

## **Submission re the draft National Freight Strategy**

Philip Laird University of Wollongong March 2010

### **Introduction**

The present submission will draw on ongoing research conducted at the University of Wollongong, however, it does not necessarily reflect the views of the University. This submission shall be of a general nature. It shall include, as Appendix A, part of a submission dated October 2008 to the National Transport Commission with the conclusion in part that Australia's rail systems should be carrying much more freight than they currently do.

The goal of producing a National Freight Strategy is commended. So also is the work leading to national regulation of rail and road freight. However, an overseas observer could well ask why it has taken Australia so long since its Federation in 2001 to achieve national freight regulators and a draft National Freight Strategy (along with gauge standardisation).

In seeking public feedback on the *draft National Freight Strategy*, the Department of Infrastructure and Transport notes "a blueprint for a truly national, integrated and multimodal transport system capable of moving goods from point A to point B quickly, reliably and efficiently."

What appears to be missing in this request for feedback is the need to also move goods in a manner that is SAFE and ENVIRONMENTALLY FRIENDLY. Here it is acknowledged that safety and environment receives some mention in the report.

### **Bigger picture**

The impression gained on a first reading of the draft is a preference for the use of heavier trucks with numerous - at least ten - references to high productivity vehicles. However, there is no direct reference to any of the physical constraints on Australia's rail network that limit rail freight productivity. This omission also occurred in the National Transport Commission's October 2010 Discussion Paper: *The Role of Government in Rail Freight Investment*.

Nor is there any reference to the draft report of the House of Representatives Standing Committee (the Neville Committee) on Transport and Regional Services (2007) *The Great Freight Task: Is Australia's transport network up to the challenge*.

The 2007 Neville Report did acknowledge a need for some straightening and strengthening rail track to increase rail freight productivity. Also needed is improved overhead and side clearances for freight trains (again absent from the draft report).

In addition, road pricing for heavy trucks is mentioned. More attention in the final National Freight Strategy needs to be paid to this important issue. This could be accompanied by a summary of the investment of government funds into roads since 1992 (with the establishment of a National Road Transport Commission and a National Rail Corporation).

## **Data**

The draft report, correctly in this writer's view, notes data deficiencies. In respect of data, the 2007 Parliamentary Report *The Great Freight Task: Is Australia's transport network up to the challenge?* made two pertinent recommendations. These were concerned with long standing data deficiencies, with the second recommendation urgently (emphasis added) calling for enabling legislation. The government's response is of interest, and notes that legislation provides support for maritime and aviation data. It is fair comment that Australian maritime and aviation data is appreciably better than that of road and rail data.

Quite simply, land transport data deficiencies noted during the 1990s by the Productivity Commission and other official reports continue to exist. By way of example, the 2007 Committee report noted (on page 69) a 2006 BITRE problem on getting inter capital city rail freight data. Result: the 2010 BITRE Research Report 120 "*Interstate freight in Australia*" reverts to interstate as opposed to intercapital city freight data.

On the road side, an update of the ABS Survey of Motor Vehicle Use appears to have 'stalled,' the latest being 2007 data. In terms of road crash statistics, inquiries to the relevant federal agency has been unable to supply the numbers in each recent year of the fatal road crashes involving B-Double trucks, and of the articulated truck fatal crashes, how many are either single vehicle crashes or truck-truck crashes?

For many years, the United States has had a Bureau of Transportation Statistics. In 2001, Professor Peter Newman et al (*Back on Track, rethinking transport policy ...*) recommended that within Australia, as part of land transport reform, consideration be given to: *Formation of a National Bureau of Transportation Statistics needs to occur with the publication of accurate, comprehensive and up-to-date information on all modes of transport, including energy use and greenhouse gas emissions.*

Despite the work done before and after the release of the Neville Report, significant land transport data deficiencies remain.

However, NSW now has a Bureau of Transport Statistics (in earlier years the NSW Transport Data Centre). It is understood that the NSW Unit has 30 staff. A staff number of this size would be appropriate for an Australia wide Bureau of Transport Statistics.

### **International comparisons**

The draft report, correctly in this writers view, notes a need for international comparisons. The appropriate benchmark is that of the former Canberra based Bureau of Industry Economics (BIE) whose report *Rail Freight 1995 International Benchmarking* makes good reading. In brief (from this writers peer reviewed paper from *Transport Reviews*, 1998, Vol 18. pp 241-256 *Rail freight efficiency and competitiveness in Australia*) the IE (1995) noted high rail freight rates in Australia as against a 'benchmark' rate in America of 2.87 cents per net tkm adjusted for length of haul.

The BIE (1995) gives an extensive discussion on ways and means of improving rail freight operating efficiency and moving towards World Best Practice (WBP). This includes (BIE, 1995, p69) analysis of potential cost savings in several areas that could have made a reduction in total 1993-94 operating costs of \$2097 million by \$497 million, or 24 per cent. The areas identified for savings, by moving to WBP adjusted for Australian conditions, (with share of total saving in brackets) were Train Crew (13%), locomotive maintenance (16%), wagon maintenance (12%), terminal marshalling (8%), signalling/control (3%) infrastructure maintenance (16%) and, corporate and business overheads (32%).

The BIE (1995, Appendix A3.3) gives a discussion of the major factors influencing operating costs, including those listed above. This discussion cites the terrain, over which the trains are operated, as affecting: locomotive maintenance (requiring more sustained effort, and with any accompanying sharp curvature "...greatly increasing the wear on wheels and bogies"), wagon maintenance (with track curvature affecting "...the wear of wheels" and gradients affecting "...the wear of brakes" ), fuel, and track and structure maintenance (via curvature and topography).

With regard to fuel use in rail freight, the BIE (1995, p70) also noted that this was "...efficient given the existing (age) profile of the locomotive fleet". Thus, ongoing upgrading of the locomotives fleet will assist in improving energy efficiency. However, there is appreciable scope for further gains in energy efficiency by improving the mainline track alignment. The easing of grades and curvature on mainline track that currently has steep ruling grades or tight curvature would also reduce maintenance costs, and reduce train transit times. In turn, this would improve rail freight's competitive position.

In this regard, with recent data, during 2007 in Australia, the articulated freight task was about 144 billion tonne kilometres. If rail was to take 15 per cent of this road freight task, then the savings in diesel fuel use would be over 375 million litres per year (with a reduction of about 1 mtpa of CO<sub>2</sub>). There would also be reduced road congestion and

improved road safety with an expected reduction (based on recent data) of some 16 road fatalities each year involving articulated trucks.

By international standards, Australia has made slow (at glacial like speed) progress on gauge standardization. The question of railway gauge gets a brief mention on page 6 of the discussion paper, including that in 1995 when the Melbourne - Adelaide rail standardisation was completed that “a standard gauge link between (mainland) capital cities was finally achieved” (indeed 116 years after being recommended in 1889 by Major-General Edwards and advocated that year by Sir Henry Parkes). However, there are gauge standardisation issues still requiring attention in Australia.

This writer has also examined rail freight productivity in a recent paper *Australian Rail Freight Productivity* of this writer presented at the 3rd International Conference on Transportation and Logistics (T-LOG 2010) held at Kyushu University in Fukuoka, Japan whose abstract follows:

This paper outlines Australia’s growing rail freight task, which has grown from about 110 billion tonne kilometres (btkm) in 1994-95 to 217 btkm in 2007-08. The major rail freight changes from 1995 are noted along with non-bulk rail freight movements on the East-West, North-South, Adelaide-Darwin and Brisbane-Cairns corridors. The rail transport of exports of iron ore, coal and wheat is outlined, including the three fold growth of iron ore exports over the past decade (to 389 million tonnes in 2009-10). Road freight and energy efficiency issues are also addressed. Productivity factors including speed-weight characteristics of certain main lines, and differing performance ranging from poor (eg North-South interstate rail freight) to world best practice (including iron ore and Central Queensland coal exports plus East-West interstate rail freight) are noted. The paper concludes that further track investment and land freight transport policy reform is needed within Australia.

### **Oil vulnerability**

Oil dependency appears only to gain a footnote (#52) on page 34. It deserves much more attention in a national strategy, along with the important question of increasing energy efficiency in transport. This is at a time (as noted on page 3 of the 2010 NTC discussion paper *The Role of Government in Rail Freight Investment* ) in looking to the future "...where the interstate freight task is expected to double between 2008 and 2030 at a time both peak oil and climate change challenges will impact."

The fact that rail and sea are appreciably more energy efficient than road in moving freight (except for low tonnages over small distances) is also relevant to a final national transport strategy. The Queensland draft integrated freight strategy addresses this question and this strategy suggested that more attention be given to it. A link follows: <http://www.tmr.qld.gov.au/search-results.aspx?query=integrated+freight+strategy>

The comment on page 40 of the Queensland draft integrated freight is of note

**Encourage freight movement that minimises the effects of oil price fluctuations and availability, and environmental and climate impacts**

– oil-based fuels account for approximately 20% of transport costs in Australia across all modes. Diminishing identification of new reserves in conjunction with predicted refining capacity constraints will mean that supply will eventually be insufficient to meet the increasing demand for oil. It is widely recognised that the transport sector is the largest user of oil and one that has experienced the largest growth in demand in recent times. Managing this dependency will require further planning to identify alternative fuels and efficiencies to sustain freight operations and ensure freight is able to be moved at an affordable cost.

### **Further questions**

The various issues posed in the draft paper could be usefully complemented by questions including.

Question A. What are the total costs of underperformance of rail freight in Australia in terms of more use of road freight, and more demand for road construction.

Question B. How much of this underperformance is due to a lack of investment in rail infrastructure.

Question C. What are some of the costs of delaying investment in rail infrastructure.

Question D. Are there cases where government investment in rail, post World War II, have delivered good economic, social and environmental advantages.

Question E. Are there cases where further government investment in rail would give good benefits.

Question F. Should Australia be expediting construction of an Inland Railway.

Question G. Should the Australian Rail Track Corporation be reconstituted, with enabling legislation, as an Authority ?

Comment on these questions follows. To answer Question A would require more data than is currently available and much analysis. However, inefficiencies on the North South corridor linking Australia's three largest cities coupled with a much improved National Highway System and low road user charges for heavy trucks (when compared with either current New Zealand levels or current track access fees for freight trains) have led to road carrying over 90 per cent of all Sydney Melbourne freight and about 90 per cent of all Sydney Brisbane freight. In regional Australia, partly as a result of deteriorating track in

most states, there has been more freight diverted from rail to road - with appreciable cost shifting to local government.

One clear rationale for government investment in rail freight in general, and rail track in particular, is the high cost of road freight when all costs are counted. The high costs of road freight are not those paid by consigners of freight, but society as a whole.

Re Question B, numerous reports in the 1990s, and the 2007 Parliamentary Report *The Great Freight Task: Is Australia's transport network up to the challenge?* have addressed substandard rail track infrastructure. More recently, Engineers Australia 2010 Infrastructure Report Card has downrated rail from C- in 2005 to D+. In part this is due to urban rail shortcomings which include, in Sydney and Brisbane, inadequate separation of freight and passenger train movements.

It is worth noting that recent government buy back of rail freight operations include that of New Zealand and Tasmania. In both cases, the private sector had been found not to have delivered over time the expectations at the point of sale; also to have closed down the rail system would have led to high social and environmental costs as well as economic costs.

In addition, the Victorian and United Kingdom governments have taken back rail track networks previously leased to the private sector.

Re Question C about costs of delaying investment in rail infrastructure, it is instructive to look at how lack of government support for rail signalling in the past has inflicted excessive operating costs. By way of example, Centralized Traffic Control – CTC was under consideration in 1978 for funding under a National Railway Network (Financial Assistance) Act. Some CTC projects were funded with loans; one project that was denied was between Casino and Brisbane, when the estimated cost was \$9.9 million. CTC was finally installed some 30 years later in 2008 by the ARTC on this section. Thus, for thirty years, either manual signal boxes were manned at crossing loops, or the train drivers had to stop their trains at each loop, unlock a signal box, and exchange staffs to obtain their authority to proceed. In the year 2000, this was estimated to impose on freight train operators a cost of \$106 for each train and each stop. (Appendix B has more details). Given the number of crossing loops and train numbers, the estimated cost penalty in train operation was about \$1 million a year. This in part was due to extra fuel use. With inflation and increasing fuel prices, it is likely that the order of cost was about \$2 million a year.

Re Question D about where government investment in rail, post World War II, has delivered benefits, numerous examples can be given. These include the three major gauge standardisation projects of the 1960s. In regards to Melbourne Albury completed in 1962, removing the break of gauge allowed for more freight to be moved at less cost. Ironically, this investment in part is still due to be paid off with repayments from each of NSW and Victoria due to cease in 2012. Imagine funding the reconstruction of most of the Hume Highway since 1974 this way.

There has been strong growth in rail freight on the East-West Corridor linking the East Coast to Perth. This has been due to a programme going back some 50 years of upgrading, including gauge standardisation. Work from the 1960s to the 1990s is outlined in Appendix C. To further improve operations on the East-West corridor, additional work was needed. Since 1998, this has been done by the ARTC with the assistance of the private sector. ARTC has also introduced a wayside monitoring program including Wheel Impact Load Detectors, Acoustic Bearing Monitors, and more recently, a noise detector array in the Adelaide Hills.

As seen by Mr Geoff Smith, CEO of SCT, in a March 2009 speech in Melbourne to the Committee for Economic Development *"can we replicate the success of the East-West Rail corridor onto the North South corridor, and can the Government's target of increasing market share from 11% to 25% be achieved?"*

In a similar way to upgrading the East West corridor, the upgrading of Queensland's North Coast line has also delivered good benefits. To quote from a 2010 ATRF paper of this writer (*Brisbane Cairns land freight* which outlines the AusLink Brisbane - Cairns corridor strategy (final version released in 2008) and the ongoing upgrading of the Bruce Highway which for much of its length is a two lane highway):

The Brisbane - Cairns railway is also outlined with its former severe speed-weight constraints and the subsequent track straightening and strengthening to allow for faster and heavier freight trains. This includes the Main Line Upgrade of the 1990s and more recent upgrades. As a result, rail now has some 30 per cent of non-bulk freight on this corridor. This is opposed to less than 10 per cent on the Brisbane - Sydney and Sydney - Melbourne corridors. The paper also notes the introduction in 1998 of electric tilt train services between Brisbane and Rockhampton.

Some future corridor upgrade options are noted with particular attention to external costs and energy use. The paper finds that further Brisbane Cairns rail track upgrading to improve rail freight efficiency and competitiveness could result in many benefits.

Incidentally, the maps on page 6 and 53 of the draft strategy do not show the Townsville - Cairns railway as part of a national freight network. *Is this an oversight ?*

Re Question E as to cases where further government investment in rail would give good benefits, two examples are given. The first one is in regard to the further upgrading both North South lines linking Australia's three largest cities. To quote the summary from AusRail 2007 MELBOURNE - SYDNEY - BRISBANE RAIL OPTIONS FOR 2014 this paper looks at potential 2009-2014 track upgrades to give faster transit times and lower train operating and track maintenance costs. Reference is made to the relevant AusLink draft corridor strategies.

Due to 'steam age' alignment, freight and passenger trains moving between Melbourne and Sydney traverse some 72 circles of curvature, and trains between Sydney and Brisbane traverse 177 circles. Ongoing upgrading of the Hume and Pacific Highways invites more attention to the costs and benefits of straightening the track between Australia's three largest cities. By way of example, construction of about 196 km of rail deviations in five locations between Menangle and Junee would remove some 256 km of track with substandard alignment and reduce transit times by over two hours; and a 67 km rail deviation could replace the existing 91 km Hexham - Stroud Road section would halve transit times and reduce fuel use by 40 per cent. As a result of this and other track straightening, appreciable annual savings by 2014 could result in diesel use (155 million litres) along with reductions of greenhouse gas emissions (about 400,000 tonnes CO<sub>2</sub>e) and external costs (\$274m).

The second example is completion of the Maldon Dombarton rail link. To quote the conclusions of Australasian Transport Research Forum 2010 Proceedings (see patrec.org for the full paper) *An Illawarra Macarthur rail link:*

With the constraints on the existing road and rail networks, the ongoing expansion of Port Kembla, and increased demand for passenger train services on the existing South Coast railway, the case for completion of the 35 km Maldon - Dombarton link is stronger than it was in 1988 when worked on it was suspended.

Given the positive findings in the pre-feasibility study, either the Federal or the NSW Government should move to acquire the complete corridor (most is already held) and commence additional environmental impact assessment to meet any new requirements introduced since the 1983 EIS was completed. The results of the full feasibility study will be awaited with interest.

The Maldon - Dombarton link could also be tied in with a 36 km Menangle - Aylmerton rail deviation to improve freight and passenger train operations on the NSW Main South railway. Corridor protection for this and other Main South rail deviations could well be expedited.

Re Question F, it is suggested that Australia be expediting construction of an Inland Railway. The 2010 decision of the Australian government to acquire a land corridor is noted with appreciation, as of that of the Victorian government to locate a major new road and rail corridor called the Outer Metropolitan Ring/E6 Transport Corridor.



It is suggested that the role of government in reserving land corridors could usefully be addressed by the Commission in the draft paper.

Re Question G Should the Australian Rail Track Corporation be reconstituted as an Authority ? In 2009, there were calls for the ARTC to be made into an Authority, and for the ARTC to be given a mandate to get more freight onto rail. These calls were complemented by Mr Lindsay Fox in 2009 and in March 2010 at the Australian Logistics Council Forum in Sydney when calling for greater use of rail for the benefit of easing road congestion and for future generations.

As an Authority, with adequate powers conferred by legislation (including that to acquire or resume land for new rail track), the ARTC could take a longer term view of rail development. Plus track upgrades to meet speed targets agreed to in 1998 for intermodal trains to average 80 km/h between terminals.

Indeed, if the ARTC had been reconstituted in 2004, (the year it took up a lease on NSW track and was allocated \$450m for work such as ‘to straighten out the track’) it could have not only built some mainline deviations by now and avoided delays on the South Sydney Freight Line near Glenfield. Plus avoid the imposition of tax bill on the ARTC with a contingent liability of \$360 million (again, imagine treating a road authority in this manner).

In conclusion, a final National Freight Strategy could usefully address number of issues concerning government investment in rail freight. The Productivity Commission’s 2006 freight report correctly notes that poor track is due to past under-investment over many decades. It remains to be seen if a National Freight Strategy is able to articulate a way forward to get the public and/or private investment of the rail network in Australia’s South - Eastern corner (where most Australians live and work) up to standard.

As also noted by the Fischer Review of Victorian regional lines, there is a good case for rehabilitation of branch lines. The alternative was to see more and more freight moved by B-Doubles on lightly constructed roads.

Accordingly, Infrastructure Australia and the Federal Department of Infrastructure and Transport in finalizing a National Freight Strategy are urged to address measures to overcoming impediments to productive and efficient rail freight operations in Australia.

## APPENDIX A Edited submission to National Transport Commission

### re Rail Productivity Review Issues Paper October 2008

1. This submission is 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.

2. The interest of the Commission in rail productivity is welcome. If the Commission can be effective in lifting rail productivity, as it has been in assisting the road freight industry to lift its productivity, there will be significant national benefits.

#### Rail freight

3. Australian freight railways face major impediments in moving freight in an efficient manner. Some of these impediments are multiple gauges and regulatory obstacles imposed by various State Governments. Many of these impediments reflect failings of Australian federalism which, in part, is due to Federation in Australia occurring at a later date (1901) than either in Canada (1867) or the US. It is of note that these problems were mostly resolved in the late 19th Century in both Canada and the United States. Other impediments for Australian rail freight are early 20th century ("steam age") mainline track alignments.

4. As seen by "RON FINEMORE speaking on Business Sunday, 2 May 2004  
*"You've seen all the productivity improvements from road, and real productivity improvements that are to come in the future are going to be with rail. There is enormous opportunity for longer trains, faster trains, heavier trains."*

This is perhaps a little overstated, as productivity includes energy efficiency in terms of more tonne-kilometres per litre of diesel, and this could be achieved with reductions in tare mass and maximum speed. However, it appears that the significant advances in road freight energy efficiency and productivity made in the 1990s may not be maintained this decade. In addition, increasing road congestion is likely to erode some gains.

4. There is much that could be done to further lift interstate rail freight productivity in Australia. At present, this is severely limited in places (mostly NSW and the Adelaide Hills) by significant speed-weight restrictions imposed by "steam age" alignments. Lower axle loads on the Defined Interstate Rail Network also limit rail productivity.

In short, the mainline track of Canadian and US Class I Railroads allows for "FAST AND HEAVY" freight trains moving at 100 km/h with 25 tonne axle loads. Between Sydney and Brisbane, the trains average 47 km/h with 21 tonne axle loads. It is little better between Sydney and Melbourne.

Even between Melbourne and Perth, where high average speeds are possible, and rail performs well, for faster trains, the axle loads are 21 tonnes (although 25 tonnes is possible at lower speeds). However, axle loads of 35 tonne or more are used in the Pilbara due to its superior track structure.

6. The Australian Rail Track Corporation (ARTC) is nearing completion in 2009 of mainline interstate track upgrading on the North South corridor linking Melbourne – Sydney – Brisbane. Benefits will include shorter transit times and increased reliability. However, on completion of the work, the track will still not be “fit for purpose”. At least 200 km of the Sydney – Melbourne track should be rebuilt to modern engineering standards (as indeed over 200 km of Brisbane – Cairns track has been rebuilt since 1987 on improved alignment, with most of this track now on concrete sleepers).

7. Rails market share of about 30 per cent on the Brisbane - Cairns corridor is about triple that on the Brisbane - Sydney and the Sydney Melbourne corridors. This superior performance (which includes five Pacific National Qld trains per week offloading freight from Brisbane to Rockhampton as of February 2008 as opposed to the first drop off point being Mackay) was only made possible by the track upgrades since the 1980s (starting with Main Line Electrification, the Queensland Main Line Upgrade program of the 1990s and subsequent track upgrades). Without these upgrades, there would now be many more trucks on the Bruce Highway and a higher cost of living in Far North Queensland.

Following completion of work to duplicate the Calboolture - Beerburrum track(early 2009) on an improved alignment, similar work should proceed without delay to Landsborough. Further upgrading of the Queensland North Coast line including track straightening from Landsborough to at least Maryborough West is now needed. Such an investment would reduce operating costs, fuel use, greenhouse gas emissions and external costs and help keep the cost of living down in Central and Far North Queensland.

Attention is also required to replacing older rail bridges including the Burnett River near Bundaberg and a bypass of Rockhampton.

8. The Melbourne - Sydney corridor has the largest inter-capital city freight tonnages (at 11 mtpa) in Australia, whilst freight on the Sydney - Brisbane corridor is currently about 8 mtpa and expected to almost triple over the period to 2029.

Recent estimates show that rail is moving less than 10 per cent of intercity intermodal freight on the Melbourne - Sydney and Sydney - Brisbane corridors. Current ARTC track work will assist rail to improve its modal share of intercity freight on the North - South Corridor. However, whilst the Hume and Pacific Highways continue to be rebuilt on an improved alignment, the existing railway upgrades remain on an older ‘steam age’ alignment with excessive point to point length and curvature. Some track straightening on the NSW interstate mainlines linking Australia's three largest cities is recommended during 2009-14, with the extent determined by whether an inland route proceeds during these five years.

As observed in numerous reports, the state of the track linking Australia's three largest cities is "substandard". Trains going from Melbourne to Sydney turn 36 circles to the left and 36 circles to the right - 72 in all as they traverse ‘steam age’ aligned track with excessive curvature and extra length. The NSW North Coast line has an even worse alignment. Although the ARTC is investing \$2.3 billion to upgrade interstate track, there are no published firm plans for track straightening.

Construction of 200 km of track to modern engineering standards between Menangle and Junee, would remove 50 of the 72 circles and reduce point to point distance by 60 km, cut off 1 and ¾ hrs in transit time as well as save fuel. It is a good question as to whether the

\$800 million allocated in the 2006 Federal budget to expedite Hume Highway upgrading would give the same economic, social and environmental benefits as reconstructing mainline rail track to modern engineering standards.

The North Coast line of NSW has worse curvature than the Main South line with ample scope for track straightening. Some Pacific Highway upgrading could be combined with shared road-rail corridors.

Along with lower transport costs, substantial benefits would result from such an upgrade and rail winning a 50 per cent mode share on each corridor (a challenge of Paul Little made in July 2007 and later adopted as a rail industry goal for 2017). When compared projected high road mode shares, a 50 per cent mode share for rail would save over 150 million of litres of diesel each year as well by 2014. This would reduce greenhouse gas emissions by over 400,000 tonnes per annum by. It would also improve road safety with a reduction in external costs of about \$275 million per year. These are substantial economic, social and environmental benefits.

9. Attention is needed to the recommendations of the House of Representatives Standing Committee (the Neville Committee) on Transport and Regional Services (2007) *The Great Freight Task: Is Australia's transport network up to the challenge?* This includes weight constraints on existing mainlines where the Committee noted [19, p 128] that "... the greatest need for Australia is the reconstruction and realignment of the main freight networks. This would:

- \*allow faster speeds and greater axle loads;
- \*clear the way for longer trains and double stacked containers;
- \*make it possible to reduce the steepness of grades, straighten lines and remove loops; and
- \*allow for the elimination of many level crossings."

10. In addition, Queensland should have a much better rail connection to NSW and Victoria, with consideration of a staged development of an Inland Route (Melbourne – Parkes – Toowoomba – Brisbane) and some ongoing upgrades to the coastal route.

11. Along with main lines and port access, the Neville Committee also recommended attention be given to grain lines. As noted in its August 2007 report, the Committee: "took advantage of the visit to Australia of a Canadian expert on regional railways – Mr Ed Zsombor, Director of Rail Services in Saskatchewan."

The report noted that Canada does not have a railway gauge problem; both the Federal and Provincial governments own grain wagons, and outlined how both levels of government in Canada act to facilitate short line operations for the movement of grain and other commodities.

The Neville Committee in its 2007 report found that:

"... the type of structure outlined by Mr Zsombor is worth closer examination in Australia. The concept of local businesses and authorities arranging to take over the short regional lines, with some help from the State or Australian governments, could be a useful way of keeping the infrastructure available."

12. Many branch lines in NSW, Victoria and SA are a national disgrace. In Tasmania, the track is so bad that no train is allowed on any section of track to travel more than 60km/h

with many permanent speed restrictions and a growing number of temporary low speed limits. Today, no State would tolerate a road system with a maximum speed of 60 km/h.

The Productivity Commission's 2006 freight report correctly notes that poor track is due to past under-investment over many decades. It remains to be seen if the NTC is able to articulate a way forward to get the public and/or private investment of the rail network in Australia's South - Eastern corner up to standard.

As also noted by the Fischer Review of Victorian regional lines, there is a good case for rehabilitation of branch lines. The alternative was to see more and more freight moved by B-Doubles on lightly constructed roads.

Related to this is the fact that there is general agreement that B-Double operations are in receipt of significant subsidies.

### **Road pricing and private rail investment**

13. It is submitted that under present arrangements where taxpayers fund freeways and road pricing for heavy trucks is conservative at best, there is little incentive for the private sector to build new railways or upgrade existing railways except when there is either large tonnes (such as iron ore or coal), or, appreciable public support as per the case of the construction of the Alice Springs to Darwin railway.

Under a CoAG generated process, the Productivity Commission was directed in February 2006 to hold an inquiry into road and rail freight infrastructure pricing. This followed considerable difficulties experienced over many years by government in leading reform in the area of road pricing of heavy vehicles, and, the increasing need for Australia as a nation to make more effort in the provision of 'fit for purpose' transport infrastructure.

In March 2006, Australia's Federal and State transport ministers declined to adopt a benign third determination by the National Transport Commission (NTC) of charges for heavy vehicles. This was followed in May 2006 with a Federal budget granting an additional \$2 billion in road funding and a \$1.2 billion concession in road pricing for heavy trucks.

There appears to be three notable broad groups of estimates for road system costs attributable to heavy trucks:

- Conservative or NTC - as per the National Road Transport Commission (NRTC) first and second determinations along with the NTC third determination and the 2007 NTC determination.
- Intermediate - including the former Inter-State Commission findings during the 1980s, the 1990-91 Over-Arching Group (OAG) recommendations and NSW permit fees for heavier semitrailers and all B-Doubles in use to 30 June 1996.
- High, or "user pays" - including the Bureau of Transport and Communications Economics (BTCE) 1988 report noted in the draft report of the Productivity Commission, McDonnell's methodology (NSW) (see for example, this writer ), and ongoing New Zealand Road User Charges.

When announcing the NRTC first generation charges in 1992, the chairman, the late Gordon Amadee, conceded they would not be "user pays" as this would not be tenable. The

costs to the NSW Government of implementing the then new NRTC charges (as of 1 July 1996) was over \$60 million per year. Meanwhile, NSW annual permit and registration fees of \$12,650 a year in 1989 for an 8 axle B-Double were slashed to \$5500. With Consumer Price Indexation, the 1989 NSW B-Double fee would now be over \$20,000 per annum.

Subsidies are one reason why the number of large B-Doubles has grown so rapidly in recent years, as noted in the draft report — up from about 700 in 1997 to more than 6000 today. The difference between road system costs attributable to articulated trucks under the 2005 NTC model and using Macdonell's Methodology is approximately \$1.5 billion per year.

In 1992, the Industry Commission (IC) had no doubt that the NRTC charges subsidized the heavily loaded big trucks hauling long distances each year. As the IC 1992 Annual report noted, the NRTC charges would distort road-rail competition as rail reform took place. After many years of rail reform since, Australia has long since reached the point where such competition for freight is being distorted.

### **Externalities and energy use**

14. Externalities, including air pollution in cities, and accidents involving both articulated trucks and freight trains were considered by the Productivity Commission.

External costs are conspicuously absent in many current reports relating to transport, and the current NTC issues paper is no exception. 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 (revised 2006) by the Australian Transport Council. As these guidelines (available at [auslink.gov.au](http://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 taken into account.

External costs were also addressed in the ARTC Track Audit which gave unit estimates for "... noise pollution, air pollution, greenhouse gas emissions, congestion costs, accident costs, and incremental road damage costs" for road and rail freight in both urban and non-urban areas.

These unit estimates were revised as 2000 costs of 2.75 cents per ntkm for road haulage in urban areas, 1.98 for road haulage in non - urban areas, 0.43 for rail haulage in urban areas, and 0.17 for rail haulage in non - urban areas.

Although articulated trucks are driven about three per cent of all vehicle kilometres, about one road fatality in ten involves an articulated truck. In most cases, this is not the fault of the truck driver. Most fatalities involving articulated trucks are on roads with speed limits exceeding 80km/h. Worse still, on the National Highway System in NSW, about one road fatality in three involves an articulated truck.

The current issues paper does raise a question on page 16 as to external benefits "Does the provision of rail address any community or social obligations or provide any external benefits to society and what are the benefits?" Clearly, moving some freight from road to rail will reduce external costs and thus provide benefits.

15. Energy efficiency and oil vulnerability issues affecting the transport of people and freight are identified in a report released 7 February 2007 of the Senate Rural and Regional Affairs and Transport Committee from the Inquiry into Australia's future oil supply and alternative transport fuels. Recommendation # 7 of the 2007 report 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 as is the suggestion in the report that if there is a long term rise in the price of fuel, this will favour rail because fuel is a greater proportion of costs for road transport. This may suggest a need to increase the pace of catchup investment in rail infrastructure."

### **Advanced planning**

16. A further NTC issues paper question on page 18 is: Is sufficient land use planning and land banking occurring to ensure that future transport needs are accommodated?

It is submitted that much more attention needs to be paid to this issue by both State and Federal Governments for not only new railways, or minor works close to existing railways, but also for future rail deviations. The Queensland Transport Minister, The Hon Paul Lucas MP (as quoted, Track and Signal, Oct-Nov-Dec 2005, page 77) has noted the need to "reserve rail corridor land before it becomes a costly issue".

## **APPENDIX B. SMOOTH RUNNING – A ROUTE TO COST REDUCTION**

**SUMMARY** (of paper by M.J.R. Michell and P.G. Laird) given at the 2002 Conference on Railway Engineering).

One of the most important attributes of train running is the capacity to slow or stop. The downside of actually doing so en route between traffic nodes is that transit times are extended and train operating costs are increased. Despite this there does not appear to have been much attention paid to costing the process of slowing or stopping trains. This paper attempts to redress this situation by investigating the cost that would be incurred by a typical freight train as a result of slowing or stopping from otherwise achievable running speeds – hence the title notation of Smooth Running.

A range of cost factors were considered and built into a model. The variability of the cost to these factors was then considered, indicating that the significant variables associated with train stopping are train gross mass, normal running speed at the location concerned, and the dwell time when stopped. Similar factors were found to be significant for train slowing (such as for a temporary speed restriction or for a signal check) but with the restricted speed, train length and speed restriction length replacing dwell time.

The cost of stopping and re-starting a typical east coast Superfreighter train is estimated to be in the order of \$106 , while slowing the same train by as little as 20 km/h from 100 km/h is estimated to cost in the order of \$30 with other degrees of slowing being between these two extremes.

## APPENDIX C EAST WEST SUCCESS STORY

From Section 4.4 of *The Railway Technical Society of Australasia - The First Ten Years*

By P Laird published RTSA 2008

Rail freight movements on the East-West interstate rail network have continued to increase and rail now wins just over 80 per cent of the land freight between the Eastern States and Perth. Such a modal share for rail is high by world standards.

This high modal share has been supported by 'fit for purpose' infrastructure that is capable of supporting competition between rail freight operators. In July 1995 freight forwarder SCT started their Melbourne - Perth rail freight service to compete with National Rail's freight trains. This was an early application of National Competition Policy and a weekly 600 metre train with 22 louvre vans and hired locomotives was placed into service. Now, SCT run four and sometimes five trains per week with each train having up to 70 wagons. In May 2008, SCT announced a freight train service from Parkes to Perth with a trailing weight of 6,000 tonnes, using their new 4,500 horse power AC traction locomotives.

From 1998 to 2007, the freight task has doubled on the East - West rail corridor. Figure 3 shows the growth in billion gross tonne km for non-bulk freight. Underpinning this strong growth were three major Federal initiatives:

- \* Kalgoorlie-Perth gauge standardisation including a new route through the Avon Valley,
- \* The formation of Australian National and their Adelaide-Crystal Brook gauge standardisation project plus concrete resleepering in South Australia and,
- \* The Keating Government's Melbourne-Adelaide Rail Standardisation project.

The upgraded standard gauge line between Perth and Kalgoorlie, with dual-gauge track along the Avon Valley, was officially opened in August 1968. This major work allowed Kalgoorlie-Perth freight train times to be reduced from 31 hours to 13 hours, and passenger train times from 14 to 8 - both significant gains. This was one of three gauge standardisation projects recommended in 1956 by a Government Member's Rail Standardisation Committee in 1956 chaired by W. C. Wentworth, with the support of the Federal Parliamentary Labor Party. The other two projects were Wodonga to Melbourne (completed 1962), and Broken Hill to Port Pirie (completed 1970).

It took the formation of the Australian National Railways Commission or Australian National (AN) as an initiative of the Whitlam Government to take the next major step. The enabling legislation for Australian National was signed into law on 10 November 1975, and AN commenced full operations in 1978. AN worked hard to provide reliable and competitive freight and passenger train services, and in early years made an economic case for extending standard gauge into Adelaide. This was in contrast to a long held aversion by the South Australian Government to adopt standard gauge. However, the Federal Government required AN to raise loans for this gauge standardisation project. Conversion of a broad gauge line to standard gauge from Crystal Brook near Port Pirie to Adelaide (by the cost effective method of generally transposing one existing rail on the existing timber sleepers), on improved alignment, was finally effected in 1982. Freight services started in 1983, with passenger



trains in 1984. This project was promoted by AN, who found that the benefits would exceed the costs over 25-years by a factor of 2.8, and raised loan funds for the project.

A further initiative of Australian National starting in 1987 was a six-year programme of track upgrading with the specific aim of providing for 23 tonne axle loads at a speed of 80 km/h for freight on the existing mainly 47 kg/m rail whilst allowing for increases to 115 km/h on sections progressively re-laid with 60 kg/m rail. The upgrading consisted of acceleration of completion of concrete resleepering, dip weld straightening and rail profile grinding on the Adelaide-Kalgoorlie and Crystal Brook-Broken Hill lines. For this project a Plasser SMD80 concrete sleepering machine, STRAIT rail end bending machine and a Speno Rail Grinding train were purchased. This work was in conjunction with signalling improvements and crossing loop extensions and rationalisation. As seen by AN (*AN Freight*, January 1992), "*Good quality track is the bedrock on which fast, efficient freight operations are based*".

To achieve Melbourne-Adelaide rail standardisation again required a national approach. Although standardisation had been favoured by Australian National in the 1980s as per a preliminary V/Line-AN joint study (Adams, 1983), it took until 1995 to complete the work. This was helped by a House of Representatives Standing Committee 1989 report *Rail: Five Systems – One Solution* that held, into alia, that:

*"Considerable benefits would flow to the nation from the standardisation of the Melbourne-Adelaide route."*

The Hawke Government's initial, negative response to this finding was made in December 1990. By then, an intergovernmental agreement had been made to form a National Rail Freight Corporation (NRFC) and the Government view was that this project was:

*"...a matter for the NRFC's commercial judgement ... without reliance on government guarantees."*

Fortunately, a wider view prevailed and new Prime Minister Paul Keating (after consideration of a National Rail Corporation report) was able to announce, on 23 February 1992, a commitment of \$450 million for a 'One Nation' rail programme. The main project was Melbourne - Adelaide rail standardisation (MARS).

Throughout 1992, there was uncertainty as to whether standard gauge would proceed through Ballarat or Geelong. In addition, NSW track upgrading cost estimates proved to be unreliable. This led to Prime Minister Paul Keating on ABC's *Lateline* in November 1992 describing the Victorian and NSW rail systems as "*dinosaurs*" and the Federal Treasurer announcing that month that funding for the rail projects had been re-allocated because of "*design and logistical delays*". In early 1993, it was agreed standard gauge would proceed via Geelong - as recommended in 1983 by AN.

The MARS project was officially opened on 4 June 1995 at Melbourne's Dynon intermodal terminal by Prime Minister Paul Keating, at a final cost of \$166.7 million. As Paul Keating said later (*Railway Digest*, July 2005) completion of MARS was:

*"...not just a big strike for rail but an even bigger strike for the country."*