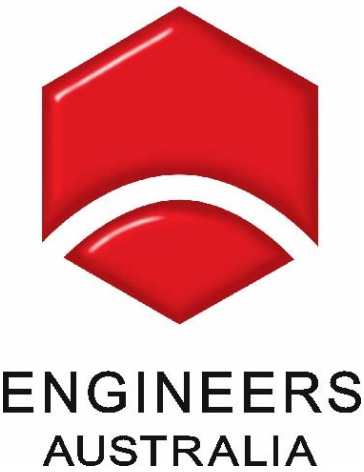
LAND TRANSPORT INFRASTRUCTURE PRICING

SUBMISSION TO THE PRODUCTIVITY COMMISSION



APRIL 2006

Contact: Andre Kaspura
Policy Analyst, National and International Policy
Engineers Australia
11 National Circuit, Barton, ACT 2600.
Tel. 02 6270 6570, Fax. 02 6273 4200.
email: akaspura@engineersaustralia.org.au
http://www.engineersaustralia.org.au

CONTENTS

1. INTRODUCTION

Engineers Australia is the peak body for engineering practitioners in Australia representing all disciplines and branches of engineering. Membership is now approximately 75,000 Australia wide and *Engineers Australia* is the largest and most diverse engineering association in Australia. All *Engineers Australia* members are bound by a common commitment to promote engineering and to facilitate its practice for the common good. *Engineers Australia* is organised into Colleges and geographic regions. The Colleges exercise the learned society functions of engineering and often exercise this function through National Committees. *Engineers Australia* is grateful for this opportunity to contribute to the Productivity Commission's review of the economic costs of freight infrastructure and efficient approaches to transport pricing.

Engineers Australia has a keen interest in the core issues relevant to this review. *Engineers Australia* has been a proponent of sustainable transport policies for some time[1]. While modal choice is an inherent component of a sustainable transport policy, it is not necessarily the central issue. A sustainable transport policy is a broader framework which defines and encapsulates the conditions and circumstances under which optimal transport solutions can be established. A central element must be competitive neutrality between transport modes. Competitive neutrality is essential for efficient economic decisions in both the immediate future and for the long term and will enable the evolution of the most appropriate transport mode for Australia's circumstances..

Transport is not an end in itself but is a derived demand which reflects the structure and operation of Australia's economy and society. The next two decades will see critical changes in the way the world responds to climate change and to changes in the availability and price of petroleum fuels. Since much of transport infrastructure is long lived, contemporary decisions need to be cognisant of these key aspects of sustainable transport. Other externalities such as congestion, the cost of accidents and health must also be factored in. *Engineers Australia* is convinced that establishing a transport policy framework which recognises these elements is the best way forward for Australia.

Engineers Australia has been a long time proponent of the importance of appropriate levels of infrastructure investment in Australia. This is reflected in the *Engineers Australia* Infrastructure Report Card series[2] which demonstrate clear and irrefutable evidence of under-investment in Australia's transport systems. Defining at what level investment in particular transport infrastructure is appropriate is dependent on optimising transport decisions in a sustainable transport framework. The present situation is that both road and rail infrastructure are generally sub-standard, although there are specific sectors of both that are world class.[3]

It will take time for Australia to establish a sustainable transport policy and from a practical perspective, it will need to be approached in manageable steps. *Engineers Australia* believes that establishing full cost freight transport pricing in a competitively neutral environment is the essential first step. *Engineers Australia* accepts that adjustment towards this goal may need to be achieved over a period of time. Providing such an objective is clearly articulated, Australia's transport

arrangements can progressively move in the right directions. *Engineers Australia* also believes that sustainable transport outcomes should be specified in a robust policy framework. It is insufficient for considerations of freight transport policies to be bogged down by the immediate circumstances of particular stakeholders which appear to have been an issue in the past. A robust policy framework should be capable of incorporating the implications and responses to climate change, the future of oil and other externalities as these matters are dealt with by the framework of government.

2. THE CURRENT SITUATION

This Inquiry is directed at a subject which has had a long history of review. As long ago as 1972 the Bland Inquiry concluded that Victoria was getting its transport on the cheap, neither rail nor road transport were paying their way and that a truly competitive environment was for both road and rail freight to bear their real costs.[4] In 1980, the McDonell Inquiry showed that similar conclusions were relevant in New South Wales. [5]. An early Bureau of Transport Economics study showed that the national picture was also much the same.[6] As time passed, subsequent reviews confirmed these conclusions with growing analytical sophistication.[7] Valuable contributions were made by the Inter-State Commission during the 1980`s. The predecessor of the Productivity Commission participated in this process and in one report, while expressing the same concerns about road freight cost recovery raised in much of the literature, surprisingly agreed with the National Road Transport Commission assertion that full road cost recovery was being achieved,[8] despite the evident flaws in this process.

The culmination of this process of review was well summarised by the Productivity Commission Review of National Competition Policy released in early 2005.[9] National Competition Policy (NCP), as stated by the Commission, was intended to expose "previously sheltered activities to competition."[10] However, the genesis of the modal debate between road and rail freight was an unintended consequence of this broad objective. Rail reform was initiated and proceeded as an element of structural reforms to public monopolies under the Agreement on Competition Principles. Accordingly, reforms typically were based around corporatisation and/or privatisation accompanied by the separation of natural monopolies from potentially contestable elements.

Road freight was not included under the Competition Principles reforms. Much of the road freight sector was and continues under the operation of the private sector, but under regulation of the States and Territories. Road freight was included under the so called 'related reforms.' The initial challenge for road freight reform was developing greater consistency in regulation between the States and Territories rather than injecting competition into a government monopoly structure. The reform mechanism accordingly was quite different and developed modus operandi and direction independent from decisions taken in respect to other transport and freight matters.

Engineers Australia believes that the major lesson from this history is that a comprehensive transport policy is essential. While there are many potential benefits from a common starting point, separate policy reform mechanisms for rail and road freight reform, over time, dissipated these to such an extent that they are unrecognizable. Continuation of the present separation of reform mechanisms between road and rail freight will lead to further deterioration in inter-modal freight

arrangements. In the context that led to past freight reform decisions, obtaining consistency in State and Territory regulation was an important contribution to progress across the broad canvas of NCP reforms. When tied to National Competition Policy payments, the future directions of the different elements of reform were set independently early in the process and evolved their detail quite separately. However, when progress is reviewed in the narrower context of freight transport reform, especially in contemporary terms, progress is modest indeed.

3. ISSUES RELATING TO THE HEAVY ROAD FREIGHT PRICING REGIME

Road freight transport pricing operates under arrangements determined by the National Transport Commission (NTC). The NTC uses a methodology which attributes road expenditure to different classes of road uses. The share of road expenditure attributed to freight transport is then converted into a two-part pricing regime. The road freight determinations are founded on principles which "should promote the optimal use of infrastructure, vehicle and transport mode."[11] This over-arching principle is supported by other statements which seek to ensure **full recovery of allocated infrastructure costs**, cost effectiveness, and allow for the inclusion of externalities such as congestion, noise, and atmospheric emissions.

The methodology used by the NTC is presented in "scientific and engineering" terms but its character is better described as a methodology for resolving the "conflicting objectives of different stakeholders. Not all stakeholders have the same strength of representation."[12] However, the notion that road freight transport pays for its infrastructure costs is the main argument used to defend the approach used. That the road freight sector should adopt this stance is hardly surprising. However, it is surprising to *Engineers Australia* that such a flawed methodology enjoys broad based government support.

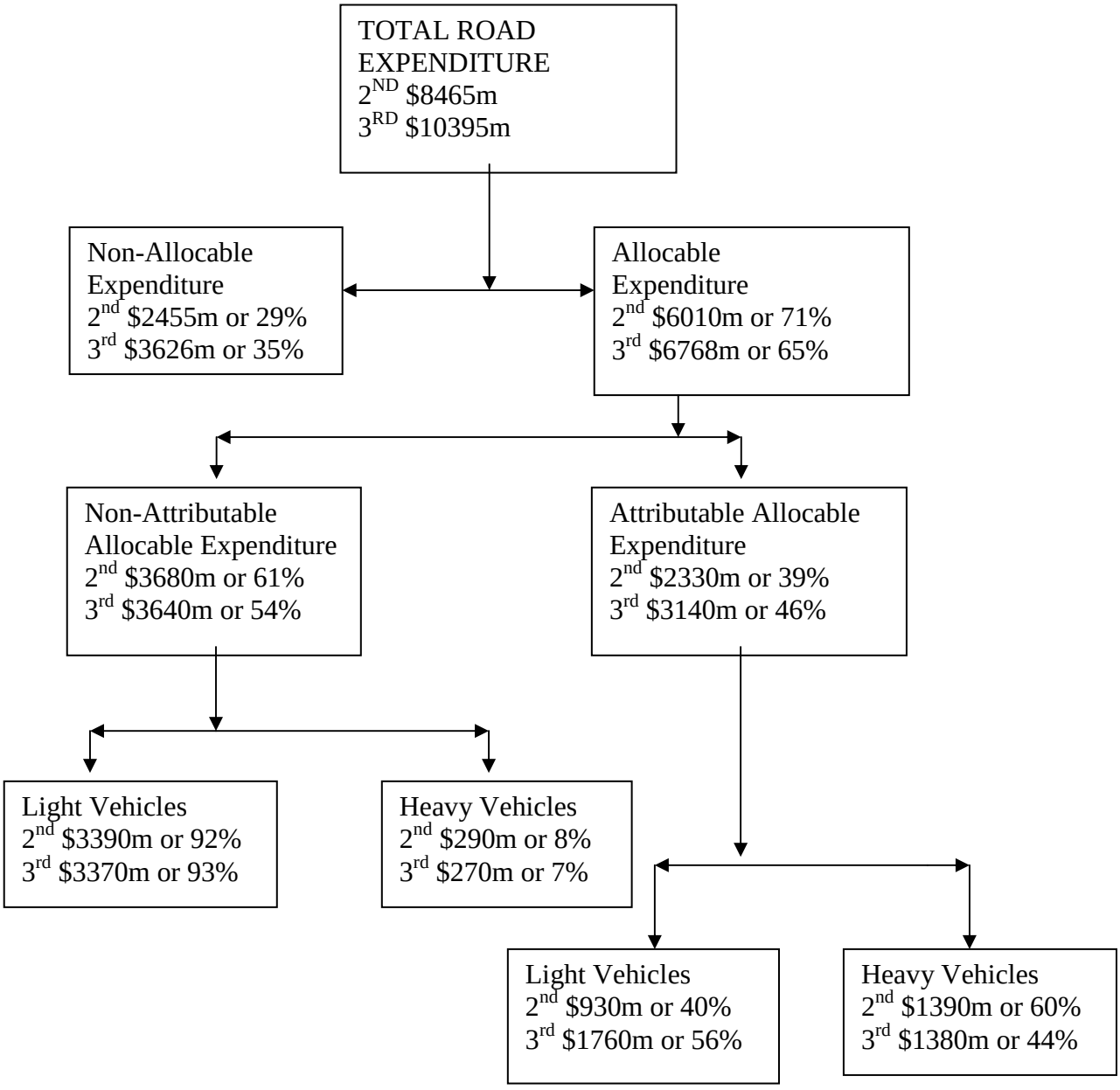
Figure 1 sets out schematically the road expenditure allocation methodology used by the NTC in the second and third Heavy Vehicle Road Pricing processes.[13] The process begins by assuming that current road expenditure is a satisfactory proxy for the annualised costs of providing and maintaining roads. This is at variance with normal commercial principles which apply generally in the competition reform processes. Commercial principles take into account depreciated, cumulative, past investments in infrastructure. Equivalence between the NTC approach and a commercial approach is argued in terms of what can be best described as special case arguments[14] which can hardly be described as conventional economics. As a result, the NTC needs to delete private toll roads from their process. A comprehensive policy would not need to do this and would aim to encapsulate all road infrastructure irrespective of ownership.

Engineers Australia is unconvinced by the arguments used by the NTC to differentiate between allocable and non-allocable road expenditure. The central supporting argument used by the NTC is that various road related expenditures are not relevant to road charging[15]. These include administration of vehicle registration, administration of licensing, loan interest and toll revenue and enforcement in relation to arterial roads. Similar exclusion arguments are canvassed in relation to the contributions made by developers to roads in new developments which are part of the local road system. Another set of arguments relates to the notion that a portion of road

expenditure exists "solely to provide access, amenity, or provide for non-motorised road users."[16]

In all some 13% of arterial road expenditure and "75 per cent of urban local roads expenditure and 50 per cent of rural local road expenditure" is treated as not relevant to the allocation process, supported by a survey of local government engineers. *Engineers Australia* believes that roads are constructed for the use of motorised traffic of various configurations. Over time the accepted standards of road construction have advanced in line with social expectations, safety, and engineering developments. All road expenditure is relevant to the determining relative shares of infrastructure costs. *Engineers Australia* does not support the arbitrary exclusion of some costs and does not support "engineering arguments" which may be used to suggest that some roads are built for non-motorised use.

FIGURE 1
NTC ROAD PRICING 2ND AND 3RD DETERMINATION



The result is that only 65% (29% in the second determination) of road expenditure is treated as allocable to road transport costs. The rest is dismissed as not relevant to road user charging. This allocable road expenditure is then further divided into attributable and non-attributable components, broadly along the lines of variable and fixed costs. The former would change in relation to road use and the latter would be independent of road use. Finally, these components are allocated to different classes of road traffic use. On the face of it, this is an methodology is defensible, but the way it is applied results in significant problems.

Separating road expenditure into attributable and non-attributable components relies on a general argument that *Engineers Australia* believes is unsupportable. The NTC defines non-attributable costs as "the costs of providing a minimum standard of infrastructure regardless of the traffic that is to use it."[17] Contained in this line of reasoning are several arguments supported by statistical and "engineering" reasons that *Engineers Australia* cannot support. Some examples are:

- It is well known that weather effects are associated with pavement deterioration. The NTC has used this association to argue in the Second Determination that only half of routine pavement maintenance and periodic pavement maintenance should be attributable to road use. For the Third Determination the NTC undertook unspecified statistical analyses to investigate the relationship between pavement maintenance and road use. They report that only one of four analyses produced statistically reliable results. This indicated that both routine and periodic pavement maintenance was "related to tonne-km of traffic and, to a lesser extent, passenger car equivalent units."[18] *Engineers Australia* regards this as an entirely unsurprising result consistent with the expectations of engineers. The influence of weather on road pavement is not independent of road use and would be included in the estimated statistical parameters. But having undertaken the statistical research the NTC allocates 26% of routine pavement maintenance and 30% of periodic pavement maintenance to the non-attributable component apparently on the conviction that the weather effect on pavement is independent of road use.

- Only 45% of pavement rehabilitation and new construction expenditure were treated as attributable to road use. The supporting argument was that this "cost allocation rule has not been the subject of significant uncertainty and is to be retained."[19] *Engineers* Australia does not support this argument. The purpose of pavement rehabilitation is essentially to renovate the pavement and can be regarded as broadly equivalent to new road construction. Decisions to proceed with this work and to proceed with new road construction are taken in the light of overall traffic expectations. Tight road work budgets do not provide for the luxury of building a minimum level of road infrastructure that may never be used. *Engineers Australia* views all pavement rehabilitation and new road expenditure as attributable to road use.

- Only 33% of bridge maintenance and rehabilitation expenditure and 15% of bridge asset extension and improvement expenditure are attributed to road use.

> This is justified by the NTC arguing that "most of the costs of bridge construction are related to the cost of holding the bridge up." The NTC then estimated the costs of bridges designed to carry heavy traffic and compared these costs to those associated with constructing bridges which would not carry heavy traffic. Engineers Australia does not support this proposition. Social infrastructure is designed and built on a balance of considerations including the expectation that it will be used for its built purpose, that access will be available to the widest range of users and that the fixed cost elements of particular aspects of the infrastructure will not necessarily be so in its combination with associated infrastructure elements. In other words, it may be correct that the costs of holding a bridge in situ have fixed cost elements, but, unless the bridge is there, an associated freeway or road cannot be used.

The main purpose of roads is to facilitate the carriage of passengers and freight. When the main purpose is something else, such as foot-traffic, bike-traffic, or even visual amenity, one does not build a road. Cheaper and more aesthetic options are available. Most road expenditure such as pavement construction and maintenance, bridge construction and maintenance, the general standard of roads in terms of width, number of carriage-ways, safety features and land occupied by the road are all related to size and weight of vehicles, as well as distance travelled. If this were not the case there would be widespread access restrictions to prevent roads deteriorating more rapidly than planned. *Engineers Australia* believes that all elements which comprise a modern road package are relevant to road infrastructure pricing should be included in the cost base to be distributed. Although some elements reflect community demands for improving standards, these are often set against the risks associated with the presence of heavy vehicles.

The outcome of the allocation is that 54% (61% in the second determination) of allocable road expenditure is treated as non-attributable, or as a fixed cost element which should be distributed to vehicle traffic class according to the number of kilometres travelled annually. As a result light vehicle traffic is said to be responsible for 93% (92% in the second determination) of non-attributed allocable costs and heavy vehicles are said to be responsible for 7% (8% in the second determination). This result is associated with the distribution variable chosen.

The choice of annual kilometres travelled to distribute non-attributable allocable road expenditure is to ensure there is equity between vehicle classes.[20] The only alternative distributional measure seriously contemplated was a measure of road space occupied (PCU-km) by different types of vehicles, and, this is dismissed by invoking the separation assumption discussed above. Other possibilities were not considered because there "is little debate" or there is "less consensus" about the use of these distributive measures. *Engineers Australia*, however, not-with-standing its fundamental view that many non-attributable cost are actually attributable, believes that many commentators have proposed alternative measures which do not appear to have been given serious consideration.[21]

However, *Engineers Australia* is not convinced that data limitations alone can explain the dilution of road expenditure cost that is allocated to heavy vehicle user charges. The choice of cost distribution measure applied to attributable and non-attributable road expenditures reflects some deliberation. In the final analysis, the process results

in some 75% of allocable road expenditure, being distributed according to annual kilometres travelled and this is after about one third of road expenditure has been assumed away as irrelevant.

Annual kilometres travelled do not encapsulate vehicle size or mass. Yet the costs of many aspects of road construction and maintenance rise with size and/or mass. This is particularly the case for heavy vehicles over 17 tonnes as shown by the Bureau of Transport and Resource Economics. Another way to express the effect of the NTC process is to say that 25% of allocable road expenditure is distributed in a way which reflects the actual costs of constructing and maintaining roads. When non-allocable road expenditure is taken into account, this share falls to a little over 16%. *Engineers Australia* regards this as inadequate and as the root cause of the lack of competitive neutrality in Australian freight transport. *Engineers Australia* believes that an essential requirement for achieving freight competitive neutrality is that the share of road expenditure actually affected by size and weight of vehicle be the basis for heavy vehicle road pricing.

Governments are typically unenthusiastic about hypothecating revenue streams to particular expenditure programs. Thus, the revenue from the variable component of the heavy vehicle road charging regime, the diesel fuel excise, becomes part of consolidated revenue. As a road user charge the diesel fuel excise, although stated in terms of 20 cents per litre (22.1 cents per litre proposed for the third determination) is essentially indistinguishable from the fuel excise paid by motorists in general. Indeed if road user equity is an issue, one's focus may dwell on the 38.1 cents per litre excise paid by non-business users.

The policy argument for petroleum excise taxes are largely revenue related. There may be good arguments for providing implied subsidies to business users, but in line with NCP principles there should be greater transparency regarding their existence and application. Considered in the context of a sustainable transport policy framework, *Engineers Australia* questions the validity of treating the heavy vehicle diesel excise as a road user charge and believes the relationship in fuel excise levels between different users needs to be re-examined in the light of the arguments dealt with below concerning the future of oil.

The second component of the heavy vehicle charging regime is the annual vehicle registration charge levied by the States and Territories. The minimum annual vehicle registration charge is designed to maintain relativity with light truck registration fees. These are the largest vehicles that fall outside the ambit of the NTC process and the purpose of this approach is to maintain congruency across the range of registration charges administered by the States and Territories. The registration charges for each heavy vehicle class is set to recover the difference between attributed road expenditure costs and fuel revenue expected to be recovered from the application of the fuel excise. Arbitrary adjustments are applied to moderate the impact of the outcome on B-doubles and road-trains. This arrangement charges 6-axle articulated trucks more in order to significantly lower the registration charges for B-doubles and to enable the timing of final recommended charges to be phased in[22].

Engineers Australia does not necessarily disagree with the notion of a two-part heavy vehicle pricing regime. However, the objective of the charging regime is to recover

road expenditure. This is clearly not the case and may go some way to explaining under-investment in road infrastructure despite the lack of hypothecation. While it is true that nominally the registration fees paid by heavy vehicle operators are high compared to a typical passenger motor vehicle, they are too low relative to their impacts on road infrastructure.

The road access pricing regime may not intend informing investors about the best vehicle choice, but in effect it does. At the level of individual road freight operators, relative costs favour investment in the largest vehicles and it is this class of vehicles which has grown the most since this method of pricing has been in place. In turn, the road maintenance and construction task becomes more difficult because of the demands imposed by the size and weight of these vehicles[23]. At a system level the implied subsidy to the heaviest vehicles favours investment in them over other road freight vehicles as well as conferring on these vehicles a competitive advantage relative to rail freight. *Engineers Australia* believes these distortions are inconsistent with competitive neutrality and are inconsistent with the direction of micro-economic reform in Australia. The impact on road infrastructure and implied impact on the source for additional road infrastructure investment mean that the heavy road transport pricing regime is not sustainable financially and inconsistent with a sustainable transport policy.

4. ISSUES RELATING TO THE RAIL FREIGHT PRICING REGIME

Access arrangements for rail freight are quite different to those which apply to road freight. The two essential differences are that charges are market based and that regulatory oversight is by the Australian Competition and Consumer Commission (ACCC) under NCP arrangements.

Rail infrastructure owners charge users so as to achieve positive returns on assets. This contrasts with the current year road expenditure approach used to establish road user charges. One advantage of this more conventional commercial approach is evidenced by growing private sector interest in rail infrastructure. However, there are four broad limitations to the proper functioning of this mechanism:

- Road freight charges set an upper limit to rail charges. In circumstances where competitive neutrality exists between modes of freight transport this is simply a reflection of market realities. But, competitive neutrality is not the case, and, as was argued in the previous section, road freight cannot be said to meet its infrastructure costs and operates with an implied subsidy. This places rail at a general disadvantage and significantly limits the scope for realising optimal economic returns. This is insufficient and long term sustainability requires the realisation of returns sufficient for optimal infrastructure maintenance and renewal[24] and opportunity costs.

- The long term neglect of rail as an appropriate freight transport mode has resulted in levels of rail freight on some routes that are insufficient to achieve a positive return on assets. Charges can at best be set to cover operational costs and revenue is insufficient for infrastructure renewal and maintenance. The

outcome is that infrastructure is allowed to deteriorate further[25] eroding the overall integrity of the rail network.

- Rail infrastructure decisions are based on financial considerations, including taxation requirements, relating to the investor making the relevant decisions. Road infrastructure decisions, with the exception of private toll roads, are based on cost-benefit analyses which typically incorporate social benefits, such as reductions in travel time and congestion costs. Prior to the commencement of the reform process, rail infrastructure was also characterised by differences in the approaches taken by State Governments largely related to local, rather than national needs.[26]

- As noted by the Productivity Commission, the Australian propensity to reinvent wheels is well reflected in the myriad of rail safety requirements, different access regimes, differing accreditation requirements even within the same jurisdiction and tension between operational and safety responsibilities between private operators and government agencies.[27]

The implications of these issues are summarised in the forecast of freight modal shares made by the Bureau of Transport and Resource Economics (BTRE)[28] which shows that while the Australian freight task in the period to 2020 will grow at 1.2 times GDP growth, road and rail shares will continue along long term trends. This means the share of road freight will continue to increase and the share of rail freight will continue to decrease. Accompanying the growth in freight transport will be corresponding growth in the implicit subsidy to road freight.

The BTRE has noted the strategy adopted by the Australian Rail Track Corporation (ARTC) which owns and manages rail corridors in South Australia, Victoria, and NSW. This provider was singled out because the ARTC access regime had been approved by the ACCC. The ARTC approach is in two parts. Overall, charges are set below full economic costs, and second, ARTC invests in specific track enhancements designed to improve productivity and hence reduce unit costs of track usage to induce a more elastic response from rail users[29]. More recently, the benefits of strategic investment in rail infrastructure has been recognised in the Auslink program which has recognised the neglect of rail transport and the importance of inter-modal facilities. The low base from which rail infrastructure development is proceeding will impede Auslink`s recognition of the need for co-ordinated long term development of Australian land freight transport. Moving to competitive neutrality across different modes of freight transport would facilitate improved adjustment.

5. EXTERNALITIES

The cost of externalities originating from both road and rail freight transport are met by the community at large. Neither mode incorporates the costs of externalities into infrastructure access prices. This is a serious distortion in the path of achieving competitive equilibrium and economic efficiency generally. The degree of distortion may be gauged from Table 1 which summarizes the work undertaken by Port Jackson Partners in 2005.

TABLE 1
ROAD AND RAIL EXTERNALITY COSTS COMPARED TO AVERAGE FREIGHT RATES ($`000nkt)

		ROAD			RAIL		
EXTERNALITY		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
NOISE POLLUTION	RURAL	0.03	0.25	0.50	0.00	0.10	0.20
	METRO	0.06	1.00	1.32	0.04	0.10	0.20
AIR POLLUTION	RURAL	0.00	0.00	0.00	0.00	0.00	0.00
	METRO	1.10	1.15	1.20	0.30	0.15	0.30
GREENHOUSE		1.40	1.55	1.70	0.60	0.90	1.10
CONGESTION	RURAL	0.00	0.40	0.80	0.00	0.00	0.00
ENFORCEMENT	METRO	0.80	0.85	0.90	0.00	0.00	0.00
ACCIDENT COSTS	RURAL	3.20	5.10	7.00	0.24	0.27	0.30
	METRO	3.20	5.10	7.00	0.24	0.27	0.30
TOTAL	RURAL	4.60	7.30	10.00	0.84	1.27	1.60
EXTERNALITY	METRO	6.80	9.30	12.10	0.90	1.40	1.90
AVERAGE FREIGHT COST			61.30			36.10	

Source: Port Jackson Partners, The Future for Freight, 2005 pp74 & 86

In arriving at the estimates of externality costs in Table 1, the Port Jackson Partners reviewed a wide range of earlier studies including by the Bureau of Transport and Resource Economics, NTC, the ARTC Rail Audit, Queensland Transport and the Bus Industry Confederation. A range of additional assumptions and new information was used to establish the range of low, medium and high estimates. The average freight costs shown in the Table are the average costs for road and rail freight across 7 key freight corridors around Australia. The Table is expressed in terms of $`000 per net tonne kilometre. The model used was post merger between ARTC and RIC.

The Table shows that road freight generates externality costs of between 11% and 15% depending on rural or metro area. In comparison, rail freight generates externality costs between 3.5% and 4%. Rural medium estimate externalities for road freight were almost 6 times higher than for rail freight and in the case of metro medium estimates around 6.5 times higher. While recognising that this comparison is relatively crude, it never-the less makes the point that failing to incorporate externality costs is a major factor impeding competitive neutrality.

Engineers Australia believes that sustainability, generally and in freight transport, will not be possible without adequate recognition and incorporation of externality costs.

6. THE FUTURE OF OIL

Much of the discussion about the future of oil is characterised in one of two ways. On the one hand, there is a vigorous debate devoted to the illusory precision of when peak oil will occur. Peak oil is relevant because of the likely impact on oil prices. Second, recent rises in the price of oil have been brushed away as temporary, caused by

specific geo-political events. *Engineers Australia* believes that the price of oil is a key point of vulnerability for the Australian transport system. In the context of a sustainable transport policy the likely future price of oil will be a major determinant of optimal infrastructure investment, as well as influencing the future of vehicle manufacture, and should be a consideration in a review of infrastructure access pricing.

The timing of peak oil is generally agreed to be in about 10 years, give or take a few years[30]. When the peak occurs the supply of oil will continue to be available for some decades. However, the price of oil will rise as it becomes progressively more expensive to extract. Indeed, the price of oil is likely to rise ahead of the peak because the world's oil wells are likely to peak progressively. The approach of peak oil is important because the proportion of individual fields which have peaked will increase putting upward pressure on world oil prices.

In Australia, the main source of domestic crude for the refining of petroleum products is the Gippsland field which peaked around 1986. This field remains in production, but accounts for a dwindling share of Australian production. Peak oil for Australia occurred in about 2002 because the impact of Gippsland peaking was offset by new discoveries in Western Australia. However, most of this oil is exported. Australian demand for oil however continues to rise reflecting this country's transport arrangements. The significance of this situation is that Australia will become increasingly reliant on imports of crude oil. Currently about 75% of Australian crude is sourced domestically, but by 2010 this is likely to be only 40%.[31]

Several implications flow from this.

- The high level of domestic Australian self-sufficiency in petroleum has shielded the country from supply disruptions even though price effects have been felt. Greater dependence on imported oil will not offer this protection.

- Australia, despite being a net exporter of energy, has become a net importer of oil. In 2000-01 net exports of oil were $4269 million in constant 2004-05 prices. By 2004-05 this had changed to a net importation of $8127 million of oil. This is a turn-around of over $12 billion in 4 years.

- The Australian dollar price for oil will become more susceptible to variations in the exchange rate. Recently, the exchange rate has been relatively stable around US$0.72-0.74. As recently as 2004 it was US$0.60. The implications of a fall in Australia's exchange rate are a rising fuel bill.

The arguments that recent high oil prices are temporary are typically pitched against the background of rising demands for oil in China and India. Instability in key oil producing countries becomes magnified resulting in observed price pressures. World agencies are beginning to accept that structural factors have permanently shifted demand upwards and these are not temporary[32]. In combination with the approach of peak oil, particularly in non-OPEC countries real oil prices have been rising since 2000. It is important to recognise that long dated oil futures have remained high indicating little support for the notion of temporary increases in oil prices[33]. Oil intensity has improved dramatically since the oil shocks of the 1970`s. However, the

IMF for one believes that this is a temporary cushion and that the real price rises since 2003 have reduced global GDP by about 1 to 1.5%.[34]

The reform of Australian freight transport policies to date has occurred in relative isolation from broader policy considerations. This has resulted in the growth of road freight and a decline in rail freight transport. Predictions suggest this will continue over the coming decades. Freight adjustment to rising world oil prices is impeded by present infrastructure access regimes. While the economic impact of recent high oil prices has been minimal, there have been vocal reactions from consumers and industry representatives. There have even been suggestions that excise taxes on petroleum fuels be cut to mitigate the impact on consumers generally.[35]

Potential rising oil prices are a strong argument for competitive neutrality in freight transport. According to ABARE energy consumption in road freight will grow by 2.9% per annum through to 2019-20 and increase its share of energy consumption from 27.3% to 30.6%, most of it being consumption of petroleum. In contrast, energy consumption by rail is expected to increase by 0.7% per annum and its share of energy consumption is expected to decline from 2.4% to 1.7%. Energy consumption by road freight in 2019-20 is expected to be 610.4 PJ compared to 34.4 PJ by rail. These figures illustrate the scope for higher oil prices adversely impacting the Australian economy, primarily through secondary increases in freight transport.

There remains uncertainty about the extent and timing of oil price rises. What is clear is that recent increases are not the end of the story. Transport infrastructure is long lived and while funding infrastructure is not hypothecated to revenue raised through pricing regimes, investment decisions are strongly influenced by inter-modal competition. *Engineers Australia* believes the most appropriate response of policy in these circumstances is establishing competitive neutrality between transport modes combined with explicit recognition by government that rising oil prices will become critical in shaping the future of freight transport in Australia. This would more adequately guide adjustment to problems associated with rising oil prices as well as the benefits normally associated with improved competition.

7. CLIMATE CHANGE

Greenhouse gas emissions from the transport sector are well documented by the Bureau of Transport and Regional Economics.[36] The transport sector (of which freight is part) is expected to account for 21.7% of the greenhouse gas emissions from the energy sector in 2010 and some 11.4% of the emissions from the economy as a whole. Road freight emissions are expected to grow by 51.0% to 2010 and by 84.0% by 2020. In contrast greenhouse gas emissions from non-electric rail are expected to grow by 25.6% and 52.3% respectively in the corresponding periods. In making these comparisons it is important to note that road freight accounts for about 30% of transport emissions while rail accounts for about 2.5%. Several abatement policies are in place and include the following:

- Compressed Natural Gas Infrastructure Program.
- Alternative Fuels Conversion Program.

- Environmental Strategy for the Motor Vehicle Industry.

- Diesel and Alternative Fuels Grants Scheme.

The BTRE incorporated these measures into its emissions projections and the results show that overall transport emissions fall to 43.1% above 1990 levels compared to 46.5% without measures. Similarly for the period to 2020, with measures emissions are expected to grow by 58.8% compared to 67.9%. The key observation to make is that there is no perceptible change in the road transport or non-electric rail projections with measures. In other words, the measures listed above can be expected to lead to greenhouse gas reductions in transport elements other than the two key modes of land transport.[37]

On 10 February 2006, COAG agreed to a revitalised collaborative action plan on climate change[38]. The plan recognised the need to "achieve significant reductions" in greenhouse gas emissions as part of a developing international abatement effort. This is a highly significant agreement in the context of past debates in this area. While the plan is still in its early stages it clearly recognises the need to include freight transport and COAG has asked the Australian Transport Council to pursue fuel reduction and conservation options[39]. International agreement will take some years to achieve but it is important to note that early discussions refer to emission reductions in the order of 50-60%. Consider the possibility that by 2010 international agreement is achieved to limit emissions in 2020 to 50% of 2010 levels. In the transport sector this would mean halving expected 2010 emissions (97 Mt CO2-e) by 2020. Currently the sector is expected to produce emissions of 115 Mt CO2-e. In other words, a 68% reduction would be needed.

The broad implication of greenhouse gas abatement policies for freight transport are cost rises in proportion to emissions produced. This further highlights the importance for Australian freight transport to be in a position to deal with the necessary adjustments. Table 1 provides an indication of the order of magnitude associated with present day views on greenhouse gas abatement policies as well as an indication of the relationship between road and rail freight modes. The larger scale changes suggested in international discussions would see these effects increase markedly. *Engineers Australia* believes that the best way forward is a policy of competitive neutrality accompanied by explicit recognition by government that climate change mitigation policies will be important future influences on the direction of Australian freight transport.

8. APPROACH TO CHANGE

In 1999 *Engineers Australia* set out its vision for a sustainable transport policy[40]. With the passage of time this has increased in relevance as a result of the issues discussed in this submission. *Engineers Australia's* vision for change includes:

- The total transport task being increasingly based on sustainable (non-polluting, non-depleting) energy sources and their enabling technologies.

- The need to reduce the growth in total transport demand in passenger and freight tasks, where levels of growth are unsustainable.

- Infrastructure investments, transport technologies and modal options that can service transport requirements in as least carbon and pollutant intensive a manner as possible.

- Evaluation of all transport infrastructure investments and industry development strategies based on a total life-cycle assessment, incorporating full economic, energy and other resource impacts across the capital and operational life cycle of the proposed project.

The rationale for change is compelling and includes:[41]

- Improving economic and environmental efficiencies.

- The need to counter escalating congestion costs and levels of anxiety.

- Redress the current lack of transparency in the pricing of transport facilities and services.

- Addressing the pending resource scarcity and the ethics of resource conservation.

- To reduce escalating greenhouse emissions and emissions of other pollutants.

- To improve the sustainability of financial mechanisms necessary to meet the capital and maintenance cost requirements of infrastructure.

- To reduce the deleterious health and environmental impacts of current patterns of energy consumption.

A key step towards this vision for change is the adoption at national level of a sustainable transport policy which includes the elements articulated above. The first strategy for implementation within this framework should be competitive neutrality between transport modes. In a speech in 2003 Greg Bourne the Regional President BP Australasia[42] differentiated between an incremental approach to change in which deficiencies in current policies are dealt with reactively and a step change approach which envisages wholesale changes in systems, technologies and regulatory frameworks.

Engineers Australia is pressing for incremental change, but set against the backdrop of a clearly articulated vision statement describing the ultimate objective of policy in a way which does not avoid major change where needed. Incremental change alone risks repeating the past in which there has been little cohesion between policies which apply to competing modes of transport. The issues of oil and climate change, in particular, have the potential for radical change. Coping with these by being relatively prepared is an option preferable to facing reactive change on the back foot.

Engineers Australia believes that moving to competitive neutrality between freight modes is an essential first step. Competitive neutrality must be the preferred basis for rebalancing modal freight shares, particularly in respect of long haulage freight. Competitive neutrality is also the preferred basis for dealing with oil price and supply issues in the future. The same argument applies to reducing greenhouse emissions from road transport. While a simple concept, policy consistency between different sectors of the economy will go a long way towards dealing with these difficult and unavoidable issues.

The Auslink Green Paper raised the possibility of congestion charging in major cities and mass distance charging for heavy road vehicles. While there is some interest in the former, mainly in Victoria, mass distance charging has been a classic example of "circling the wagons;" there has been a lot of discussion but little action. The discussion in this submission shows that there are serious flaws in the present system of road infrastructure pricing. The claim that road transport fully meets its share of road costs depends on mainly arbitrary assumptions which are not supported by "engineering" concepts as understood by *Engineers Australia*. Dealing with these issues as part of an incremental approach will move freight arrangements towards competitive neutrality and address a serious source of externalities.

9. ENDNOTES

[1] Sustainable Transport, Responding to the Challenges, The Institution of Engineers, Australia, 1999
[2] Engineers Australia, 2005 Australian Infrastructure Report Card, Canberra, 2005 and 2001 Australian Infrastructure Report Card. There are also State and Territory Infrastructure Report Cards for various years.
[3] D Kilsby, P Laird and D Bowers, Australian Transport Infrastructure: Fit for Purpose? 27th Australasian Transport Research Forum, Adelaide, 29 September 2004
[4] Board of Inquiry of the Victorian Land Transport System, 1972, Chairman Sir Henry Bland
[5] Report of the Commission of Enquiry into the New South Wales Road Freight Industry, G McDonell, Chair, Government Printer, Sydney, 1980
[6] Bureau of Transport Economics, Cost Recovery in Australian Transport, 1974-75, Canberra 1977
[7] See for example National Road Freight Industry Inquiry Report, AGPS, Canberra, 1984: the various reports of the Inter-State Commission: Cost Recovery Arrangements for Interstate Land Transport, 1986; A Review of Federal Registration Charges for Interstate Vehicles, 1987, Road use Charges and Vehicle Registration, a National Scheme, 1990 and National Transport Planning Task Force, Building for the Job, AGPS, Canberra, 1994 and many others.
[8] Industry Commission, Rail Transport Inquiry Final Report, 1991, Annual Report, 1992, and The Growth and Revenue Implications of Hilmer and Related Reforms, 1995, in particular p347, AGPS, Canberra.
[9] Productivity Commission, Review of National Competition Policy Reforms, Inquiry Report No 33, February 2005
[10] Op cit, p9
[11] National Transport Commission (NTC), Third Heavy Road Pricing Determination Technical Report, Melbourne, October 2005
[12] NTC, op cit, p2
[13] Bureau of Transport and Regional Economics, Land Transport Infrastructure Pricing, An Introduction, Working Paper No 57, Canberra2004, p3
[14] NTC, op cit, p8
[15] NTC, op cit, p13
[16] NTC, op cit, p15
[17] NTC, op cit, p35
[18] NTC, op cit, p30
[19] NTC, op cit, p32
[20] NTC, op cit, p35
[21] See for example P Laird and F Lander, Land Freight Subsidies in Australia, Australian Transport Research Forum, Vol 21, Part 1, 1997, pp420-435; Railway Technical Society of Australasia, Submission to the National Transport Commission Inquiry, 2004 and Port Jackson Partners, Reforming and Restoring Australia`s Infrastructure, prepared for the Business Council of Australia, March 2005.
[22] NTC, op cit, p69
[23] See the chart on p38 of Port Jackson Partners, op cit, taken from the BTRE study of competitive neutrality between road and rail.
[24] Port Jackson Partners, op cit, p39
[25] BTRE, op cit,p16
[26] Port Jackson Partners, op cit, p41
[27] Productivity Commission, op cit, p217
[28] BTRE, Predicting Traffic Growth in Australian Cities, 2004 and Port Jackson Partners, p30
[29] BTRE, Land Transport etc, op cit, p17
[30] Engineers Australia, Australia's Future Transport Fuel Options, Submission to the Senate Rural and Regional Affairs and Transport Committee, February 2006
[31] Op cit, pp7-9
[32] Op cit, pp6-7
[33] IMF, World Economic Outlook September 2005, p62
[34] Op cit, p65
[35] See the press releases from the NRMA IN September 2005 and the press releases accompanying the release of the Westpac Index of Consumer Sentiment in July and September 2005
[36] BTRE, Greenhouse Gas Emissions from Transport, Australian Trends to 2020, Report No 107, 2002
[37] Australian Greenhouse Office, Transport Sector Greenhouse Gas Emissions Projections, 2004, Department of Environment and Heritage, pii and BTRE, op cit, p8 and p72
[38] COAG, Plan for Collaborative Action on Climate Change, 10 February 2006

[39] Op cit, p5
[40] Engineers Australia, op cit, p6
[41] Engineers Australia, op cit, p7
[42] Greg Bourne, Sustainable Transport Speech, Moving Beyond Oil, 21 February 2003