pacific national

Submission to Senate Rural and Regional Affairs and Transport Committee

Inquiry into Australia's Future Oil Supply and Alternative Transport Fuels

March 2006

1.0 Introduction

Pacific National (PN) welcomes the opportunity to provide input to the Senate Rural and Regional Affairs and Transport Committee, in relation to its inquiry into Australia's future oil supply and alternative transport fuels.

PN is Australia's largest private rail operator, hauling most of the containerised rail freight between Australian capital cities, as well as directly servicing many of the country's key coal and grain export businesses. We are the only rail organisation operating in all States and Territories.

PN transports significant freight tonnages in each of the sectors in which we operate. We haul:

- approximately 800,000 intermodal freight containers per year between Australia's capital cities and within Tasmania, Victoria and Queensland;
- 90 million tonnes of export coal per year;
- an annual average of six million tonnes of export grain to ports in New South Wales and Victoria;
- and approximately six million tonnes of mineral concentrates and construction materials.

PN locomotives are powered by diesel fuel. As one of the largest users of diesel in Australia, we are exploring a number of initiatives to improve our fuel efficiency and increase the already-significant fuel efficiency advantage rail has over its direct modal competitor, road.

In this submission, we will discuss the current fuel efficiency of rail, before exploring a number of options for reducing Australia's transport fuel demands. We will also include a brief discussion of potential alternative transport fuels.

2.0 Rail's current fuel efficiency advantage

A 1.8 km double-stacked container train travelling between Australian capital cities does the same haulage job as 450 semi-trailers. So intuitively, rail should always be the most efficient mode for the longest haulage distances.

Both road and rail have become more fuel-efficient in recent years, as road and rail infrastructure has been upgraded, and new generation prime movers and locomotives have been introduced.

Pacific National's forerunner, National Rail Corporation, invested in a new fleet of locomotives in the early 1990s. The new fleet, along with upgraded wagons and incentives for drivers to save fuel, enabled NRC to significantly improve fuel efficiency . NRC's average fuel use dropped from 7.4 litres per 1000 gross tonne kilometres (gtk) for 1992/3/4 to 4.0 litres per 1000 gtk for 1999/00/01[1].

[1] National Rail Update, September 2001

Over the last four years, Pacific National has built on the NR fleet commitment with a further investment of $360 million in new and upgraded locomotives and wagons.

The net result of rail's natural efficiency advantage, as well as technology improvements and new investments, means that rail is between three and four times more fuel-efficient than road than road for an equivalent task.[2]

3.0 Rail initiatives to reduce use of diesel in Australian transport

3.1 Fuelmiser/Freightmiser

Several classes of locomotive active in coal haulage for Pacific National (90, 81 and 82) are equipped with the in-cab Fuelmiser technology. Fuelmiser involves the installation of a PLC-based electronic unit in the cab of a locomotive. When a number of locomotives are joined together (typically three or four) it allows the driver, operating from the lead locomotive, to control the power output of each unit. The current fuel level of each locomotive is also displayed to the driver, enabling each locomotive to be managed separately.

Under the system, a driver can bring individual locomotives off-line according to the power requirements at the time. Drivers can also assess fuel levels without having the stop the locomotive and check unit fuel gauges directly. It is estimated that consistent application of Fuelmiser can result in fuel savings of between 20 and 24 percent. There are now plans in place to fit Fuelmiser to the rest of PN's coal locomotives.

A separate fuel-saving application is being trialled for use in PN's Intermodal NR locomotive fleet. Freight-miser is a software-based driver-assist program which uses terrain, location and trailing load information to advise drivers whether to power, coast or brake. This is a technology developed through the Rail Co-operative Reseach Committee (Rail CRC) and the system could provide fuel savings of between 10 and 15 percent in certain corridors.

3.2 Concessions for fuel-efficient locomotives

With the March 2006 decision of Transport Ministers to reject the latest round of NTC-recommended truck price increases, Australia now provides a direct subsidy to B-Double operators of at least $100 million per year. The stated reason for this concession is the superior efficiency and improved safety features of B-Doubles when compared with other heavy vehicles.

As indicated above, Pacific National and its forerunner National Rail, have invested substantially in new and reconditioned locomotives which have increased the overall fuel efficiency of PN's fleet. However, there is currently no compelling commercial justification to upgrade PN's fleet of older grain haulage locomotives, despite the obvious fuel efficiency benefits of such a move. Pacific National therefore proposes a Government assistance program to encourage rail operators to re-condition older class

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[2] Affleck Consulting (2002), *Comparison of Greenhouse Gas Emissions by Australian Intermodal Rail and Road Transport* (via qr.com.au)

locomotives (for example the 48 class) in the same way that the B-Double pricing concession encourages road operators to use B-Doubles.

This proposal would generate significant fuel savings. For example, upgrading the engine of a 48 class locomotive would reduce fuel usage by up to 15 percent. Even more significant savings could be available by using new "hybrid" technology, which is currently suitable for shunting operations and is being further investigated for main line application. Hybrid locomotives are powered chiefly by batteries, with diesel only used to regenerate the batteries. The overall fuel savings are in the region of 50 percent.

Additionally, there would be flow on benefits to the environment arising from an upgrading of the older locomotive classes including reduced noise and vibration emissions, and reduced emission levels from engines compliant to current EU and US standards.

3.3 Investment in and maintenance of critical rail infrastructure

The quality of the interstate rail infrastructure has been a major obstacle to further improvements in rail's fuel efficiency. Since 2001, there has been a steady deterioration in track condition due to inadequate maintenance spending, which has resulted in an increase in temporary speed restrictions (TSRs).

TSRs significantly increase fuel use. A driver of a Sydney to Perth PN freight train (two locomotives and 3500 trailing tonnes) uses an additional 40 litres of diesel each time he slows down from the 110 kmh to 80 kmh. If the driver encounters a 40 kmh speed restriction, the fuel loss is 110 litres. If he or she needs to stop the train altogether, for example to park in a passing loop to allow a passenger train priority on the track, then it takes an additional 425 litres of fuel to get back up to top speed.

Track under speed restrictions have moved from 0.88% (38km) in 2001 to 2.39% (87km) in 2004 and even further in 2005[3]. From December 2001 to March 2006, TSRs increased from 27 to 120 (at its peak in March 05) on the Melbourne- Perth corridor and 20 to 110 (at its peak in March 05) on the Sydney – Perth corridor. In addition to the significant additional fuel used, this increase in speed restrictions has added significant time to the typical East-West rail journey, making rail less competitive with road haulage.

Further investment in key capital projects will also be critical to efforts to enhance fuel efficiency. A number of AusLink rail investments announced in recent years by the Australian Government will make a major difference. For example, an Australian Research Council/Rail Infrastructure Corporation computer simulation of the proposed upgrades of the Sydney-Melbourne corridor estimated that fuel use by one locomotive on this route would reduce from 13,200 litres to 11,900 litres.[4] Pacific National welcomes the Government's total $1.8 billion investment commitment to rail, although we are concerned about the speed to date of actual project delivery.

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[3] Australian Rail Track Corporation 2001 and 2004 Annual Reports

[4] Laird, PG, Mitchell, M and Adorni-Braccesi, GA, *Sydney-Canberra-Melbourne High Speed Train Options*, Australasian Transport Research Forum, Papers, Volume 25 2002

It is interesting to note that several of the smaller investments under the AusLink package will create the most dramatic impact. An example which underlines this issue, as well as the historic difficulties in the process of securing high priority rail investments, is the effort over many years to replace the manual signalling system between Casino (NSW) and Greenbank (Queensland). Remarkably, the signalling system on this stretch of track has not changed since the track was first opened in 1930. The driver of every freight train from Melbourne or Sydney to Brisbane enters a bizarre time warp as he or she approaches the NSW/Queensland border. On five separate occasions in just 149 km of track, the driver has to stop the train, get out of his or her cabin and manually place a metal rod into a signal box at the side of the track. Overall, these delays add almost one hour to every freight journey, contributing significantly to rail's difficulty in competing with trucks on transit times, and burning an estimated additional 2000 litres of fuel (based on a standard two-locomotive operation for this corridor).

This project requires investment of just $14 million, making it one of the clearest rail investment priorities in Australia in terms of relative cost and benefit. But it has taken more than five years of pressure from rail operators to finally move from agreement on the need for change to project implementation. The project was identified by the ARTC interstate track audit in 2001, listed as a Priority Project in July 2003, promised by RIC for completion in January 2004, then agreed as an urgent priority when ARTC took on the NSW Lease in September 2004. The project has now finally been tendered and is scheduled for completion late in 2006. The inexplicable delays, however, have continued to cause unnecessary wastage of fuel by every freight train operating on the corridor.

3.5 Competitively neutral pricing between road and rail

In a single step, competitively neutral pricing between road and rail would deliver a meaningful *reduction* in demand for petrochemical transport fuel in the short to medium term. This policy move would also place a significant limitation on the scale of longer-term demand increases as Australia's freight task continues to grow over the next 20 years.

As outlined in the Australasian Railway Association's The Future of Freight Report, released in February 2005, on an efficient cost basis, rail is the lowest cost mode of transport on all interstate freight corridors. [5] This cost advantage is being masked from transport customers by a distorted heavy vehicle charging system, which ensures that heavy truck operators currently do not pay the full cost of their impact on the nation's roads.

A Port Jackson Partners analysis for Pacific National found that, coupled with promised infrastructure cost reductions in New South Wales, and improvements in rail service levels, competitively neutral road and rail prices would result in modal share shifts of between 20 and 40 percent on inter-capital city corridors. If rail was to take a 20 percent market share off articulated trucks and B-Doubles, the diesel fuel

[5] Australasian Railway Association, *The Future for Freight*, 2005

savings would be at least 500 million litres per year (based on ABS 2004 road use statistics and rail's three to one fuel consumption advantage over road).

The Productivity Commission is currently reviewing what would be required to achieve competitive neutrality in road and rail pricing, and is due to report to COAG in December 2006. In its review of National Competition Policy in 2005[6], the Commission summed up the policy issue succinctly:

"As a general principle, the pricing arrangements for such infrastructure should ensure that the freight task flows to the transport mode which in the long run will deliver the transport services concerned at the lowest overall cost to the community. Further, prices should desirably reflect not only the financial cost of providing these services, but also any externalities associated with their provision and use. Non-neutrality in the pricing of road and rail infrastructure is a particular issue in this regard."

4.0 Alternative Transport Fuels

For the foreseeable future, there will not be a workable alternative to diesel fuel for the Pacific National fleet of locomotives. However, PN is actively involved in research into the longer-term viability of alternative transport fuels.

Bio-diesel is formed by processing either vegetable oils (new or used) or animal fats. The glycerine in the oil/fat is replaced with an alcohol, creating an oxygenated fuel. There are a number of bio-diesel plants planned for development in Australia over the next three years.

At this stage, while bio-diesel appears to be an attractive future option, the practical impact of this fuel, particularly on locomotive performance, is unknown. PN is therefore proposing a research project to determine the suitability of using Bio-diesel as a fuel for the Australian rail industry. A research team with the Cooperative Research Centre Rail Diesel Research Facility would investigate the quality and supply issues with bio-diesel and thoroughly assess its performance in locomotive engines.

5.0 Conclusion

Rail has a significant fuel efficiency advantage over its direct competitor, road. Pacific National, and other rail operators, are building on this advantage by investing in new fuel-efficient rollingstock technology. The greatest potential for reducing demand for petrochemical transport fuel, however, lies in the hands of Australia's policy makers. The key initiatives in this area include promoting competitive neutrality between transport modes, encouraging more timely maintenance and capital spending on Australia's long-suffering interstate rail network, and direct assistance to encourage fuel-efficient retro-fitting of older locomotives.

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[6] Productivity Commission, *Review of National Competition Policy Reforms Inquiry Report*, February 2005