Submission to the

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Road and Rail Freight Infrastructure Pricing Inquiry

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Abstract

This submission provides a response to many of the questions and issues raised in the Productivity Commission's Inquiry into Road and Rail Freight Infrastructure Pricing. The discussion in this response highlights the factors impacting on the success of being able to price efficiently to achieve a determined objective. In addition to the complications associated with determining and attaching accurate values, there is the political perspective of pricing that too often directs whether more efficient pricing measures are introduced in many countries.

1 Full Economic and Social Costs of Road and Rail Freight

Congestion is probably the externality most conscious in our minds as we all experience it in our daily lives. Congestion is also an externality, which unlike others, can more easily be valued and therefore be factored into any new pricing system.

While all vehicles using road infrastructure contribute to congestion, its affects are borne by more than the motorists that use the roads. For example, the immediate effects (such as visual, noise and air pollution) are experienced by urban dwellers who may not use the road system.

Some of the costs of congestion are greater for some motorists than others, particularly those that have a higher value of time.

The impacts of congestion also vary according to vehicle age, vehicle emissions rating, vehicle suspension systems, mass per axle, time of day.

Congestion costs tend to be internalised by motorists in the cost of their trip. The indirect method of pricing can skew supply and demand for the service. For example, the freight forwarder does not price one city different to another, even though, the cost of congestion may be greater in one than the other. This results in cross-subsidisation of services and as such, possibly a false belief of their profitability for a given product/service due to the lack of information.

2 Options for Pricing Reform

Consistency may also be thought of in terms of outcomes. Given the differences in the nature of the investment, nature of demand, source of demand, it may not be consistent to apply these principles to both modes.

The story differs for freight forwarders and private road users, as road pavement quality is determined by heavy vehicles, as the impact of most passenger vehicles is marginal at

best. It may be that passenger vehicles cross-subsidise heavy vehicles for the cost of the pavement damage. Thus heavy vehicles unlikely pay 100 per cent of the damage they cause to road pavements.

Pricing roads at short run marginal costs (SRMC) will only recover the maintenance, very little, if at all, is recouped for capital costs, costs of congestion and externalities. A disconnect exists between what motorists pay and the expenditure in road infrastructure. In aggregate terms, motorists may pay the cost of their use, however, without more accurate measures of externalities, especially congestion, it is difficult to argue.

Pricing at long run marginal costs (LRMC) will more effectively capture all costs, including capital costs, or at least make some contribution towards these. Prices charged to reflect all costs would need to reflect distance travelled vehicle type, age, emission rating, route, road type and location, tie of day, mass, mass per axle, which means in congested areas that vehicles incur a congestion charge. An environmental charge could also be incurred reflecting the cost of pollution (noise, visual and air) typically associated with urban traffic and roads that attract considerable stop-start driving.

A key problem with current heavy vehicle charges is that they reflect average costs, which means that on average these users pay their way. However, in reality, some motorists with marginal use pay more than their share of the costs, thereby cross-subsidising high use motorists, who under pay for their use.

Freight vehicles should pay the costs they impose on the network. Subsidising the inputs they use in their activities, such as fuel, leads to an inefficient allocation of resources, skewing demand away from more efficient activities, possibly rail.

If fuel subsidies are paid, they need to be consistent across all modes. Although for efficiency, subsidies should be reviewed and other policy options considered, such as a direct charge to freight forwarders per kilometre of travel, with different prices based on a range of variable as listed above.

Variations to the current road pricing model – an inefficient form of two-part pricing, would be band-aid measures at best. The key efficiency gains will arise by reforming the current pricing system. The current indirect form of pricing is based on a pre-payment, delayed consumption model, where payment is made prior to use – a model common to the retail industry. The pricing regime more common to utilities is the post-payment, consumption model, as seen with the consumption of gas, electricity, telecommunications and electronic tolling accounts.

If more efficient prices were charged to road and rail users, it may be that the current demand for road use by freight forwarders would skew away from road to rail freight. This suggested decline in demand for road use would have a direct impact on the cost of road infrastructure.

The move to a direct user pays model would result in motorists paying for their road use post-consumption, as they do with their mobile phones. A direct user pays system has many advantages over an indirect system, namely, it can differentiate prices according to; inter alia, time of day, vehicle and road type and location. This process would more effectively inform the user of the cost of their use, rating it a more valuable tool to affect change existing inefficient driver behaviours. Other factors affecting road infrastructure costs also includes mass per axle, the number of axles and vehicle's suspension systems.

The permitted weight o heavy vehicles will also impact on road infrastructure costs, as the permitted loads rise, so does the need to increase maintenance or the standard of the road pavement.

Road pavement damage can be determined by the impact the vehicle has on road. Given that pavement thickness and strength of most roads is determined by heavy vehicles, it is fair to associate most road damage to these vehicles and weather, not passenger cars.
If heavy vehicles use local roads, which are not generally designed for high heavy vehicle use, the damage they cause will obviously increase significantly, which is another reason why a new pricing system needs to price local roads differently.

Obviously, if the direct charge exceeds current user costs, it may have an impact on prices, causing an inflationary impact. Moreover, to achieve full cost recovery, the pricing system will need to price in all externalities, which may result in too high a price and having inflationary impacts.

A pricing regime based on short run marginal cost (SRMC) will only be effective in achieving cost recovery for the maintenance and other variable costs of infrastructure. Therefore, a more effective approach would be to price at long run marginal cost (LRMC), as in the long run all factors are variable. In which case, LRMC pricing would recover a proportion of fixed costs of the infrastructure.

It would not be unreasonable to charge motorists an 'access' charge, similar, but more efficient a charge than current registration fees, to recover some of the capital costs – as is the practice of telecoms. However, for the charge to be efficient, it would need to reflect the individual motorist's use of the network, such that cross-subsidisation did not occur. Such a charge could be based on motorists travel during a previous period. It would not only be inefficient to do otherwise, it would also be inequitable. That is, by averaging charges, the low use motorists cross-subsidise the high use motorists.

Under an efficient pricing system, urban road users would pay more than rural based users, given the greater value of land, the stronger existence of congestion and other externalities that are more evident in urban areas. Maybe public transport would become a better option to lower income groups where the more efficient user charge discouraged their use. With such a pricing system, road use revenue collected would reflect road use.

To achieve an efficient use of road and rail freight infrastructure, price needs to reflect the cost of the utilisation of this infrastructure. For example, if road freighters contribute to congestion, they should contribute to the cost they impose. If they emit emissions, they should pay a charge relative to the environmental rating of the vehicle (based on the year of the vehicle, emissions technology of the vehicle and the vehicle's listed output of emissions particulates).

3 Bulking CTP with Registration – a case for Reform

An area for reform relates to the inclusion of compulsory third party (CTP) insurance charges in registration charges, when the two factors do not relate. CTP should be separate and a more transparent cost to motorists. Ideally, CTP should be a component of every motorist's insurance policy, which would encourage competition between insurance providers and reduce duplication in costs being paid by motorists.

Including CTP with registration fees only discourages competition, forcing motorists to pay excess premiums for something they pay direct to insurance companies in their policies. The removal of CTP from registration fees would also attract less criticism of government's registration fees as motorists would realise that the CTP charge is greater than the registration charge.

4 Impact of Efficient Prices

While efficient charging may have a negative impact on the road freight industry, one could argue that because the road freight industry has been underpaying for its use of the network for so long, it has artificially attracted new entrants into that market, resulting in an oversupply of road freighters. Establishing efficient prices will restructure road and rail freight supply. One that is based on more accurate information and result in a more efficient service. This in turn will provide important information for future investment in road and rail freight infrastructure.

The inclusion of externalities will encourage more efficient use of the infrastructure, which will likely result in the abatement of some externalities. Even if abatement is marginal, revenue will be raised, which could be invested to address their abatement of externalities associated with road and rail freight infrastructure.

To be efficient, all vehicles, not just heavy vehicles, should be charged for the costs of congestion, since they all contribute to its existence. If in the short term it is politically unacceptable to impose congestion charges on passenger vehicles, it should be phased in

over time. Since, unlike road pavement damage where heavy vehicles are primarily responsible, passenger vehicles, because of their dominance, are the greatest contributors to congestion and other externalities, such as pollution.

The key impacts of efficient pricing include a change in:

- the demand for road and rail freight;
- the supply of road and rail infrastructure;
- the mix of road and rail freight providers;
- the price of goods via road and rail freight;
- the distribution of labour and other resources utilised in road and rail freight.

Moreover, where two modes operate on the same route, a change in the market share of each mode is likely. Further, efficient prices may attract competing modes, where a particular route offers only a single mode to carry freight.

The establishment of efficient pricing in road use will lead to a change in the nature of road use by freight forwarders, as the greater costs associated with congestion during business hours, particularly in peak and shoulder periods, will likely divert use to off peak, lower use periods. Moreover, heavy vehicles should be discouraged from using local roads, by charging a premium for their use, which should deliver:
a reduction in the demand for local roads, thereby increasing the safety and improving the environment in local communities;

- a reduction of demand away from road to rail;
- a reduction in the cost of maintenance away from roads to rail;
- a change in the road use habits of road users;
- a reduction of investment funds out of roads and into rail.

While the current heavy vehicle charging system may achieve cost recovery in aggregate, some users are overcharged, while others under pay for their use of the road network. As a result, roads are used inefficiently, thereby encouraging further inefficient investment.

Efficient prices could impact on the profitability of firms, so some firms may leave the market, possibly for the rail network. Where road freight firms are confronted with higher costs, they will attempt to pass on as much of these to consumers. However, this will depend on the demand elasticities of consumers. Any costs that are passed onto freight customers, in the form of increased road freight costs, will erase the competitiveness of road freight compared to rail. It could also lead to an increase in the price of the goods freighted.

5 The Impact of higher prices on market structures

In a perfectly competitive market, firms enter a particular industry where there is an attractive rate of return. However, once firms become price takers, firms will tend only to earn a normal profit in the market for road and rail freight. Moreover, because of government intervention (diesel fuel rebates, fuel subsidies, investment bias), firms have been artificially attracted to the road freight business at the cost of greater interest in rail.

As with any other market, firms enter a market while it is commercially viable to do so. If the incumbent is competing at below marginal cost and incentives are reduced or removed (such as with diesel fuel rebates), road freight prices may rise. However if the incumbent firms are efficient enough to compete in the long term at current prices, there maybe be little change to prices.

6 Implementation

To be more palatable by the community, it may be most effective to introduce efficient pricing incrementally; using a well planned marketing campaign. To first gain public support, introducing a new system of direct pricing to heavy vehicles may be more successful in the short term. However, in order to provide the most effective signals for future road investment, the full implementation of a broad pricing system in the medium term should be the objective. In addition, as positive results arise from the introduction of heavy vehicle pricing, these should be incorporated into the marketing campaign for a broad pricing system to accelerate or assess possible support for its introduction.

The need for institutional change is great. The fact that there is more than one department responsible for infrastructure investment can result in numerous inefficiencies.

7 Institutional Inefficiencies

For a transport system to be effective and efficient, it would be a necessary condition that all modes (public and private) work in an integrated, well functioning and unimpeded fashion. This assumes the price of each mode reflects an efficient allocation of resources and that the system will be economically sustainable into the future. It is therefore essential to incorporate both public transport and roads into a strategic, long term solution under an integrated administrative system. Compared to the current situation, where each agency tends to work in isolation of one another, resulting in miscoordination and inefficiency.

Main Roads is responsible for the state roads system, many of which fall within the responsibility of the Brisbane City Council. While it may be assumed that the two entities would ensure coordination of road investment activities, they operate quite isolated from one another. This disconnect between agencies, which provide similar activities, is an indicator of inefficiency. In fact, the present institutional structure in Brisbane will tend to increase the existence of information asymmetries and externalities.

Institutional impediments are cited as one of the key obstacles obstructing the effectiveness of transport systems. The numerous bodies that influence transport decisions add complexity to the task of providing an optimal transport system. With two government departments responsible for Brisbane's transport arrangements, each with different objectives, we find they often work in a compartmentalised and isolated fashion, reducing the benefit of their joint efforts.

With the 'disconnect' of activities between the different transport providers, decision makers have struggled to improve the cohesiveness and coordination of both public and

private modes. Each authority largely exists in isolation of the other, with the objective of satisfying their agendas. Proponents for public transport tend to chant the 'roads are bad' theme, while those with the roads bent argue that 'public transport is bad' and that roads are the most effective solution to transport. Even if the different levels and areas of government responsible worked together to coordinate an optimal transport system, there would still be various other constraints associated with shifting patronage away from private to public transport.

The current institutional arrangements governing Brisbane's urban transport network are ineffective and inefficient, highlighting the need for institutional reform. With different government departments having responsibility for different modes of transport, their ability to optimise decisions is diminished as a result of conflicting agendas. Each agency is so self-centred on its own activities that any attempt to coordinate efforts laterally for the greater benefit of the public is diminished. Each agency's financial position and political appearance take precedence over the efficiency and coordination of their broader responsibilities to residents.

Institutional barriers and failures highlight the substantial benefits that could emerge from a single, fully-integrated transport authority with the responsibility over road and public transport modes (Duhs and Beggs 1977). There would be more value in having a single authority coordinate transport needs through the development of a single urban transport plan. This plan should be *realistic* in what it states, as 'pie in the sky' euphoric wish lists do little more than raise theoretical discussion and unnecessarily raise community expectations.

The lack of planning and coordination across transport agencies is concerning, although, it is more troubling when it occurs internally within an agency. While the establishment of TransLink indicates some foresight in transport planning, it falls short of the broader urban transport picture. Brisbane residents rightfully deserve integrated public transport. More broadly however, they require a more efficient and effective transport system, one that incorporates private and public transport. To study one without the other would be

myopic and lead to a transport system as disjointed and uncoordinated, like that provided in Brisbane.

A lack of coordination continues to exist between the statutory bodies responsible for Brisbane's urban transport system. These comprise Main Roads, Queensland Transport, Queensland Rail and Brisbane City Council and numerous private bus and taxi companies. Until a single, fully integrated transport authority exists, resources will continue to be wasted on the objectives of the individual agency rather than that of the whole. Not until a single authority exists, encapsulating all elements of urban transport, will the travelling public experience functional and efficient transport.

8 Externalities - non-priced effects

The existence of market failure in urban transport is demonstrated by the presence of unpriced externalities. Economic efficiency is achieved when the marginal private benefit (MB) per dollar of expenditure equals the marginal social cost (MC). However, if MB>MC, society would benefit from an increase in production of that good or service. However, if MB<MC, society would benefit from a decrease in that production to the point where MB=MC.

Unpriced externalities exist when the actions of an individual or firm imposes a cost on others without providing them with any direct form of compensation. The existence of unpriced negative externalities suggests an inefficient allocation of resources in the market. Where individuals or firms are not confronted with the full costs of their activities, they tend to be undertaken excessively. One may argue this to be the case with road use. Therefore, without government intervention, congestion and pollution levels may exceed socially optimum levels.

Congestion is one commonly cited example of an unpriced negative effect in urban transport, where additional users of a road, at some point impose a cost (reduced speed, increased travel time and the increased probability of an accident) on those users already on the road.

Although an additional user of a congested road imposes costs on other users, it does not suggest these costs are not considered, simply because the other drivers are not compensated directly. It may be that the affected motorists already internalise this cost in their decision to travel.

Recognising externalities as costs, the Singapore government introduced a manual cordon tolling system in 1978, revising this with an electronic system in 1998. The toll varies by time of day to reflect the higher resource value during peak demand periods. A similar scheme was introduced in London in February 2003, although this scheme charges a non-variable fee per entry into the London city area. Similar mechanisms could be used in Australia; however, these have not yet received political support. At most, state governments have undertaken research or engaged consultants to investigate the applicability of such intervention.

Externalities such as air and noise pollution should be considered when different modes of transport are being compared on efficiency grounds. During congested periods, on a per capita basis, single occupancy vehicles, as a group, emit considerably more pollutants than a bus or train. In addition, Kolsen and Docwra (1992) state that lower population density cities, such as Australia, produce lower proportions of pollutants than cities in Europe, the US and Japan. Therefore, care is needed when attempting to transfer data from these countries as its relevance in the Australian context may be substantially overstated.

The above discussion on externalities has been consistent with its treatment in the literature. However, the literature tends to offer a limited discussion on the positive externalities of urban transport. One could argue that the positive externalities of urban transport sufficiently exceed the negative externalities, especially if we consider the pecuniary effects it provides.

An analysis of real estate values before and after transport infrastructure services demonstrates another dimension of the positive externality that follows new or improved

urban transport services. This is a benefit that is often inherited by property developers and the like, not the providers of the infrastructure or service.

The Brisbane City Council and land developers may capture these positive externalities in their decision to provide a bus service to a new area. The increase in accessibility to the area would increase its attractiveness and raise land prices in the area, thereby benefiting the developers and residents through capital gains and the BCC through growth in rates revenue.

9 Pricing Theory

9.1.1 First Best Pricing

In an economy, where all markets are perfectly competitive, the optimal or efficient price is equal to the short run marginal cost (SRMC) of each additional unit produced. With respect to public transport and roads, SRMC pricing would only recover the variable costs, such as service provision (labour, fuel), maintenance, rehabilitation and externality costs. It most circumstances, they make little or no contribution to the large capital costs of road and rail infrastructure or the investment in rolling stock and bus fleets. However, it could be possible to recover some or all of the capital costs of highly congested roads through employing efficient pricing techniques.

Capital investments in road and rail infrastructure are defined as 'lumpy' investments. This is because the large capital outlays they command restrict them from being constructed efficiently or effectively in parts, the whole road or rail link would need to be built in succession. Therefore, an efficient price for road or rail use equals its social MC plus some contribution towards the capital costs. While in practice, there is no pricing mechanism in passenger rail that reflects a contribution to its capital costs, registration fees may be viewed as a contribution to the capital costs of roads.

9.1.2 Problems with First Best Pricing

In reality, the `transport market is riddled with distortions. There are institutional law or other constraints that impede their removal, in which case SRMC pricing may not be the most efficient mechanism. Where two or more related products exist in the market and MC pricing is not achievable, it may be more efficient to set prices so that demand in each market is closer to the level that would occur if prices were equal to marginal cost everywhere (King and Maddock 1996).

An exception to the rule of first-best pricing is when one of two substitutes is priced differently to SRMC. For example, to price one good (rail) at SRMC while a close substitute (road) is priced below SRMC, would lead to an inefficient transfer of demand from rail to road, ceteris paribus. For government to improve this failure, the second-best solution would be to price rail below its SRMC, similarly to road (BTE 1999, King and Maddock 1996).

Public transport providers price below SRMC, not because they believe it is an efficient price, but because government regulates public transport prices below SRMC levels. The Queensland Government has various community social obligations (CSOs), which results in it obtaining cost recovery levels far below 100 per cent.

When perfect competition is not possible or desirable, price regulation may be the only possible solution to restrain an enterprise from abusing its monopoly power. Even though regulation may be an ineffective instrument at times, it may be more effective than no regulation at all. King and Maddock (1996) suggest the optimal level of regulation could be determined by the point where the failure that results from this activity is less than the market failure that existed without it.

The major impedance to effective regulation is the problem of asymmetric information and the existence of externalities. In most cases, the regulator is placed at a disadvantage as it is unaware of a given firm's marginal cost, or whether a manager is taking reasonable steps to minimise costs.

The problem of asymmetric information and externalities may be overcome by sourcing the information from other producers in other states or countries. If the regulator can access another firm's cost structure it may be possible to compare the operating costs of a public transport provider or road supplier in Queensland with one corresponding in NSW or Victoria for example. This information may be useful to the regulator to pressure the local monopolist to be as competitive as its peer producers, ceteris paribus. For example, a regulator could require Main Roads to operate under a similar structure to the RTA or VicRoads to determine the efficiency of its operations.

Conversely, being cognisant that their market power may be constrained, a manager of an enterprise has little incentive to report adequate and correct information. Therefore, where the regulator is constrained from being able to apply the first-best pricing rule (price equals marginal cost), in a context of uncertainty and constrained optimisation, the regulator will determine second-best prices.

9.1.3 Pricing at Second Best

It has been demonstrated that urban transport does not replicate a perfectly competitive market and as such pricing at marginal cost (first-best) would result in an inefficient allocation of resources in this market. For example, it would be inefficient to price urban transport at marginal cost when prices in the rest of the economy deviate from this.

There are a number of institutional and regulatory constraints in urban transport, such as taxes and subsidies that prevents the attainment of first-best pricing policies. Taxes and subsidies can distort the allocation of resources, particularly when they are applied unequally to goods that are substitutes. For example, if there is substitutability between public transport and private vehicles at the margin, and quantity demanded is largely influenced by price, then unequal taxation or subsidisation or the taxing of one and subsidisation of another creates inefficient resource allocation. In the absence of externalities, the second-best solution would be to require that goods with high substitutability have equal MC/price ratios (Kolsen 1979).

In urban transport, taxes relating to sales, GST, registration and excise apply to the purchase and use of private vehicles is inefficient and mostly indirect. This tax revenue is pooled into consolidated revenue without relation from where it was sourced. In addition, the Queensland Government provides a fuel subsidy to the fuel retailers in Queensland from the GST revenue it receives from fuel sales.

Pricing in public transport is based on a fare per trip (below 100 per cent cost recovery) and a subsidy is provided for the difference between the fare revenue and the operational costs. In considering the cost of public funds with regards to subsidies, there are less distortionary impacts from a tax on road use, than a subsidy on public transport provision and fuel. That is, a tax on use frees public funds for more effective purposes.

In both circumstances, second and third-best prices are determined by federal and state governments. It can be shown that a payment of a subsidy (to fuel and public transport) is the most inefficient. According to Kolsen (1979), the application of a tax on private vehicle use and a subsidy on public transport provision, distorts the demand between these two substitutes. The resulting inefficient allocation of resources could be offset with a second-best price solution if these two goods have equal MC-price ratios.

In addition, one should consider the positive effects that subsidised fares could have on the costs of road construction and congestion. It may be worth increasing the public transport deficit if it could be offset with a reduction in roads expenditure, congestion and parking space requirements in the future.