Submission to the Review of the National Freight and Supply Chain Strategy

Philip Laird, University of Wollongong, September 2023

1. Introduction

This submission is based on research conducted at the University of Wollongong. However, the views and research findings are the responsibility of the writer.

The early review of the 2019 National Freight and Supply Chain Strategy (NFSCS) is appreciated. As noted in the discussion paper, there is a need to address decarbonisation and this needs to extend to freight.

The review comes at a time where extreme weather events in 2022 impacting on rail and road highlight a need for investment to improve resilience, and in some cases, increase redundancy in rail networks.

This will require funding, and this in turn invites governments at all levels to improve cost recovery from all modes of freight. This includes road freight where mass distance location charges for heavy trucks in Australia are long overdue. As the 2015 Harper Review into Competition Policy found "*Roads are the least reformed of infrastructure sectors, with little change to institutional arrangements around provision and funding over the past 20 years. Lack of suitable road pricing models leads to inefficient investment decisions and creates distortion on the choices users make between different modes, particularly between rail and road freight.*

This echoes pertinent recommendations of the 2009 Henry Tax Review for road pricing reform that included:

Recommendation 61: Governments should analyse the potential network-wide benefits and costs of introducing variable congestion pricing on existing tolled roads (or lanes), and consider extending existing technology across heavily congested parts of the road network. Beyond that, new technologies may further enable wider application of road pricing if proven cost-effective. In general, congestion charges should apply to all registered vehicles using congested roads. The use of revenues should be transparent to the community and subject to further institutional reform.

Recommendation 62: The Council of Australian Governments (COAG) should accelerate the development of mass-distance-location pricing for heavy vehicles, to ensure that heavy vehicles pay for their specific marginal road-wear costs. Revenue from road-wear charges should be allocated to the owner of the affected road, which should be maintained in accordance with an asset management plan. …

If one accepts that the current New Zealand charges with mass distance pricing are user pays, then the operation of six axle semitrailers and the nine axle B-Doubles on public roads are in receipt of an annual hidden subsidy of about $2 billion per year. This equates to about one cent per net tonne kilometre. This unit estimate does not include externalities such as road crash risk, emissions and urban road congestion.

More details to support the above estimate can easily be supplied on request. The present and long standing road user charges result in more 'loads on roads'. This act against decarbonisation as for many freight tasks, rail freight uses one third of the fuel needed by road freight to do the same work. This ratio was three to one is noted in the *Australian Government response to the Senate Rural and Regional Affairs and Transport References Committee report: The Management of the Inland Rail Project* by the Australian Rail Track Corporation and the Commonwealth Government, 2021.

The ratio that rail is three times more fuel efficient than road in moving freight was also noted by Minister King in her keynote address to a Rail Decarbonisation conference held September 2023 at Melbourne. The Minister also noted that observed

that transport is our third largest source of carbon emissions and is on track to be the largest by 2030; accordingly we need not only more trains on our tracks but also to improve efficiencies so we have to stay on track to get to net zero.

It is trusted that the present review will led to an appreciably revised National Freight and Supply Chain Strategy

Legislation passed in 2022 by the Australian Government requires Australia to reduce emissions by 2030 to 43% of their 2005 levels. As argued elsewhere by this writer in a December 2022 article for The Conversation
https://theconversation.com/why-electric-vehicles-wont-be-enough-to-rein-in-transport-emissions-any-time-soon-195722

Transport, whose emissions in Australia has been trending upwards for some decades, is a necessary target for change. However, this will take much more than the uptake of more electric vehicles.

The article in The Conversation notes that a 2022 report prepared by the American Council for an Energy-Efficient Economy shows how far Australia has fallen behind. Although Australia ranked 18 th out of 25 of the world's largest energy users overall, it had a very low rating of just 23rd for transport.

On five of the nine criteria for assessing transport, Australia scored zero points. These were: no 2025 fuel economy standards (now hopefully been addressed); poor on light vehicle average fuel economy; low electric vehicle sales share; no heavy vehicle fuel economy standard; and, no smart freight programs.

Australia would do well to development smart freight programs that are not just about larger and heavier trucks or the very energy efficient iron ore railway operations in the Pilbara.

2 Data Deficiencies and KPIs

If any real progress is going to be made on freight decarbonisation, freight tasks and their respective energy use will need to be accurately measured, and disclosed.

Ongoing severe data limitations in Australia occur for volumes of freight moved by rail in tonnes, and the freight tasks measured in billion net tonne kilometres. BITRE's 2022 Trainline 9 [3, p5] notes that "Due to an ongoing data shortage *Trainline* is unable to report the national 'above-rail' freight task beyond 2015–16." This report gives 2015-16 estimates of the bulk rail freight task as about 381 btkm and the non – bulk rail freight task at some 32.4 btkm.

Although BITRE's Australian Infrastructure and Transport Statistics- Yearbook 2022 indicated respective road, rail, coastal shipping and air freight tasks as:
234.65 460.32 100.00 0.27 btkm, there is no readily available data on various rail freight tasks such as bulk freight and non-bulk freight.

Also lacking is interstate rail freight on each corridor. Such data was freely available up to the 1990s. The data limitations are mostly due to a failure of governments to require adequate reporting of freight data as part of the rail privatisation process.

In 2007, the House of Representatives Standing Committee on Transport and Regional Services 350 page report *The Great Freight Task: Is Australia's transport network up to the challenge?* outlined Australia's growing land freight task. The report addressed data deficiencies and in part noted *"The issue of rail data is perhaps the most vexing. …After 1997, the recently privatised railways have declined to permit public release of City to City data. Furthermore, since 2001, they have not allowed any origin – destination data – even State to State – to be released. This raises severe*

difficulties for future estimates of rail flows on any of the corridors…"

In 2007, the Parliamentary Committee considered that this problem should be dealt with immediately and that commercial interests should be required by law to provide the essential information the Australian and State Governments need to plan the long-term development of transport infrastructure.

Some 17 years later, despite establishment of a National Freight Data Hub (NFDH), the plain fact of the matter is that freight data deficiencies remain

The cessation by the Australian Bureau of Statistics Survey of Motor Vehicle Usage is also on concern.

2.1 Freight KPIs

If progress is going to be made in freight decarbonisation, the emissions generated by various freight activities are going to have to be measured, and where possible reduced.

It is submitted that Australia needs to collect, analyse, and make publicly available in a timely manner the following KPIs:

A. Average rail freight emissions per tonne kilometre for each of bulk freight and non-bulk freight.

B. Average road freight emissions for each of the articulated trucks, rigid trucks and light commercial vehicles.

3. Interstate rail infrastructure issues

Rail should be moving more interstate freight, but it needs to improve its productivity and efficiency towards that of the Canadian and US Class I railroads.

At the Rail Decarbonisation conference held September 2023 at Melbourne, Ms Joan Smemoe, CIO of Railinc (https://public.railinc.com) – a subsidiary of the Association of American Railroads, noted how the six Class I railroads operating in Canada, Mexico and the US. Whilst these railroads account for 40 per cent of all US ton miles of freight, they account for less for two per cent of US transport emissions. This is due to the incredibly high energy efficiency of now 499-ton-miles per (US) gallon of fuel. This works out to about 192 tonne km per litre (tkm/litre) which is better than current Australian interstate rail freight operations and much better than the 2019-20 average fuel use of articulated trucks in Australia of about 40 tkm/litre).

These six Class I railroads have a Capex (capital expenditure) of $25 billion per annum.

The present arrangements of generous federal funding of the National Highway System, whilst requiring the Australian Rail Track Corporation (ARTC) to pay dividends to shareholding Ministers and severely constraining upgrading of the Defined Interstate Rail Network, needs to be reviewed.

Much of the Australian interstate rail network fails to meet the short-term goals set out in a 1997 meeting of the Australian Transport Council (ATC) that called for a commitment for the interstate network to provide a minimum level of service by 2002 including:

- less than 2% of track subject to temporary speed restrictions;
- up to 21 tonne axle load (TAL) average speeds of 80 km/h; and,
- between 21 – 25 TAL average speeds of 60km/h.

The ATC also agreed to additional longer-term "stretch" goals to deliver an improved level of service on the interstate network.

The problem is particularly acute on the Melbourne-Sydney-Brisbane rail corridor. As observed by former NSW State Rail CEO Len Harper, the track is

"inadequate for current and future needs". This was despite the extensive remedial work done by the ARTC on this track after taking up in 2004 a long term track lease from the NSW Government.

Inland Rail between Melbourne and Brisbane has been delayed to the 2030s. Thus, there is a need to have a fit for purpose existing track. It is submitted:

A. There is a case for the Beveridge to Illabo section of the Melbourne Sydney track to be curve eased (straightened) to a minimum 800 metre curve radius along with higher clearances to enable double-stacking.

B. Attention this decade should be given to a start of the three major deviations identified in ARTC's 2001 *Interstate Track Audit*: Wentworth (Mittagong– Macarthur); Centennial (Yass–Goulburn); and, Hoare (Cootamundra– Bowning).

The benefits of this and other minor works is that 260km of steam-age alignment could be replaced by 200km of new track allowing that freight train transit times to fall by two hours. Australia could then have a Sydney Melbourne passenger train time of less than 9 hours which would be faster than driving. This was give reduced fuel usage and emissions. Of the three deviations, priority could go to the Wentworth deviation as this would allow improved Sydney Canberra train services,.

C. Between Sydney and Brisbane, as noted by the 2007 Commonwealth Parliamentary report *The Great Freight Task,* the 67km Karuah Valley Bypass replacing the 91km Hexham-Stroud Road corridor should be constructed.

In addition, the 30km Lower Hunter Freight Bypass (Fassifern-Hexham) should be expedited.

A combined 97km of new track on an improved alignment would effectively bypass Newcastle's urban area, shorten the Sydney-Brisbane rail line by 34km and cut 60 minutes off transit times with reduced fuel use and emissions.

The scope and cost of these deviations pale into insignificance when compared with the $20 billion total reconstruction of the Hume Highway by 2013 to modern engineering standards and the subsequent $20 billion near complete reconstruction by 2020 of the Pacific Highway.

However, given the questions raised in the 2023 Schott Review of the Inland Rail Project, the question as to whether ARTC is the best placed agency to deliver such upgrades arises.

3.1 East west rail corridor issues

Questions of resilience were raised by the failure of part of this vital corridor during flood events.

In addition, there are upgrading options that could usefully be considered. These include a Horsham Rail bypass (see "The proposed Horsham cut-off" by G Smith and M Michell in Railway Digest, June 2009, p35 -36) as Horsham is "something of a diversion" from a direct route between Murtoa and Dimboola in western Victoria. A deviation of some 28 km between two locations is possible: Jung at 307.5km and near Wail at 351.2km; a current distance of 43.7km. As well as reducing point to point distance by some 17km, the deviation with easy ruling grades and curvature would save at least 10 minutes of transit time and 200 litres of fuel for each 1500 metre intermodal train.

As noted, the proposal "involves a simple piece of new railway engineering across very easy country" and not only benefits to train operators, but also residents of Horsham. It is envisaged that the existing track would remain, and this would provide extra track capacity.

Next, in the 122 km from Murray Bridge to Adelaide, no less than 67 km (55

per cent) fails to meet basic fast freight standards of a ruling gradient of 1 in 80 and ruling curve radii of 800 metres. A 1997 proposal by M. Michell advocated realignment of the 65 km Murray Bridge - Mt. Lofty section to ease the present severe ruling gradients for west bound trains to eliminate the need for banking locomotives for the heavier west bound freight trains. This proposal included minor work between Murray Bridge and Callington, followed by a major deviation between Callington and Nairne, and significant but smaller deviations between Nairne and Mt. Lofty.

4. Intrastate rail infrastructure issues

The Pilbara iron ore railways are better than world class. The Hunter Valley coal network is fit for purpose, as is the Central Queensland coal network.

However, there are serious deficiencies with the Victorian rail freight network due to multiple gauges and some degraded track. Other states also have some rail freight issues to address.

4.1 Victoria

Until 1962, Victoria was a single gauge state (broad gauge). Since then, standard gauge has slowly crept in, initially in 1962 and then in 1995 as interstate connections, but progressively also on regional Victorian lines. Rail freight is now the most impacted group on rail users across the two gauge system.

In 2023, the Victorian regional rail network is a dysfunctional mix of broad gauge and standard gauge lines as shown in Fig 1 below. The gauge split – according to BITRE May 2023 - is 1849 km of standard gauge and 2439 km of broad gauge. Rail freight operators are increasingly finding they cannot afford to have multiple fleets in Victoria where the broad gauge component has relatively poor utilisation in Victoria and no relevance or usefulness in the national context.

4.2 New South Wales

In NSW there is an ongoing need for better separation of freight and passenger trains in the Greater Sydney region. Here, completion of the 35 km Maldon-Dombarton link would do much to take some freight trains away from the congested Hurstville – Sutherland track with many passenger trains and steep ruling grades for southbound freight (including grain) trains.

Although not strictly an infrastructure issue, as noted by the Auditor General of NSW in their 2021 report Rail freight and Greater Sydney:

“Transport agencies do not have strategies or targets in place to improve the efficiency or capacity of the metropolitan shared rail network for freight. The transport agencies acknowledge that they do not have sufficient information to achieve the most efficient freight outcomes and they do not know how to use the shared rail network to maximise freight capacity without compromising passenger rail services.”

The Freight and Ports Plan 2018-2023 contains one target for rail freight: to increase the use of rail at Port Botany to 28 per cent by 2021. However, Transport for NSW (TfNSW)'s data indicates this target will not be met.

Sydney Trains records data on train movements and collects some data on delays and incidents. TfNSW collects data for the construction of the Standard Working Timetable and third-party contracts.

However, a lack of clarity around what data is gathered and who has ownership of the data makes data sharing difficult and limits its analysis and reporting.

The Freight and Ports Plan 2018-2023 includes the goal of 'Reducing avoidable rail freight delays', but the transport agencies do not have any definition for an

avoidable delay and, as a result, do not measure or report them."

It is submitted that the revised National Freight Strategy should provide a mechanism to improve this situation.

4.3 Queensland

Whilst considerable rail freight productivity gains were achieved by Queensland's rail electrification program in the 1980s and the Mainline Upgrade program of the 1990s, further work is required to bring the Brisbane – Cairns mainline to an acceptable standard.

The 1681-kilometre Queensland North Coast Line (NCL) between Brisbane and Cairns is important for moving freight. The construction by the mid-1990s of 160 kilometres of deviations to modern engineering standards (easy gradients and most curves no tighter than 2200 metres) allowed for heavier and faster freight trains.

Here, the trailing load behind a locomotive doubled from 750 to 1500 tonnes. Further upgrades, including much concrete re-sleepering, allowed (as noted by a 2006 AusLink study into the Brisbane-Cairns corridor) for rail to win 25 to 30% of the 6 million tonnes per annum of intermodal freight on the corridor. However, the study also found that "current NCL infrastructure may not enable rail freight to grow at the same rate (3% per year), thereby resulting in the freight growth over 3% per annum 'spilling over' to road transport.''

More freight on the Bruce Highway does nothing to improve road safety, which is the main reason for improving this highway at a cost exceeding $10 billion to the Australian taxpayer. The remedy is to further upgrade the NCL to reduce train operating costs and transit times to improve the efficiency and competitiveness of the Queensland NCL which plays a vital role in keeping supermarkets in Townsville and Cairns at Brisbane prices.

The NCL is useful when flooding closes the Bruce Highway but not the railway. A 2016 report by Ranbury Consultants for the Queensland Government found upgrades, including replacing 61 ageing timber bridges, floodproofing works and duplicating key sections of track, were necessary to ensure that the line remained a viable freight route.

As an *Engineers Australia* spokesman noted in May 2016, huge numbers of trucks would be funnelled on to the Bruce Highway unless $2.5 billion was invested in the railway to improve some of the poor alignments and repair many old bridges; also "It's already one of the more dangerous roads in Australia, so by moving all that freight on to it is only going to make it worse."

It is submitted that a revised National Freight Strategy should provide a better balance between funding improvements in the National Highway System, and funding mainline rail track.

A further issue within **Queensland** wereproposals for the 216 km Border to Gowrie section of the Inland Rail is that 209 km of new or upgraded track was to be dual gauge. The remaining 7 km of standard gauge is from the NSW Qld Border to Kildonan, near Kurumbul.

This is opposed to converting near Kurumbul (174.13 km from Warwick) to Thallon (350.07 km from Warwick) (light rail at most 47 kg/m) - some 176 km plus six crossing loops - to standard gauge. This could be done in an economical manner (as per Esperance to Kalgoorlie about 390 km about the time that Kalgoorlie to Perth was converted by 1969 to standard gauge).

It is highly likely that this option would cost much less than constructing dual gauge on 209 km of track with its crossing loops. The lower cost is in part because

there will be less rail used. If the extra rail for the narrow gauge of track was 60 kg per metre (the specified standard weight of rail for Inland Rail) then 207 km of extra rail will weigh 12,420 tonnes (plus the extra steel for the crossing loops).

There will also be ongoing and significant savings in track maintenance.

It is submitted that an effective NFSCS would seek to be promoting a uniform railway gauge for through running lines. This was proposed as far back as 1889 by Major Edwards in his report on Defence that was cited by Sir Henry Parkes in his Tenterfield speech in support of Federation of the Australian colonies.

5. The Short Line question

This was addressed in the 2007 Commonwealth Parliamentary report *The Great Freight Task* which states that '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 [rail] infrastructure available'.'

It is submitted that an effective new NFSCS would facilitate the emergence of short line operations.

6. External Costs

Reducing the external costs of land freight transport deserves a lot more attention in the revised NFSCS than they get in the present strategy.

As part of the National Interstate Track Audit commissioned by the ARTC, Booz•Allen and Hamilton (Appendix A page 24) noted *'...six external cost items of noise pollution, air pollution, greenhouse gas emissions, congestion costs, accident costs, and incremental road damage costs'* and gave a Table of road and rail freight externalities.

Such external costs were revisited by the Independent Pricing and Regulatory Tribunal IPART) of NSW its 2012 Review of Access Pricing for the NSW Grain Line Network. This report noted, inter alia, the 2001 ARTC Track Audit estimates (with unrecovered road system costs from long standing road user charges for heavy trucks at 1.0 cents per net tonne km).

It is appreciated that estimates for external costs are assumption sensitive. However please do not effectively assign them as zero by ignoring them.

It is submitted that an updated list of default values for various external costs of road and rail freight in both urban and non-urban areas could usefully be included with a new NFSCS. This was the case in the 2004 Australian Transport Council with National Guidelines for Transport System Management in Australia that inter, alia, considered external costs with reference to various default values for unit costs.

7. Conclusion

If decarbonisation of freight is to be effective in Australia, the revised NFSCS will have to be significantly different from the present strategy. Attention will also needed to be paid to road pricing for heavy trucks, freight data and analysis with appropriate KPI, rail infrastructure investment, and external costs.

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