



## **Interstate Road and Rail Investment and Access**

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### **Abstract**

The paper outlines Australia's National Highway System (NHS) that was formed in 1974 and now extends for some 18 700 kilometres, and, the mainline interstate track network of some 8270 kilometres. The Pacific Highway is also noted along with the Parkes - Brisbane secondary rail lines. Past levels of investment from 1974 to 1999 (in the order of \$1 billion for intercity rail and \$18 billion for the NHS), major infrastructure upgrades, and economically warranted future investment to 2015 as identified for the former National Transport Planning Taskforce, are also outlined. Such future investment includes augmentation of parts of the NHS to six or more lanes, and, the need to further improve interstate rail freight efficiency and competitiveness through selective track upgrading.

Road pricing for trucks using the NHS in 1974 and the changes in road pricing to date are given in summary form, along with the recent arrangements for 'open' interstate track access' for trains with the posted Australasian Rail Track Corporation rates

The paper questions the consequences of ongoing Federal funding of interstate rail and road links at past levels, and, suggests that more consistency between rail track and road access pricing for intercity land freight is needed. The potential benefits of such a "new and different" approach include lower total transport costs, and, a reduction in energy use and greenhouse gas emissions.

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## Introduction

Australia's National Highway System (NHS) was first declared in 1974, and has since received full Federal funding. The Commonwealth has a long history in the enhancement and funding of interstate rail track, but since 1974 has committed much more resources to the NHS than to rail. The Commonwealth role in the NHS and rail were examined in two inquiries by the House of Representatives Standing Committee on Communications, Transport and Microeconomic Reform (HORSCTCMR - 1997, 1998). In the last 25 years, there have been considerable changes in road pricing for heavy trucks using the NHS, and there have been recent changes granting interstate rail track access to 'private' train operators. All of these changes have occurred during a time of significant growth in mainland inter-capital city land freight, which, with the exception of freight moving into Perth, has been largely captured by the road freight industry operating at or near world best practice. The challenge is now to improve rail's intercity freight performance.

## Commonwealth road funding and the National Highway System

No specific provision is made for roads in the Australian Constitution. Commonwealth funding for roads commenced in 1922-23, with a \$500,000 allocation under the *Loan Act 1922*, followed by the *Main Roads Development Act 1923* which allocated \$1 million with a formula for distribution to the States (three fifths on a population basis, two fifths on area, with five per cent to Tasmania) which remained unchanged to 1959 under Section 96 grants (Inter-State Commission (ISC), 1986, p108-110). Federal funding for roads has continued to date at varying levels under a sequence of different acts. In the 1960s, an increased Commonwealth interest in roads was demonstrated by the establishment of the Commonwealth Bureau of Roads under a 1964 Act, which later produced reports that, inter alia, proposed the formation of a National Highway System.

Full Federal funding of the National Highway System (NHS) commenced in 1974 under the *National Roads Act 1974*. One reason for the formation of a NHS by the Whitlam Government was that the main inter-capital city roads were in a poor condition, and were likely to remain that way without full Federal funding. It is of interest that the first stated objective for the NHS in 1974, as updated in 1993, was "*facilitating overseas and interstate trade and commerce*" (HORSCTCMR, 1997, p23).

For many years, the NHS basically comprised the main roads linking all mainland capital cities, with certain main Tasmanian roads, with a combined length of about 16,000 kilometres. Between Sydney and Melbourne, after some examination, the Hume Highway was chosen, and between Newcastle and Brisbane, the New England Highway was chosen, but not the Pacific Highway. The two major achievements resulting from sustained Commonwealth full funding of the NHS include the sealing of the entire length of the NHS by 1989, and, the reconstruction of most of the Hume Highway. In November 1992, the NHS was extended to 18,500 kilometres to include the Newell Highway (Melbourne - Brisbane) and the Sturt Highway (Adelaide-Sydney). As of January 1994, the NHS also included the roads linking the former termination points of the highways away from the city centres of the mainland State capital cities.

From 1974 to 1994, the Commonwealth continued to provide funding for roads other than the NHS, including rural and urban arterial roads and local roads. Following intergovernmental agreements (IGAs) in 1991, the Commonwealth restricted its tied road funding to the NHS as of 1 July 1994, but made additional 'untied' grants to the States with a view to their use for roads. However, the spirit of these agreements were not followed when in 1996, the Howard Government introduced Roads of National Importance (RONI). With a further IGA, a Federal contribution of \$750 million was made for the substantial upgrading of the Pacific Highway from 1996 to 2005. This was conditional on matching funds from the NSW and Queensland Government. A total amount of \$2.9 billion is now planned for Pacific Highway from Hexham (NSW) to Brisbane. Work is now underway, and includes augmentation of a 35 km section of the Brisbane - Gold Coast highway from 4 to 8 lanes. The Pacific Highway upgrade north of Hexham complements NHS upgrading of the Sydney - Hexham road (in excess of \$1 billion to date), plus the New England Highway. It is also of note that Federal funds have now been expended on no fewer than five roads leading from NSW to Queensland, these being the Pacific Highway (IGA), the Summerland Way, the New England Highway (NHS), the Newell Highway (NHS), and now the Kidman Way (RONI).

The total Federal outlay in grants for roads and the maintenance and enhancement of roads, including the NHS, along with rail funding, is given in Table 1. Throughout this paper we use the term Department of Transport to denote the Federal Department of Transport in its various forms. Table 2 indicates that the total Federal expenditure on the NHS from 1 July 1974 to 30 June 1999 was approximately \$17.9 billion in constant 1998-89 prices. This estimate exceeds that of \$11 billion given by HORSCTCMR (1997, p21). Of the \$17.9 billion, a broadly estimated \$3.9 billion (\$3.66 billion from Table 2 plus say \$250 million maintenance from 1980 to 1991) has been expended on the reconstruction and maintenance of the Hume Highway. The result, following the opening of bypasses in Wangaratta and Yass in 1994, has been to change a deficient two lane road to a modern four lane highway throughout its entire length in Victoria and two thirds of its length in New South Wales.

It is of note that Commonwealth outlays on roads are complemented by State and Local Government expenditure on roads, with the respective 1995-96 allocations being approximately \$1.6 billion, \$3.0 billion, and \$1.7 billion (HORSCTCMR, 1997, p48). It is also of note that the Commonwealth funding on roads is now appreciably less than Federal component of fuel excise which was \$8.9 billion in 1995-96 (HORSCTCMR, 1997, p62), and, travel in 1993-94 on the NHS was some 12 per cent of the nation's vehicle kilometres (Department of Transport, 1996, p1).

Given that the Australian Constitution does not mention roads at all, one may question the significant Federal outlay on roads, which with untied grants, amounted to nearly \$43 billion over 25 years in today's terms. In regards to the NHS, as seen by the Federal Department of Transport (Federal Department of Finance, 1997) "*Successive Federal Governments have taken a view that an interstate road network is required to serve national objectives and that Federal funding is necessary to construct and maintain it adequately.... States traditionally underinvested in major interstate links because, generally, they are of greatest benefit to road users travelling to other jurisdictions*"

## Future highway outlays

For the entire National Highway System, plus the Pacific Highway, the Bureau of Transport (and Communications) Economics (BTE) estimated warranted expenditure for new works on intercity highways of \$11.3 billion to 2014-15, with a projected total outlay on maintenance to 2014-15 as \$6.5 billion (NIPT, 1995, p 35). It is of note that the total of \$11.3 billion by 2014-15 includes an estimated expenditure of about \$6 billion for augmenting highways to from 2 to 4 lanes, plus some \$3.1 billion for augmenting highways to from 4 to 6 lanes, and \$1.3 billion for town bypasses. Funding was presumed to be paid by Government, as opposed to increased road pricing or tolls.

These estimates of future outlays were updated by the BTE, whose findings were summarised by the HORSCTCMR (1997, p70-73) as including an amount of \$16.8 billion being needed from 1998 to 2020 for the upgrading and maintenance of the non-urban sections of the NHS. Of this amount, \$2.6 billion was warranted as 'backlog'. The emerging NHS needs were also seen to be in the '*...higher populated areas on the main eastern seabards*'. In addition, there is a need, as noted by the HORSCTCMR (1997, p 24), to recognise '*...broader system functionality*' in how the NHS interacts with connecting roads, and '*...competing and complementary forms of transport*'.

## Commonwealth rail development and funding

The Australian Constitution makes specific provision for the Commonwealth Parliament to make laws in respect to conditional railway acquisition and construction. Under Section 51 (xxxiii) of the Constitution, and agreements with South Australia and Western Australia, the Commonwealth completed in 1917 a standard gauge railway from Port Augusta to Kalgoorlie. Commonwealth assistance to the States in other rail projects to 1974 was mainly restricted to the construction of standard gauge links from Kyogle (NSW) to South Brisbane (completed in 1930), from Albury to Melbourne (1962), Kalgoorlie to Perth (1968), and Port Pirie to Broken Hill (1969). Most of the more recent gauge standardisation agreements have required loan repayments, with interest.

Following agreements with the States of South Australia and Tasmania under Section 51 (xxxiv) of the Constitution, the Commonwealth formed the Australian National Railways Commission, or Australian National. Following transitional arrangements, Australian National assumed full control in March 1978 of the former Commonwealth Railways, the non-metropolitan railways of South Australia, and the Tasmanian Government Railways. This was followed by completion of the Tarcoola - Alice Springs standard gauge railway in 1980. Australian National (AN) extended standard gauge into Adelaide in 1983, reduced rail deficits, improved Adelaide - Perth freight operations during the 1980s, and completed a giant \$500 million concrete resleeper program in 1994. In 1997, AN's intrastate freight operations in South Australia and Tasmania, and interstate passenger operations, were privatised. Conditional agreement to declare an interstate network between Perth and Brisbane that extends for 8270 kilometres was also given in 1997. On 1 July, 1998, AN's control of its standard gauge interstate track was passed to a new Australian Rail Track Corporation (ARTC) which is owned by the Commonwealth.

Loan funds were made available for the upgrading of interstate track by the Fraser Government under the *National Railway Network (Financial Assistance) Act 1978*. Other rail initiatives of the Fraser Government included the formation of an Australian Railway Research and Development Organisation (ARRDO - which was disbanded in 1986), a short-lived offer in 1980 to assist in electrifying the Sydney - Melbourne railway, and a new start on the Alice Springs - Darwin Railway (with outlay of \$9 million)

The main thrust of the Hawke Government in land transport has to be seen as highway development, and its main rail initiative had to wait until the formation of a National Rail Corporation. This was with an agreement with the State and Territory Governments signed at the Special Premiers Conference in July 1991, and, was opposed to extending the operations of Australian National. The new arrangements reflected a growing need to improve intercity rail freight operations in Eastern Australia. Here, the former Inter-State Commission (1987) recommended that "*...the rail systems develop improved management structures for interstate services*" and "*...reduction in transit times on interstate services (should) be a priority of the rail systems.*" Moreover, the House of Representatives Standing Committee on Transport, Communications and Infrastructure (1989) had noted the difficulties faced by the rail systems and some of the resulting economic, social and environmental costs from excessive reliance on road transport.

The *National Rail Corporation Agreement Act 1991* provided, inter alia, for interstate rail freight operations to be conducted by a new company on a strictly commercial basis and subject to the *Trade Practices Act 1974*. Further requirements included a special enterprise award, transfer of certain assets to the National Rail Corporation and the Commonwealth, New South Wales and Victoria agreeing to contribute equity capital of \$295.8 million, \$75.6 million and \$35.1 million respectively.

A related Commonwealth rail initiative was the approval, under the Prime Ministers 'One Nation' program of February 1992, of funding for a three year rail upgrading program. This program included Adelaide - Melbourne gauge standardisation, standard gauge access to Brisbane's main port, and limited upgrading of the Melbourne - Sydney - Brisbane railway. However, at the conclusion of this program in 1995, at a cost of about \$430 million, no further funds for mainline interstate track upgrading were advanced until 1998. This was done as part of a \$250 million four year program.

A new rail development in 1995, consistent with the Competition Principles Agreement signed by Heads of Government, was the introduction of 'private' trains on the interstate mainline track. By 1997, three private operators, mostly using locomotives and rolling stock of Government operators were giving National Rail competition on the East - West corridor linking Melbourne, Adelaide and Perth. Multiple private freight train operators on the more difficult Melbourne - Sydney - Brisbane corridor had to wait to 1998.

Table 1 gives items of Commonwealth expenditure on rail for each financial year in summary form, as current or 'dollars of the day', whilst expenditure in constant 1998-99 dollars is given in Table 2. Both tables exclude outlays under various Urban Public Transport programs. For each financial year from July 1975 to June 1992, the largest item of expenditure on rail was for Australian National (AN) in the form of revenue

supplements. Table 2 also shows a general reduction of deficits by AN over time. Additional Commonwealth payments for AN include payments for free or concessional fares and grants, or loans, for capital works.

The main items of Commonwealth expenditure on rail to 30 June 1999, excluding Australian National, are for National Rail, the 1992-95 'One Nation' rail capital works program, and loan advances that were made under the *National Railway Network (Financial Assistance) Act 1978*. Detailed accounts of Federal allocations for rail to 1985-86 are given by Holthuyzen (1987) and to 1992-93 by Laird (1994). The total of Federal allocations for rail from 1 July 1974 to 30 June 1999 in constant 1998-99 dollars was approximately \$5.4 billion, of which \$4.2 billion was for AN revenue supplements. This left, in broad terms, about \$1.2 billion for rail capital works plus National Rail equity.

These outlays have partly been offset by Commonwealth revenue from loan repayments and interest to the Commonwealth. Details from 1 July 1974 to 30 June 1999 for AN loans and advances to the States are given in Tables 3 and 4 for current and constant 1998-99 prices respectively. In constant 1998-99 prices, this revenue was about \$755 million, leaving a net Federal outlay of some \$4.6 billion over 25 years (cf \$3.86 billion in 1996-97 prices over 20 years (HORSCTCMR, 1998, p 121)); also, the net outlay by the Commonwealth on rail capital works plus National Rail equity from 1974 to 1999 is less than \$1 billion in 1999 terms. Further analysis shows the Commonwealth financially gained from the *National Railway Network (Financial Assistance) Act 1978*.

A further aspect of Commonwealth revenue from rail has resulted from the liability of the rail systems from August 1982 to pay fuel excise on diesel. Estimates of this revenue in current terms are presented in Table 4 that show a total revenue to 30 June 1999 of nearly \$2.4 billion in 1999 terms. In each of the financial years from 1985-86 to 1991-92, and 1995-96, and from 1997-98, Commonwealth revenue from government rail systems, including fuel excise, appreciably exceeded Commonwealth expenditure on rail.

#### Future intercity rail outlays

The NIPT (1995, p69) identified two competitive goals for rail. The first goal was to improve reliability and transit times, and to reduce interstate rail freight full unit costs down to 3 cents per net tonne km (tkm) over a few years. The second goal, and a longer term goal, was to get these costs down to 2 cents per tkm. In respect of the second competitive goal, the NIPT (1995, p57) BTCE report notes "About \$3 billion of investment is estimated to be warranted over the next 20 years" including about \$1 billion for the Sydney Melbourne corridor, and another \$1 billion for the Sydney Brisbane corridor. These amounts exclude maintenance, which would be less with upgraded track.

The \$3 billion investment was strongly supported by the report 'Tracking Australia' of the HORSCTCMR (1998). Following a detailed evaluation of nearly \$1 billion of nominated projects, Booz Allan and Hamilton (1998) produced a priority list of projects to meet the 1997 Commonwealth offer of \$250 million. A task force (Smorgon) reportedly recommended an outlay of \$720 million (Financial Review, April 15, 1999). Work is now under way, including by the ARTC, to upgrade the Victorian and SA track.

**Table 1 Commonwealth gross expenditure on rail and roads**  
(\$million - current dollars)

YEAR	AN Rev Sup etc	AN Sub total	Other Rail	Total Rail	Roads Hume	All NHS	Tied outlays	Untied outlays
1974-75	46.5	62.5	0.2	62.7	38	109	368	
1975-76	58.5	98.4	0	98.4	46	134	442	
1976-77	47.6	76.2	0.1	76.3	58	158	434	
1977-78	63.6	93.9	0.1	94	68	175	478	
1978-79	63.8	110.1	0.2	110.3	64	186	508	
1979-80	58.1	97.9	5.5	103.4	55	205	565	
1980-81	56	78.6	15.6	94.2	45	253	628	
1981-82	70.4	79.6	25.1	104.7	39	303	685	
1982-83	106	114.5	22.3	136.8	63	386	851	
1983-84	91.3	100.6	0.4	101	63	519	1195	
1984-85	87.9	111.9	0.5	112.4	74	542	1242	
1985-86	72.5	99.8	0.6	100.4	120	559	1245	
1986-87	64.5	73.5	0	73.5	119	578	1245	
1987-88	54.9	64	0	64	113	549	1245	
1988-89	51	61.3	0	61.3	107	474	1217	
1989-90	60.3	72.9	0.3	73.2	91	521	1335	
1990-91	70.6	77.5	40.8	118.3	141	554	1561	
1991-92	59	82.2	49.5	131.7	197	661	1253	353
1992-93	59	87.6	286	373.6	229	872	1701	363
1993-94	38.2	66.9	262	328.9	208	790	1024	508
1994-95	27	59.2	203	262.2	133	819	825	687
1995-96	74.3	85.5	38.8	124.3	80	834	841	729
1996-97	30.1	389.2	6.1	395.3	41	728	846	758
1997-98	19.9	21.8	0	21.8	55	702	845	761
1998-99	0	0	40	40	68	668	838	819

Source: For Rail; to 1985-86 Holthuyzen (1987); thereafter to 1996-97, Department of Finance and Administration (1997) with data converted to current values, and AN total including free and concessional fares and to exclude all loan repayments; 1997-98 Dept. of Transport Annual Report. Details of expenditure to 1992-93 are given by Laird (1994).

For Road; to 1990-91, Laird (1994), then to 1997-98, Minister for Transport Media Statement TR 87/97 (21-8-96), then Budget Papers.

**Rail Key** AN Rev Sup etc - Australian National annual revenue supplement, etc

AN Total - Australian National total expenditure including annual revenue supplements, payments for free and concessional fares and freight, and capital expenditure.

Other Rail - Commonwealth expenditure includes *National Railway Network (Financial Assistance) Act 1978*, National Rail Corporation, and 'One Nation' rail capital program.

**Roads Key** See Table 2

**Table 2 Commonwealth gross expenditure on rail and roads  
(\$million - constant 1998-99 dollars)**

Year	Inflation Indices	AN Rev Sup etc	Total Rail	Roads Hume	NHS	Tied Total	Untied
1974-75	4.357	272	273	163	473	1604	
1975-76	3.737	368	368	172	501	1652	
1976-77	3.353	255	256	193	530	1454	
1977-78	3.095	291	291	210	541	1479	
1978-79	2.901	319	320	184	539	1474	
1979-80	2.647	259	274	146	542	1496	
1980-81	2.390	188	225	108	605	1501	
1981-82	2.148	171	225	83	650	1471	
1982-83	1.934	221	265	121	747	1646	
1983-84	1.812	182	183	115	940	2166	
1984-85	1.710	191	192	126	927	2123	
1985-86	1.597	159	160	191	893	1988	
1986-87	1.486	109	109	177	859	1851	
1987-88	1.392	89	89	158	765	1733	
1988-89	1.285	79	79	138	609	1565	
1989-90	1.207	88	88	110	629	1611	
1990-91	1.156	90	137	162	641	1805	
1991-92	1.135	93	150	223	751	1423	400
1992-93	1.120	98	418	256	976	1904	406
1993-94	1.109	74	365	231	876	1136	564
1994-95	1.098	65	288	146	899	906	754
1995-96	1.067	91	133	85	890	897	778
1996-97	1.045	407	413	43	761	884	792
1987-98	1.030	22	22	57	722	870	784
1998-99	1.000	0	40	68	668	838	819
<b>TOTAL</b>		<b>4 184</b>	<b>5 365</b>	<b>3 664</b>	<b>17 933</b>	<b>37 476</b>	<b>5 297</b>

Sources. Inflation indices are based on the Gross Non-Farm product price deflators

**Rail Key** See Table 1

**Roads Key** The Hume Highway outlay is for all construction, plus maintenance to 1980 and then from 1988, with data to 1992-93 from reply from Minister for Transport to Question on Notice No 1851 (see Hansard for 16 December 1992) except from 1981-82 to 1985-86, which is from Department of Transport Annual Reports, as is data from 1993-94 to 1997-98, with advice from this Department for 1998-99 and other data.

NHS - Commonwealth expenditure on National Highway System

Roads Total tied - Commonwealth tied expenditure on all roads.

Road untied - Commonwealth untied grants to States with a view to road expenditure



**Table 3 Estimates of Commonwealth revenue from rail  
(\$millions - current dollars)**

YEAR	AN Total	States Total	Total	Estimated Fuel use M litres	Excise Rate c/L	Rail fuel excise (\$M)
1974-75	0.01	7.19	7.2			
1975-76	0.04	5.25	5.29			
1976-77	0.37	5.23	5.6			
1977-78	0.42	5.2	5.62			
1978-79	11.64	3.61	15.25			
1979-80	4.44	5.16	9.61			
1980-81	4.22	6.85	11.07			
1981-82	4.22	7.03	11.25			
1982-83	4.22	6.44	10.66	600	5.2	31
1983-84	4.89	15.46	20.35	614	9	55
1984-85	6.28	20.13	26.41	600	9.5	57
1985-86	28.21	19.79	48	590	12.3	73
1986-87	10.19	19.09	29.28	589	19.7	116
1987-88	12.77	19.06	31.83	602	20.5	123
1988-89	9.47	19	28.47	553	21.8	121
1989-90	4.49	15.85	20.34	536	23.5	126
1990-91	11.02	15.59	26.6	492	25.2	124
1991-92	50.2	14.69	64.89	455	25.9	118
1992-93	3.05	14.35	17.4	460	26.2	121
1993-94	4.94	14.04	18.98	491	*	137
1994-95	7.33	12.87	20.2	474	*	111
1995-96	1.71	12.63	14.34	468	33.7	158
1996-97	11.2	12.12	23.32	480	34.6	166
1997-98	0	9.4	9.4	470	34.7	163
1998-99	0	3.1	3.1	470	34.7	163

Sources: The AN and States loan repayments include interest, and are from Department of Transport Annual Reports to 1997-98, with advice from this Department for 1998-99. See Key on Table 4 for details of loans and Laird (1994) for disaggregation to 1992-93. Fuel estimates to 1994 derived from various sources, as per Laird (1994), then from rail systems to 1997, then broad estimates.

Fuel excise in cents per litre is an estimate of the average rate for each financial year - see James (1993) to 1993

\* Estimates for total fuel excise are modified for the use of light fuel oil in 1993-94 and 1994-95 at a then much lower excise rate - see James (1995) and Laird (1996)

**Table 4 Real Commonwealth revenue from rail excluding fuel excise (\$millions - constant 1998-99 dollars)**

Year	AN Total	States Total	Total	Rail fuel excise	Total
1974-75	0	31	31		31
1975-76	0	20	20		20
1976-77	1	18	19		19
1977-78	1	16	17		17
1978-79	34	10	44		44
1979-80	12	14	25		25
1980-81	10	16	26		26
1981-82	9	15	24		24
1982-83	8	12	21	60	81
1983-84	9	28	37	100	137
1984-85	11	34	45	97	143
1985-86	45	32	77	116	192
1986-87	15	28	44	172	216
1987-88	18	27	44	172	216
1988-89	12	24	37	155	192
1989-90	5	19	25	152	177
1990-91	13	18	31	143	174
1991-92	57	17	74	134	207
1992-93	3	16	19	135	154
1993-94	5	16	21	152	173
1994-95	8	14	22	122	144
1995-96	2	13	15	168	184
1996-97	12	13	24	174	198
1887-98	0	10	10	168	178
1998-99	0	3	3	163	166
<b>TOTAL</b>	<b>292</b>	<b>462</b>	<b>755</b>	<b>2 384</b>	<b>3 139</b>

Reference: Table 3 and the inflation indices in Table 2

**KEY:**

AN Total - Australian National loan repayments and interest for AN

States Total - loan repayments and interest from the states for gauge standardisation advances to NSW, Vic and WA before 1973 and for the *National Railway Network (Financial Assistance) Act 1978* (NRN(FA)) outlays

Rail fuel excise - Commonwealth revenue from rail fuel excise

Total Rev - denotes estimates of revenue from loan repayments, interest, and Federal fuel excise.

## **Road pricing**

These comments are necessarily brief, and follow ISC (1996), and, Laird and Lander (1997). In 1974, road pricing for heavy trucks were mainly based on annual registration fees for intrastate trucks that varied markedly from one jurisdiction to another, plus a system of road maintenance charges that were introduced in the late 1950s (following the decision of the Privy Council in London to overturn a High Court decision to allow the States to restrict interstate trucking) and were based on the distance travelled and assigned mass of the truck. In 1979, after widespread truck blockades, the States abandoned this system of road maintenance charges. This was followed by all States except Queensland imposing a diesel fuel franchise fee, and the Federal Government increasing fuel excise taxes. Interstate trucks were generally exempt from registration fees until 1987. Following a report by the ISC (1986), a Federal Interstate Registration Scheme (FIRS) was introduced, which included the option of mass-distance charging.

Relaxation of mass and dimension limits occurred in the late 1970s, with further relaxation in the late 1980s. New South Wales and Victoria introduced a permit scheme in 1987-88 for heavy vehicles that were operating legally above standard mass limits. This included an option for a six axle articulated truck to lift its Gross Vehicle Mass (GVM) from 38 tonnes to 42.5 tonnes, with an annual NSW permit fee of \$3120 for such a truck in addition to an annual registration fee of about \$4000. A modification of FIRS in 1988 also allowed the option of a six axle articulated truck of lifting its GVM from 38 tonnes to 42.5 tonnes, with respective registration fees of \$1250 and \$3285. This met with further truck blockades in July 1988 and an apparent undertaking by the Federal Government not to increase these fees until a full review had taken place. However, the 1980s were to see an escalation in Federal fuel excise which would continue into the 1990s.

Following recommendations from the ISC (1990) that a national scheme be established for the registration and charging of all vehicles operating in Australia, and an IGA made at the October 1990 Special Premiers Conference (SPC), it was agreed that heavy vehicle charges be determined on a 'user pays' basis. However, at the July 1991 SPC, it was agreed that a new National Road Transport Commission (NRTC) should set the charges. In 1992, the NRTC gave its determination on heavy vehicle road user charges. These charges were subsequently approved by a Ministerial Council and were finally implemented by late 1996, although Western Australia had stated that the proposed charges were too high, and New South Wales had objected that the charges were too low.

The former Chairman of the NRTC, Mr G Amadee, had stated ("Recession puts truck plan off road", Sydney Morning Herald, April 13, 1992) that full cost recovery was then considered inappropriate. Later that year, the Industry Commission (1991-92 Annual Report, p197-198) held: *"Annual fixed charges are not efficient because costs vary with the distance travelled and the mass of the vehicle. The result is that some vehicles - the heaviest travelling long annual distances - will meet less than 20 per cent of their attributed costs. [emphasis added] ... Differences between the recommended charges and road-related costs are greatest for vehicles competing with rail. The charges, as recommended, will therefore potentially distort the long-haul freight market as rail reforms take effect. ..."*

In essence, the heavy vehicle road user charges determined by the NRTC in 1992, and still in force in 1999, include the following:-

- A. The component of diesel fuel excise that is to be regarded as a road user charge (as opposed to a general tax) be set at 18 cents per litre
- B. That annual charges for heavy vehicles are set by a schedule with uniform rates across Australia (irrespective of either of two Zones provided for in the SPC agreement), and, that the charges for each type of articulated truck (by number of axles) be the same, irrespective of GVM.

A six axle articulated truck in Australia bears an annual NRTC charge of \$4000 plus the NRTC road user charge on diesel at 18 cents a litre and a fuel surcharge of 8.1 cents a litre. If we assume haulage at 160,000 km per year and ABS average fuel use in 1991 at 51.5 litres per 100 km, this gives an average road user charge of 16.0 cents per kilometre. With a GVM of 42.5 tonnes, this works out to at most 0.37 cents per gross tonne km. However, if all fuel excise is regarded as a tax rather than allowing some as a road use charge, then the access charge for this truck is only at most 0.06 cents per gross tonne km. This approach was favoured by the rail industry, on the grounds that they also pay fuel excise until 1 July 2000. Six axle articulated trucks operating at 42.5 tonnes GVM in New Zealand, with GST removed, and currency conversion at \$A1=\$NZ1.1 pay about three times the current NRTC charges. For heavy B-Doubles, the ratio is about four.

The situation in Australia is now in flux. On the one hand, there are proposals for further relaxation of mass limits of trucks with so called 'road friendly suspension' at no higher annual charges being actively supported by both the NRTC and the Federal Government, coupled with Federal Government proposals for cheaper diesel, and delays by the NRTC and Government in introducing a second generation of road charges. On the other hand, concern about road pricing of heavy trucks was raised by HORSCTCMR (1998) and the Productivity Commission (1999) recommended an inquiry into road provision, funding, and pricing in Australia. Here, externalities warrant full attention.

### **Rail track access pricing**

Until 1995, rail track access pricing was a term known only to a few organisations in Australia (such as BHP for movement of their coal trains near Port Kembla on State Rail track, and then National Rail). However, when the first 'private' Melbourne - Perth train commenced operations in July 1995, it was facilitated by Adelaide - Melbourne gauge standardisation as well as track access arranged by government, at agreed rates. These rates were later revised downwards, and a posted pricing schedule of the AN Track Access unit for October 1995 noted a 'flagfall' charge by sector (eg Tarcoola - Kalgoorlie) and type of train (Premium (passenger and bi-modal), High (superfreighters), Standard (freight) and Low), plus, a variable rate per thousand gross tonne km. Further rate revisions were made by the ARTC in 1998 whilst retaining the flagfall charge (over different sectors, extending over Victoria's standard gauge interstate track) with the same type of trains, and, a variable gross tkm charge.

For a Melbourne - Adelaide superfreighter of 2000 gross tonnes not exceeding 1000 metres in length, the total charge would amount to \$5490 or about 0.33 cents per net tonne km. Federal diesel excise on rail on this track would be roughly 0.1 cents per net tonne km. For the poorly aligned NSW track over tough terrain the unit fuel excise would be more (because of lower fuel efficiency), and for Adelaide - Perth, it would be less.

NSW track access has been managed by the NSW Rail Access Corporation (RAC) since its start of operations on 1 July 1996, with rates subject to negotiation, and track access costs for the interstate mainline track lowered in 1997. This was due to a change of NSW Government guidelines for RAC, and, the provision of track Community Service Obligations (CSOs) for interstate track.

### **Inter capital city land freight - the need for change**

Road freight moved by articulated trucks has shown strong growth since the 1970s. This is due to many factors, including the ability to offer 'door to door' service, a strong and competitive industry operating at or near world best practice, and a much improved road system. Government relaxation of legal mass and dimension limits has also allowed the road freight industry to increase its efficiency, productivity and competitiveness. This is clearly shown on the corridors linking Adelaide, Melbourne, Sydney, and Brisbane where rail had 44 per cent of modal share in 1973-74, falling to 32 per cent in 1985-86 (from Bureau of Transport Economics (1990) data) and below 30 per cent in the 1990s. This includes the long Melbourne - Brisbane corridor, where rail was noted as having a modal share of as low as 21 per cent (NTPT, 1995). The current situation is not known due to severe land transport data deficiencies. Rail has done much better on the Adelaide - Perth corridor, with rails modal share of freight noted as some 80 per cent (NTPT, 1995).

The low modal share for inter-capital city freight in South Eastern Australia is in part due to severe speed - weight restrictions that result from the poor standard of track infrastructure - both poorly maintained rails, sleepers etc on reasonable alignment in Victoria (now being rectified), and, well maintained track on poor alignment in NSW and in the Adelaide Hills (with no current firm plans to improve). The HORSCTCMR (1998) considered that much of the existing mainline interstate track is in urgent need of upgrading, and, without an investment of \$1 billion over the next three years, "*...rail will continue to deteriorate*" to the point that intercity rail will become "*...irretrievable*". This echoes a view (NTPT, 1995, p63) for Sydney - Brisbane rail that "*Transit times, reliability and costs are so poor that the corridor may not survive as a commercial freight alternative unless improvements are implemented.*" The future of the Sydney - Brisbane railway in its present condition is in grave doubt, given the large scale upgrading of the Pacific Highway. The Rail Projects Taskforce (1999) also called for rail track upgrading.

In NSW, some 622 kilometres, or 40 per cent, of mainline interstate track in NSW and Queensland fails to meet basic Fast Freight Train (FFT) standards for track to have a ruling grade of 1 in 66 and no curve radius tighter than 800 metres to allow through running at 115 km per hour (Laird, 1998). Further constraints are introduced by freight train movements in Sydney having to defer to passenger trains.

Between Brisbane and Rockhampton, some eighty kilometres of deviations were constructed between 1992 and 1997, as part of a Queensland Rail \$590 million Mainline Upgrade (MLU) program. This included deviations to ease grades and curvature, with easy ruling grades of 1 in 90 and curves of 2200 metres radius, along with upgrading old bridges and acquiring modern locomotives and low tare wagons to improve the efficiency and competitiveness of freight on rail north of Brisbane. There is wide scope for this type of track work south of Brisbane, and indeed, in order to achieve the ATC goal of 80 km/h average speed for intermodal freight trains for each inter-capital city sector east of Adelaide, there is no option but for some realignment of track (Laird, Michell and Adorni-Braccesi, 1999). The Queensland MLU has also underpinned the successful introduction on 6 November 1998 of tilt trains between Brisbane and Rockhampton, which within six months had carried over 100,000 passengers.

Double stacked container services in Australia are currently possible between Perth, Adelaide and Parkes (NSW). Their extension to Melbourne, and closer to Sydney and Brisbane, is also of interest, with a basic Melbourne - Brisbane inland route having good potential (Laird, Michell and Adorni-Braccesi, 1998).

Upgrading of intercity rail corridors to improve the efficiency and competitiveness of intercity rail freight operations was noted (Laird, 1996) to have the potential to save over 250 million litres of diesel a year by 2015. The investment to gain the associated reduction of greenhouse gas reductions was shown by the Bureau of Transport and Communications Economics (1996) to be a 'no regrets' measure.

## **Conclusions**

Commonwealth expenditure on the National Highway System from its formation in 1974 to June 1999 was about \$17.9 billion in 1998-99 terms, of which about \$3.9 billion was used for substantial reconstruction and maintenance of the Hume Highway. In constant 1998-99 prices, the total revenue supplements paid to Australian National by 30 June 1999 amounted to \$4.2 billion, with additional outlay for capital works at \$1.2 billion being offset by about \$755 million of loan repayments and interest. The net result has been to create generally good quality highways (when Australia's large land area and relatively small population are taken into account) linking the mainland State capital cities, but with the exception of the Adelaide - Perth track, generally poor quality rail track linking Adelaide to Brisbane via Melbourne and Sydney.

The upgrading of the National Highway System without corresponding improvements in the interstate mainline rail track in South - Eastern Australia have gone hand in hand with rail's modal share of inter-capital city freight movements in this region declining from 44 per cent in 1973-74 to below 30 per cent in the 1990s. This trend has also been assisted by low road cost recovery from the heavier trucks operating interstate.

The increase in road's modal share of interstate freight has not been without significant economic, environmental and social costs. In order to contain future costs, the interstate mainline rail track alignment should be upgraded to at least Fast Freight Train standards.

This is beyond the scope of the current \$250 million program, the remaining Government rail systems, or the emerging private operators. Such upgrading could well require a decade of funding at \$160 million per year, which could have been obtained from the fuel excise paid by the rail systems to 30 June 2000. Application of some of the proceeds from the proposed sale of National Rail would also assist in long overdue remedial track work.

A series of Government reports in the 1980s found significant under-recovery of road system costs from the heavier long distance trucks, and this under-recovery was set in place for the 1990s by the NRTC first generation charges. During the 1990s, the Ecologically Sustainable Development Working Group on transport (1991), the NIPT (1994), the HORSCTCMR (1997, 1998) called upon the Federal Government to treat competing modes of transport in a more open and equitable manner. As shown by the Productivity Commission (1999), it is not possible to have proper rail reform without road reform. Private sector intercity rail investment will also require road pricing reform.

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