears that neither Rail Corp (NSW) nor the ARTC are involved in the strategy to the same extent as the road agencies.

The draft strategy gives much attention to **road crashes** on the Hume Highway. The response notes that during the four years to 31 December 2003, articulated trucks were involved in 35 per cent (38) of all road fatalities (108) on the Hume Highway; also an estimate is given of the average unit cost of road crashes involving articulated trucks as 0.6 cents per net tonne km. This is some 20 times the average unit cost of rail freight accidents.

External costs form an important part of the AusLink project assessment outlined in the *National Guidelines for Transport System Management in Australia* of the Australian Transport Council. However, they are not considered in the draft Sydney - Melbourne Corridor Strategy. The final strategy could at least note the high external (and operating) costs of excessive dependence on road freight transport. Indicative estimates of external costs include those of \$367m per annum by 2015 for a "base case" of rails modal share of Sydney-Melbourne rail freight falling to 6 per cent by that year. On the other hand, with track straightening and competitively neutral access pricing (which needs much more attention in the final report), rail could win a modal share of 50 per cent of line haul by 2015. The external costs estimate is then \$228m and the difference is \$139m pa.

The draft strategy observes "*Rail track condition and configuration that limits transit time, reliability, use of higher productivity vehicles, and competitiveness against road transport...*" along with its older alignment. The response qualifies how bad the '**steam age' alignment** is, and notes that any train moving between Melbourne and Sydney turns a total of about 72 circles – some 36 circles to the left and 36 to the right. The worst sections are identified between Glenlee (about 55 km south of Sydney) and Juneee, with no less than 132 km of track on tight curves of radius less than 800 metres. A detailed Appendix to the response notes that construction of five main south rail deviations (Menangle to Aylmerton, Werai to Penrose, Breadalbane to Yass, Bowning to

Cootamundra and a bypass of the Bethungra Spiral) would require 196 km of new track. This would replace about 256 km of 'steam-age' alignment which requires trains to traverse about 50 circles of curvature. In addition, three of the deviations (Menangle - Aylmerton, Breadalbane - Yass, and Bowning - Cootamundra) were noted in the 2001 ARTC Track Audit and the ATC's 2004 *National Guidelines for Transport System Management in Australia* (Vol 3, p248). These deviations, along with those under consideration by the ARTC in early 2005, warrant recognition in the final corridor strategy.

The benefits to the train operator alone for a 'standard' intermodal freight train with two 4000 HP locomotives along the proposed new track (as opposed to using the current steam age alignment) include a time saving of 105 minutes, a fuel saving of about 1340 litres of diesel and a cost saving per train conservatively estimated at some \$1700. There are also savings in track maintenance costs, and a reduction in external costs due to the substantial improvements in rail efficiency and competitiveness.

It is suggested that the final Corridor Study should give attention to **route preservation for future rail deviations.**

Oil pricing and vulnerability does not rate a mention in the study (even in Chapter 3 re foreseeable changes to 2030). There is a need to ensure that plans for future infrastructure can be modified if it is confirmed that high oil prices will be sustained (or continue to increase) as opposed to the scenario that oil prices will fall. The difference in diesel use between the base case and the real rail growth case (50 per cent modal share) will be 77 million litres [over 200,000 tonnes per annum CO₂equiv] per annum by 2015.

The draft strategy has no reference to non-urban **rail passengers** - either High Speed Rail (despite the 2001 East Coast Very High Speed Train Scoping Study commissioned by DOTARS) - or regional rail. This should be addressed in the final strategy.

In conclusion, the past 25 years has seen much highway investment to support road freight, however, a much different approach will be needed over the next 25 years. The cost to the nation if rail does not attract much more Sydney - Melbourne intercity freight will be high. This cost will include appreciably more heavy trucks on the Hume Highway, with increased road system costs, road fatalities, and imported oil use.

This response shall complement detailed comments that have already been made during 2005 - 06 as part of the North South Rail Corridor Study (NSRCS). The earlier comments are available on request.

Strong growth projections for Melbourne - Brisbane freight are noted in draft strategy. This shows Melbourne - Brisbane intercity freight rising from 4.5 million tonnes per annum (mtpa) in 2004 (mostly by road) to 12 mtpa by 2029 ...

The draft strategy notes limitations on both road and rail infrastructure (with more emphasis on road) and suggests some relatively modest improvements for each mode. These infrastructure upgrades do not extend to either a dual carriage ways for the entire Newell Highway or an inland Melbourne - Brisbane railway.

If most of the 12 mtpa of Melbourne - Brisbane freight envisaged by 2029 continues to go by road, a dual carriageway complete with town bypasses will be reasonably expected. This has been the case with the Hume Highway over the years. To date, it has cost in current terms over \$5 billion to make the Hume Highway a "Very Fast Truck" route. It will cost appreciably more to upgrade the Newell Highway to a standard where it could comfortably accommodate over 10mtpa of Melbourne - Brisbane road freight.

As an alternative to a dominant road freight option, and as suggested in the draft strategy, most of the 12 mtpa of freight is expected by 2029 to go by rail. It is suggested by this writer that the present rail track infrastructure will simply not cope. This is even with the current ARTC and the modest enhancements noted in the draft strategy.

The drafts strategy hints at, but fails to address the severe speed weight restrictions that the present track infrastructure imposes. Even when the currently committed ARTC work is completed, rail will continue to have severe constraints. To give an example from the Australian Financial Review for 26 April 2007 'Logistic Sector Jostles' (page 46) *"The rail line from Sydney to Melbourne is 972 km, the road is less than 700 km; and because trains were built for the steam age there are 18 big left-hand circles to get around the really tough hills and another 18 right-hand circles."*

Although the numbers are in need of correction (the road is about 840 km long and the curvature adds up to 36 circles to the left and 36 circles to the right) the message is clear regarding the rail track. Quite simply, there is excess length and curvature between Melbourne and Sydney. The worst sections are located between Junee and about 60 km south of Sydney. From Sydney to Maitland, the double track line is congested. From

Maitland to Brisbane the excess length and curvature of the rail track is worse than Junee to Sydney. For Maitland to Acacia Ridge near Brisbane, the track winds so much that in total the number of circles to the left is 70, with 70 to the right. The Sydney - Brisbane point to point length could be reduced by 100km on rebuilding the worst curved sections of track to modern engineering standards. The corresponding excess rail distance between Junee and Sydney is 60 km, and between Junee and Brisbane in 160km.

It is recommended that the final strategy give specific recognition to the need for an inland rail route and / or the need for track straightening on the existing lines. As with the earlier submission to the NSRCS, a decision will be needed addressing whether it is best to proceed first with an inland rail route or to commence with extensive upgrading (further than the current ARTC work) of the existing track. Ultimately, both infrastructure upgrades will be needed. A short term priority should be to acquire the necessary land or **at least protect the short corridors needed for new track or rail deviations**. In this regard, the recently reported commitment by the Government to plan a scoping study for an inland route is commended.

It is also suggested that the final strategy note that in 2004 the Queensland Government, protected a new Grandchester - Gowrie rail corridor. The fact that advanced planning and public consultation for this new corridor in Queensland started in 1996 and took 8 years to complete is a reminder of the need to act quickly to secure the entire corridor.

...It is trusted that AusLink 2004-09 funds can be made available for advanced planning for both the inland route and upgrading the existing rail route through Sydney. Whether or not an inland rail route proceeds, there is a need for a commitment from both the NSW government and the Federal Government to **build more track capacity north of Hornsby**. This shall be addressed in a forthcoming response to the Sydney - Brisbane corridor strategy.

As per the writers response to earlier draft strategies corridor strategies that project to 2030 would be enhanced by recognising both external costs and oil vulnerability.

In regards to oil vulnerability, recommendation # 7 of the 2007 report of the Rural and Regional Affairs and Transport Committee Inquiry into Australia's future oil supply and alternative transport fuels stated "*... that corridor strategy planning take into account the goal of reducing oil dependence ... Existing Auslink corridor strategies should be reviewed accordingly*". This approach is commended.

3 SUBMISSION RE SYDNEY BRISBANE CORRIDOR STRATEGY

The Sydney - Brisbane corridor has relatively high volumes of [non - bulk] freight and passengers. It also shows considerable growth potential over the next 20 years. The draft strategy notes present "...road congestion and capacity constraints" are expected to become increasingly severe and that the rail corridor "...will continue to have capacity and alignment problems." This is despite the current Australian Rail Track Corporation (ARTC) work including longer crossing loops, concrete resleepering and improved signalling.

Six strategic issues are noted in the draft strategy as follows:

- road safety, especially on road sections with high volumes of freight and passenger vehicles, through towns and at level crossings;
- managing congestion on urban fringes and at major urban and regional centres;
- the condition of the ageing road and rail infrastructure, which affects safety and efficiency;
- the amenity of towns and major urban areas along the route;
- improving the rail system; and
- planning for corridor protection, reservation and use to meet future requirements.

These six strategic issues are considered in this response to be commendable. However, the short term priorities in the draft strategy have an strong emphasis on road upgrades without complementary road vehicle use demand management strategies. In addition, more emphasis could well be given to short - term rail priorities.

It is suggested that the final strategy, with the support of government at both the state and Federal level, at least acknowledge the community reaction against the significant increase in trucking on the Pacific Highway that has resulted since 2002. This issue was discussed at length in a report released May 2006 by the General Purpose Standing Committee No. 4 (GPSC) of the NSW Legislative Council from its inquiry into Pacific Highway Upgrades. The issue was noted by the Productivity Commission in its December 2006 report, on page C.14 as follows which noted that participants to the GPSC inquiry into Pacific Highway Upgrades *'frequently attributed their road safety fears to the mixing of passenger and heavy vehicles on the one road'* (GPSC 2006, p. 67).

A concern is expressed about the treatment of road safety in the draft strategy: to extrapolate from the number of fatal crashes in just two years to road safety being 'significantly improved' is too big an assumption. The draft notes 43 fatal crashes in 2003 (a bad year following the new Yelgun - Chinderah section opening in August 2002)

increasing to 25 fatal crashes in 2006. Quite simply the number of fatal crashes on the Pacific Highway is too high, and too many of these (nearly one in three) involve articulated trucks.

The draft strategy puts forward the view that Brisbane and South East Queensland (SEQ) will become Australia's second largest conurbation by 2026 (currently Melbourne). This and other factors, point to a need for the final strategy to address *road vehicle use demand strategies*. This could include phasing out the Queensland Fuel Subsidy Scheme payments, which costs over \$500 million per year. This subsidy also imposes costs to the NSW Government and are an unnecessary and costly stimulus to road vehicle use in SEQ.

The second road vehicle use demand option, that could be addressed, is congestion tolling at Berowra (or at least re-instatement of the toll that was withdrawn in 1988).

The third option is the potential for tolls to expedite construction of more dual carriageways on the Pacific Highway. The fact that the potential for such tolls is explicitly mentioned in a 2005 Federal - NSW intergovernmental agreement (the MOU re Pacific Highway) suggests that they should at least be noted in the final strategy.

A major concern about the draft strategy is that although it recognises the likely strong growth of freight and the limitations of the rail system, there is little detail in the draft as to how substandard the track is. A way forward to upgrade it is needed. This is opposed to a somewhat negative view of further upgrading past the present ARTC work as noted in Chapter 1 of the North South Rail Corridor Study (NSRCS - page 1-16) re the Coastal Sub-Corridor re Infrastructure Requirements *"Further infrastructure investment beyond the current ARTC program does not indicate substantial additional benefits in terms of either significantly reduced transit time or greater demand. The Study Team analysis suggests that the current problems associated with congestion north of Sydney can not be easily or cost effectively addressed."*

There is a need for a commitment by both the NSW and Federal Governments to improve Hornsby - Newcastle operations. The objectives that need to be considered include:

1. Increasing freight capacity (now around 22 paths each way over around 14 hours of the day - need up to 50 paths over 22 hours or more per day);
2. Shortening run times for all trains;
3. Reducing grades for freight trains (irrelevant for passenger trains); and,
4. Providing reliability for all trains on the up grade of Cowan Bank.

A third track combined with curve easing on the Cowan Bank coupled with a ridge top passenger line using steep grades and short tunnels to get a high speed alignment from north of Cowan to south of Mt Kuringai (able to be used by all passenger trains) may well be a substantially lower cost solution to these challenges than an Mt Kuringai – Hawkesbury River tunnel than earlier proposed within the NSW Government.

The North Coast Line from Maitland to Brisbane is undoubtedly the weakest of all interstate rail links, and previous reports going back to 1989 have recognised it as a candidate for potential closure. More information is available on request.

In summary, the Maitland to Kyogle line was constructed as a string of branch lines during the early 20th century. As a consequence, it has undue excess length (about 90km) and excessive curvature imposing severe speed weight restrictions. Indeed trains going from Maitland to Grafton turn for a total of some 55 circles to the left and 55 circles to the right. Appropriately, both the 2004 Federal Budget and Auslink White Paper noted the potential for rail deviations. The least that the final strategy could do is to note this potential as well.

It is suggested that the final strategy should also note the potential of shared road/rail corridors in certain locations. The draft strategy notes (page 19) an intergovernmental agreement (Cross Border MOU) to further develop plans for a rail link from South - East Queensland (SEQ) into Northern NSW. It is of note that the Tugun Bypass is part of a shared corridor that will allow for future extension of the Gold Coast railway to Coolangatta Airport. There are locations within NSW where certain Pacific highway upgrades could include provision for future rail track straightening. Such issues were canvassed by the abovementioned NSW Parliamentary Committee inquiring into Pacific Highway Upgrades; and could well be noted in the final strategy. This would be appropriate given Auslink's goal of improving integrated transport. Comment on shared corridors follows in an Appendix.

There is scope for 1800 metre rail crossing loops as opposed to 1500 metre ones.

Scenario modelling, as used in the Brisbane - Cairns draft strategy, would enhance the Sydney - Brisbane final strategy. So also would the recognition of external costs.

As previously indicated, the final strategy should at least note oil vulnerability, as per the February 2007 Final Report of the Senate Rural and Regional Affairs and Transport Committee Inquiry into Australia's future oil supply and alternative transport fuels.

Appendix A The present Sydney – Brisbane rail corridor

The Sydney - Brisbane line was considered in 1989 in a consultants report for the State Rail Authority as a candidate for closure and in 1994 was noted by the National Transport Planning Taskforce to be the 'weakest link' of all interstate lines in Australia. Freight trains average only 50 km per hour, due to excessive 'dwell time' waiting at sidings etc, plus excessive length and track curvature. Together with Sydney - Melbourne, the Sydney - Brisbane track was rated as F by an Engineers Australia Infrastructure Report card (F being *Inadequate for current and future needs*). As noted in the draft corridor strategy, there are severe constraints on the Sydney to Broadmeadow line.

The Maitland and Kyogle rail track is basically a string of branch lines built to steam age alignment and joined together in the early twentieth century. Some details are given in Table A.1. By 1905 only the Grafton – Casino – Mullumbimby section was in place. By 1915, this section had been complemented by four further branch lines, Maitland – Taree – Wauchope, Raleigh – Coffs Harbour, Glenreagh – South Grafton, and, Casino – Kyogle. All such lines were built to a very basic standard with 'steam age' alignment and excessive curvature. So also were the various linking sections of Wauchope – Raleigh (completed 1923) and Coffs Harbour – Glenreagh (1922). The Kyogle – Qld Border (completed in 1930 to link standard gauge to South Brisbane) was also on 'steam age' alignment complete with a spiral loop.

The only grade and curve easing since 1930 known to this writer took place in the mid 1990s as part of the Keating Government's 'One Nation' programme. This was in two locations north of Grafton (Lawrence Rd and Rappsville). Using computer track file data which gives at 10 metre intervals the grade and the radius of any curve, it is possible to calculate the angle subtended by each curve on the track. Adding these angles gives the number of circles as in Table A.2.

Table A.1 – New South Wales North Coast Line

Section	Year completed
Maitland - Dungog	1911
Dungog - Taree	1913
Taree – Wauchope	1915
Wauchope – Kempsey	1917
Kempsey – Macksville	1919
Macksville – Raleigh	1923
Raleigh – Coffs Harbour	1915
Coffs Harbour – Glenreagh	1922
Glenreagh – South Grafton	1915
Grafton – Casino	1905
Casino – Lismore	1903
Casino – Kyogle	1910
Kyogle – Queensland Border	1930

Reference: Extracted from Quinlan H and Newland J R (2000) *Australian Railway Routes 1854-2000*, ARHS Note Lismore – Mullumbimby was completed in 1894 and the Grafton Bridge was opened in 1932.

Table A.2 Aggregate lengths of Strathfield - Acacia Ridge rail track with tight curves, number of circles traversed, and steep grades on tight curves

Section of Track	Length km	Tight curves km	Number of of circles	Circles per 100 km	Steep grades on tight curves km
Strathfield - Maitland	181	57	27	15	14
Maitland - Grafton	506	237	111	22	0
Grafton - Acacia Ridge	274	102	39	14	14
Total	962	396	177	18	28

Reference Laird (1998)¹ with number of circles added. Compiled from rail system computer file data with aggregate data rounded to 100 metres. Data is qualified and for track as at end of 1996. Tight curves refers to curves of less than 800 m radius and steep grades are those with a grade of less than 1 in 66.

It can be seen that a train moving between Sydney and Brisbane turns a total of about 177 circles – some 88.5 to the left and 88.5 to the right. This reflects the original ‘Branch Line’ status of most of this ‘long and winding’ track. The corresponding number of total circles for Sydney to Melbourne is 72 and averaging 8 circles per 100 km. The worst Main South section is Junee - Goulburn with 15 circles per 100 km.

The 2004 Auslink White Paper refers on page 37 to “...building deviations at 14 locations, totaling 121 kilometres, to ease curves on the North Coast railway between Newcastle and Brisbane (\$158 million).” This work, although overdue, was deferred by the ARTC in May 2005 in favour of more pressing work.

Over the next three years, ARTC's Maitland Brisbane work is to include concrete resleepering, 1500 metre loops (four new ones, 10 shorter ones extended and 18 existing 1500 metre ones upgraded) plus long overdue signal upgrades between Casino and Acacia Ridge (to replace an obsolete system - as per the ABC 7.30 report 6 Nov 98 - that imposes additional costs on train operators requiring a stop at each loop, conservatively estimated to cost \$106 per stop per freight train²).

At the conclusion of this work, transit times from Sydney to Brisbane for 1500 metre superfreighters are estimated to decrease by nearly 4 hours from 19 hours 22 minutes to 15 hours 30 minutes.

¹ Laird, P (1998) *Rail freight efficiency and competitiveness in Australia*, Transport Reviews, Taylor and Francis, London, 1988 Vol 18, No 3, p241 - 256 and submission to the Productivity Commission's draft report Inquiry into road and rail freight infrastructure pricing (# DD77 at <http://www.pc.gov.au/inquiry/freight/subs/sublist.html>)

² Michell M and Laird P (2002) Smooth running - a route of cost reduction Conference on Railway Engineering, Wollongong Proceedings page 227-237

Appendix B Shared - road rail corridors

Shared - road rail corridors have been provided for the Tugun bypass near the Queensland NSW border. Shared corridors are to be found elsewhere in Queensland and feature extensively in the Perth urban rail network. A planning mechanism is needed to facilitate them throughout New South Wales.

By way of contrast to Queensland and WA, the Roads and Traffic Authority of NSW with the exception of Tugun has declined to date to make provision for shared corridors with Pacific Highway upgrades. A case in point is the Moorland to Heron's Creek Pacific Highway Upgrades, and the December 2006 Department of Planning Director Generals Report on this project omitting any reference to them. This is despite the issue being raised in the June 2006 submissions report.

A report of an inquiry of a NSW Parliamentary Committee (GPSC)³ into Pacific Highway upgrades notes the view of the Railway Technical Society of Australasia that there would be a marginal additional cost from packaging rail and road upgrades together:

"... we are saying if you are going in there with roads, look at it for rail because it is only very marginal to acquire a bit more land while at the same time doing a road, or while you are doing the bulk earth works for the road you can do the bulk earth works for the rail, and the marginal costs to complete the rail line are insignificant."

It was also noted that implementing shared road and rail corridors would *'be putting into practice the Government's policies on the environment and land transport....We are talking about a four-lane or six lane road in the Pacific Highway and a rail corridor easement of four or five metres. Surely in the concept stage we could look at the combined rail – road corridor from an environmental and social point of view.'*

Meantime, Government at one level and/or another should be able to bear the additional incremental cost of environmental impact assessment, land acquisition and preliminary earthworks of shared corridors for all future assessments of Pacific Highway upgrades. Auslink as an integrated transport program instead of just a roads program could usefully require combined road – rail corridors.

The GPSC report found much community concern over the increase in heavy trucks on the Pacific Highway following the opening of a major upgrade (the Yelgun - Chinderah deviation) and approval of B-Doubles by the RTA, both in August 2002. The report noted this had led to an increase in heavy vehicle numbers of 340 per day from 2001 to 1230 in late 2002, and called on the NSW government, inter alia" to *"... outline measures to encourage a shift from road to rail freight, including through integrated strategic planning for both road and rail upgrades."*

³ 'Pacific Highway Upgrades' of General Purpose Standing Committee No 4 of the NSW Legislative Council.