INFRASTRUCTURE AUSTRALIA

DISCUSSION PAPER ON

AUSTRALIA'S FUTURE INFRASTRUCTURE REQUIREMENTS

QR LIMITED

SUBMISSION

October 2008

The views expressed in this submission are those of QR Limited and are not represented as the views of the Queensland Government. The Government's views are expressed in a separate submission to Infrastructure Australia.

Introduction

QR Limited (QR) welcomes Infrastructure Australia's discussion paper on Australia's future infrastructure requirements. The focus of this submission is freight railway investment where government investment and facilitation is necessary to unlock productivity improvements. QR also has pressing investment issues facing its passenger networks in South-East Queensland. These issues are addressed in the Queensland Government's submission.

In this submission, QR identifies several medium term projects that, if supported by Infrastructure Australia and the Building Australia Fund, will: increase the welfare of the nation by boosting transport productivity; address market failures for which there is no obvious correcting policy; contribute to the liveability of our cities; and reduce Australia's carbon footprint.

Significant investment and (in some cases) policy changes are required, but QR believes that a full triple-line assessment will show that the potential economic, environmental and societal benefits more than justify this commitment.

The remainder of this submission is structured as follows:

- Section 1 articulates a National Intermodal Vision for consideration by Infrastructure Australia;
- Section 2 identifies QR's assessment of the problems and their impacts;
- Section 3 considers the sources of the problems;
- Section 4 discusses some options for addressing the problems; and
- Section 5 summarises our recommendations and provides an initial evaluation against Infrastructure Australia's criteria.

1 A National Intermodal Vision

There is widespread agreement that Australia's national general freight rail network has been significantly underfunded over the last 30 years. The exception has been the East-West corridor, underpinned by the Keating Government's *One Nation* infrastructure funding in the 1990s, which has now seen rail take a dominant share of the land transport market. The story on the East Coast is quite different, where investment neglect has led to steady erosion in share and relevance for rail. Infrastructure Australia is faced with a central question – is this a problem?

On Australia's East Coast the infrastructure legacies for rail are more significant than they were in tackling the corridor to Perth. In addition to the need to upgrade track and address capacity bottlenecks, there are also height and width obstacles to overcome, and issues holding back performance at existing, sub-optimal terminals. However, it should be remembered that these legacies are no more daunting that those that faced the visionaries who planned Australia's national highway network. Until 1966, there were still unsealed sections of the main road route from Melbourne to Sydney. Yet in the period since then, there has been consistent capital investment to create a highly efficient highway system connecting Australia's capitals, which has spurred comprehensive complementary investment from road freight operators.

This virtuous road investment cycle, and the parallel neglect of rail, has created a one-mode option for many freight customers on the East Coast. A 70 percent rail market share of the Melbourne-Sydney general freight market in the 1970s has now dwindled to single figures. Even a natural rail corridor like Melbourne to Brisbane is dominated by road. Faced with effectively the one choice, customers are wedding themselves to the road network by siting distribution centres close to highways and creating other supply chain linkages. With each of these decisions, the performance gap between road and rail widens.

To many economists, this may look like a market working efficiently, despite the perennial questions surrounding competitive neutrality between road and rail. In recent years, however, it has become clear that the one-mode transport option on the East Coast will not be sustainable. Key to the change in dynamic has been:

- The escalating costs of congestion in and around major cities;
- Australia's obligations in fighting climate change (rail is three times more greenhouse-friendly than road);
- The chronic shortage of truck drivers;

- The continuing growth in general freight movements (which have consistently grown at rates well above GDP); and
- The increasing calls from customers for real modal choice (major retailers have added their voices to the chorus of support for new rail projects like the Melbourne-Brisbane Inland Rail).

QR believes that Infrastructure Australia should consider embracing a National Intermodal Vision to establish world class freight infrastructure for each of our major transport corridors. The long-term goal should be to create a world class national general freight rail system, complementing our world class national highway system.

Components could include:

- The national general freight rail network (Townsville to Perth) upgraded to allow full running of a minimum of 1500m trains initially with 2000m as the long term goal.
- The national general freight rail network (Townsville to Perth) upgraded so that all major corridors have a reliable transit time equivalent to the alternative road transit time.
- The national general freight rail network upgraded to facilitate double-stack container operations and consistency with world rollingstock outline standards on all major capital city corridors.
- The national general freight rail network enhanced by the creation and consolidation of major intermodal terminals that:
    1. provide for the next 50 years of growth;
    2. enhance competition;
    3. allow efficient compilation of long trains; and
    4. attract ancillary services and customer warehousing.

In this submission, we propose the first key elements along the path to this vision.

Specifically, we believe Infrastructure Australia should support:

- The Northern Sydney Freight Works;
- Metropolitan Brisbane rail upgrades (including the Inner City Rail Capacity project);
- Terminal developments in Sydney, Melbourne and Brisbane;

- Infrastructure upgrade to allow "double-stacking" on more routes;
- Infrastructure upgrade to suit overseas "off-the-shelf" locomotives;
- Infrastructure upgrade to allow longer trains Brisbane-Townsville; and
- A new approach to long-term planning based on:
  - Inter-modal planning with long horizons (in excess of 50 years) rather than piece-meal and transport mode or corridor specific plans;
  - Integration of an 'inter-modal' approach throughout planning processes (urban, port, rail, road, capital budgeting);
  - Recognition of carbon, urban and congestion externalities in planning, investment and pricing; and
  - Clear account taken of the effects of policies which inefficiently distort competition between transport modes.

2 The problems and their impacts

2.1 Productivity

The rail industry is a capital intensive industry and, while recognising that there will continue to be important gains from incremental reforms to regulatory regimes and the operations of rail businesses, major productivity improvements will only come with major investment in infrastructure. We believe that performance in this decade justifies reforms and investments that go well beyond incremental improvements.

The lessons of previous productivity step changes in rail are clear. To be effective, a plan must involve all parties in the supply chain. Infrastructure upgrades can only deliver productivity benefits if they unleash incentives for complementary investments by operators and customers.

2.2 Urban bottlenecks

Removing bottlenecks in Brisbane, Sydney and Melbourne is a pressing productivity challenge. We believe the costs to the rail industry and the broader community are significant and increasing. The continued growth of our cities and the transport task, and the relative lack of progress in addressing widely accepted problems, is increasing pressures on the rail industry, its customers, and our cities.

There are a large number of current and future infrastructure challenges within Brisbane affecting the efficiency of rail freight transport:[1]

- Emerging lack of capacity within existing corridors and connections for the interstate standard gauge line and dual gauge line to the Port of Brisbane;
- Lack of capacity and connections to the Western line;
- Lack of existing capacity to meet future projections of freight volume;
- Track structures, alignments, level crossings, signaling and passing opportunities limit some options for increasing freight capacity (for example, double stacking, train lengths);
- Restrictions imposed by the Toowoomba Range on metropolitan capacity;
- Short-term deficiencies at the intermodal terminal at Acacia Ridge including

[1] Department of Transport and Regional Services (2007), 2007 Brisbane urban corridor strategy. Building our national transport future.

- capacity to accommodate train lengths planned for Sydney-Brisbane Corridor
- capacity of access roads; and

- Short-term deficiencies at the Brisbane Multimodal Terminal including
  - road access limits terminal to satisfy forecast growth.

Foregoing opportunities to improve rail industry productivity impacts on the industry's ability to compete with other transport modes, results in higher transport prices than would otherwise be the case, and distorts passenger and freight volumes towards greater use of the road network. This is not a good environmental outcome and it contributes to greenhouse gas emissions and the high costs of road congestion in Australia.[2]

Beyond this, urban congestion threatens to seriously dilute one of Australia's key competitive advantages – its liveability. At a number of levels, urban congestion is increasingly negating the positive attractions of Australia's natural beauty and climate in the battle to attract people to live, work and play in our cities.

2.2.1 Track Bottlenecks

The North-South Rail Corridor Study[3] identified many infrastructure problems that are affecting rail productivity around major cities, in particular Sydney.

Freight trains, for instance, are not permitted to operate in the Sydney area during the suburban peak periods due to the curfew arrangement. In the interests of Sydney urban passenger reliability, there is a 2.5 hour freight curfew in the morning and a 3.5 hour curfew in the evening peak periods which are highly disruptive to freight operations and a main reason for the low reliability level.

In Sydney, late-running trains risk losing their slots (train paths) and have little possibility to catch up lost time due to infrequent passing loops. This is especially true when trains enter Sydney as train paths through RailCorp's network are narrow.

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[2] Bureau of Transport and Regional Economics, Estimating Urban Traffic Congestion Cost Trends for Australian Cities, Working Paper 71, 2007. This study provided aggregate congestion estimates of potentially avoidable costs for Australian capital cities total $9.4 billion for 2005. Sydney accounted for roughly $3.5 billion, Melbourne $3.0 billion and Brisbane $1.25 billion. BTRE projections have the avoidable social costs of congestion more than doubling over the 15 years between 2005 and 2020, to an estimated $20.4 billion.

[3] Department of Transport and Regional Services (2006), North-South Rail Corridor Study, report prepared by Ernst & Young, Hyder Consulting Pty Limited, and ACIL Tasman Pty Limited, Department of Transport and Regional Services, Canberra.

The Study assessed the current freight and passenger markets, projected demand (total and rail's share), rail route options, other transport infrastructure requirements and environmental issues and used these to examine economic and financial impacts.

Freight trains, for instance, have to enter the network within a 10-minute window to keep their train path.

Much of the reliability issue associated with the Melbourne-Brisbane services relates to network constraints in the Sydney area. The North-South Rail Corridor Study provided information on how reliability is affected by bottleneck situations. In 2005, freight trains' on-time reliability was approximately 80% on leaving ARTC's network heading into Sydney, before dropping to roughly 30% by the time trains reached their Sydney terminals. Trains leaving the ARTC network near Macarthur in south western Sydney and entering the Sydney network reported on-time reliability of roughly 60%[4] which fell to around 40% by the time they reached the urban terminals. This is equivalent to reliability losses of 50% for freight trains travelling from the north and 20% reliability losses for trains travelling from the south. The reductions in on-time reliability cost the rail industry market share between 2% (Melbourne – Sydney) and 10% (Brisbane – Sydney). Currently, rail's share of freight transport between Melbourne and Sydney is 9% compared to road's share of 89%. On the Brisbane-Sydney route, rail's share is currently 11% compared to road's share of 76%. On the Melbourne-Brisbane route rail's share is 30% and road's share is 61%.[5] The demand for non-bulk freight transport, particularly between Brisbane-Sydney-Melbourne, is forecast to grow faster than the rate of economic growth.[6] However, the rail industry's modal share in meeting this transport task is significantly constrained by freight capacity issues in Sydney. Table 2 in Appendix A provides information on dwell and transit times in Sydney.

2.2.2 Intermodal terminal bottlenecks

Intermodal terminals in Melbourne, Brisbane and Sydney are located in inner-city areas and are constrained by space limitations, preventing terminals from handling longer trains efficiently. Land constraints around the Victorian Dynon terminals, for instance, prevent longer trains unloading in the terminal. In Sydney none of the seven existing terminal facilities has "sufficient expansion potential to provide for longer trains and the anticipated increase in demand."[7]

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4 Department of Transport and Regional Services (2006), North-South Rail Corridor Study, report prepared by Ernst & Young, Hyder Consulting Pty Limited, and ACIL Tasman Pty Limited, Department of Transport and Regional Services, Canberra.

5 *ibid*

6 *ibid*

7 Bureau of Transport and Regional Economics, Estimating Urban Traffic Congestion Cost Trends for Australian Cities, Working Paper 71, 2007.

Port-oriented terminals as well as interstate freight oriented terminals in all States suffer from physical limitations which severely affect the efficiency of the freight supply chain.[8] Table 3 in Appendix B provides information on those current physical limitations. The most common deficiencies are congestion around the terminals, inability to accommodate long trains and freight competition with passenger transport. In some terminals lack of double-stacking facilities has also been identified.

Sydney, Melbourne and Brisbane require terminals with optimal road and rail links, ability to handle long trains with minimal shunting, and scope for long-term capacity growth. Currently, the main terminals are located close to the inner cities contributing to urban congestion. Moving freight hubs from inner-city areas will assist the reduction of urban congestion.

2.3 Network incompatibilities

2.3.1 Double-stacking

Double-stacking allows one container to be put on top of another to increase the productivity of a train service. However, it requires at least 6.5 metres of clearance above the rail height. The *One Nation* investment program removed the final height restrictions for double-stacking between Adelaide and Perth, contributing to one of the key productivity improvements for rail on the East-West corridors.

Apart from the Adelaide to Perth corridor, the use of double-stacking on the main inter-capital corridors is currently limited. Although construction costs to provide such clearances would be significant on some routes, QR believes a phased program should be implemented which targets the higher value corridors first, and works in concert with other infrastructure reforms. For example, once terminal issues in Sydney and Melbourne are resolved (see proposal later in this submission), the costs of achieving double-stack capability on this corridor are significantly reduced.

2.3.2 Locomotive load envelopes

Australia's national rail operators are forced, at considerable expense, to customise new rollingstock because of a "load envelope" which is out of kilter with prevailing world standards.

[8] Meyrick and Associates (2006), Appendix to Infrastructure Action Agenda: Supply Chain Case Studies. Prepared for Australian Logistics Council.

The standard US locomotive (a GE Evolution model) is 4.7 m high and 3.25 m wide, with an axle load of 32 tonnes. China's standard mainline diesel locomotive, the DF4, operates at 25 tonne axle loads and is 4.7 m high and 3.31 m wide. Australian locomotives, by contrast, can be no wider than 3.2 m, and operate to a maximum axle load on the Defined Interstate Rail Network of 23 tonnes. Height clearance issues are less significant, although the minimum wire height in the Sydney metropolitan area is 4.5 m.

Although the differences are seemingly minor, they make a world of difference to the economics of operating a freight train in Australia. Typically, the differences mean:

- a customised Australian standard gauge locomotive is more than double the cost of an equivalent "off the shelf" model in the USA or China;
- customisation adds 18 months to 2 years before new locomotives become operational on the network. In areas of Australia where the load envelope is not similarly restricted, for example in West Australian mining areas, it is understood that new locomotives have been introduced in a matter of weeks;
- there is a two year continuous technology lag with customised Australian rollingstock.

Along with infrastructure capacity bottlenecks in Eastern capital cities, this issue is holding back the achievement of a significant step change in rail productivity.

The cost of infrastructure changes to allow for use of world class standard gauge rollingstock is currently being assessed and options will be provided to Infrastructure Australia in the near future.

2.4 Brisbane - Townsville corridor

Population and freight growth is expected to grow strongly along the major North-South rail corridor between Brisbane and Cairns. In particular, growth in Gladstone, Townsville and Cairns will put increasing pressure on the ability of the existing Brisbane - Townsville/Cairns narrow gauge rail infrastructure to service demand.

Ruling grades between Brisbane and Rockhampton are a maximum of 1:50, compared to ruling grades between Rockhampton and Townsville of 1:75. The steeper ruling grades Brisbane to Rockhampton reduce the permissible trailing load for the whole corridor. This results in an inefficient use of locomotive power on parts of the Corridor, adding to the cost of rail operations and reducing the competitiveness of the rail freight system.

Train lengths on Queensland's North Coast Line are limited by the length of the smallest loop (currently 682 metres).

The prospect of a doubling of average freight train length on a rapidly growing and potentially rail-friendly corridor represents one of rail's most significant national productivity opportunities.

3 Sources of the problems

QR believes that the sources of the problems identified in section 2 stem from five interrelated factors:

- Environmental and congestion costs have not to date been adequately reflected in transport costs.
- Commercial investment analysis will not consider these factors leading to the delay or failure to undertake key infrastructure investments.
- Planning frameworks have failed to take a supply chain perspective and overlooked the complementarities between transport modes and the need for cooperation.
- Planning frameworks have failed to adequately acknowledge the importance of freight to economic well-being or to plan for the inevitable difficulties of providing freight services in urban areas.
- Regulation has focused on monopoly as the source of market failure and not other factors.

Current transport pricing models do not optimally take account of environmental and congestion externalities. An important current example is the effort now being made by governments to address carbon emissions. In this case, good policy should promote neutrality between roads and rail, rather than the current situation where policies favour roads. The pricing arrangements for road infrastructure usage continue to provide a competitive advantage to road transport.

Neglecting the social costs of road freight transport undermines the commercial viability of many investments in rail. The recent final report of the Garnaut Review highlighted that current arrangements, "run the risk of creating incentives for state and territory governments to give priority to road (where they can achieve matched funding) over rail projects (which they must fully fund) and non-urban over urban projects."[9] Lack of incentive alignment is also an impediment to appropriate infrastructure investment. The rail industry will never have sufficient commercial incentives to make the sort of investments that are required. The industry cannot redevelop terminals in isolation from road and urban planning processes: partnership with Government and other transport modes is essential.

[9] Garnaut Climate Change Review (2008), Final Report, p. 457.

A major cause of inefficiencies in rail freight transport is the location of intermodal terminals (highlighted in section 2). Most terminals are located in the inner metropolitan areas and all freight transport has to enter and exit through these highly congested areas. The congestion problems are amplified by competition between passenger and rail transport and arrangements that give priority to passenger transport, such as the curfew in Sydney.

Infrastructure planning has paid insufficient attention to intermodal freight transport. Road and rail services are often complimentary with investments in one mode having effects on the utilisation of the other. Reviewing and developing road, rail, urban congestion and land use policies in isolation has not solved the problems facing the rail industry or the problems facing our cities as they continue to grow.

There have also been deficiencies in the long-term planning of terminal locations. The growth and geographic expansion of cities brought formerly outer suburbs closer within and terminals that were formerly built outside the city area have now been encircled by residential and commercial areas contributing to bottlenecks. Thus, urban growth has reduced the productive potential of existing terminal assets.

The regulation of rail services has focused on monopoly aspects of rail infrastructure without considering other important sources of market failure. Neglected sources of market failure in the transport sector are congestion and pollution issues. Attempts to internalise these externalities in the costs of transport would change the cost advantages from road to rail.

4 How to address the problems

QR suggests that the infrastructure problems described in this submission should be addressed by the following measures.

a. Overcoming urban bottlenecks

i. Trade bottlenecks

It is unlikely that any one private party has the incentive or the means to fix our urban bottlenecks, particularly the Sydney bottleneck, even though it would yield benefits to a large number of market participants.

The current situation is a typical 'free-rider' problem, where the benefits of fixing the problem would be enjoyed by all parties, whereas the cost would be borne by the party undertaking the investment. Unless government invests to the benefit for all, there is a danger that investment will be deferred or not be made at all.

Although ARTC is currently completing its investment in a freight track independent of the Sydney commuter lines (the Southern Sydney Freight Line (SSFL)), the Northern Sydney area will remain the main bottleneck on the East Coast.[10] QR strongly supports ARTC proposals for enhancement of freight capacity through Northern Sydney - these should enable rail operators to finally provide a level of reliability to freight customers that will build market share. It is this project, in conjunction with terminal redevelopments, which offers the level of productivity promise seen in the *One Nation* investments of the 1990s. The Northern Sydney bottleneck provides a good opportunity for Infrastructure Australia to significantly improve the freight supply chain along the East Coast.

Recommendation 1: Investment in the Northern Sydney Freight Works

Brisbane is the origin and termination location for a large share of the freight transport along the Brisbane-Sydney and Brisbane-Melbourne corridor. Infrastructure problems around Brisbane will have flow-on impacts on the entire corridor. For an efficiently working corridor, major investments are required, including upgrades to the passenger and freight rail networks in the Brisbane metropolitan area as well as the Inner City Rail Capacity Project. In particular, the latter project promises to provide a long-term solution to Brisbane's infrastructure problem. It suggests two new lines, one

[10] The SSFL will remove the current 'curfew' on freight trains operating, in the metropolitan area during the morning and afternoon peak periods. While important, this only provides part of the solution, because freight trains will still encounter difficulties further north.

connecting the Southern and Northern lines and another one connecting the Western and Northern lines. The lines would be underground and would include new underground stations at Spring Hill, Woolloongabba, CBD, Newstead, RNA showgrounds and West End. The Queensland Government recently lodged a submission with Infrastructure Australia to highlight the significance of this project.

Recommendation 2: Metropolitan Brisbane rail upgrades (including Inner City Rail Capacity project)

ii. Intermodal terminal bottlenecks

The demand for non-bulk freight transport, particularly between Brisbane-Sydney-Melbourne, is forecast to grow faster than the rate of economic growth. However, the rail industry's ability to play its role in coping with this growth is constrained by the adequacy and location of corridors and freight facilities. QR does not believe there is significant scope to work existing assets more efficiently, and substantially less scope than would be required to meet future demand.

One reason for this is that urban growth has reduced the productive potential of existing assets. Sydney, Melbourne and Brisbane require terminals with optimal road and rail links, ability to handle long trains with minimal shunting, and scope for long-term capacity growth.

The situation identified by the Victorian Government's Melbourne Port@L group is a case in point. The Port@l strategy seeks to, "progressively direct growth in domestic freight handling operations to outer suburban locations" which will include[11]:

- promoting the development of a network of intermodal terminals in outer urban industrial centres with efficient rail and road links to the Swanson Dynon precinct; and
- encouraging container storage, packing and other value adding activities to be progressively located at or near these outer-urban terminals, away from the central port precinct.

Currently, the main terminals in Sydney and Melbourne are located close to the inner cities contributing to urban congestion. Taking these hubs out of the inner-city is a crucial step in addressing congestion. Investments in inter-modal terminal redevelopments in Sydney, Melbourne and Brisbane will improve the efficiency of rail and road freight transport, re-balance some of the future growth in the freight task

[11] Ibid.

towards rail, and reduce urban road congestion costs caused by having a sub-optimal over-use of roads.

While a site for Melbourne's next major terminal site is yet to be identified, Sydney is well placed with an available 300 hectares of land at Moorebank. Acacia Ridge in Brisbane has the ability to expand, with Bromelton being a longer term option as demand grows significantly over the next 20 years. It is QR's view that the development of the Moorebank precinct can be accelerated and that it can complement solutions for the Sydney bottleneck as well as existing investments being made in the north south corridor, in particular the Southern Sydney Freight line (currently under construction). Moorebank should act as the model for development of an outer-city terminal precinct in Melbourne.

Recommendation 3: Facilitation of road and rail access to new terminal developments in Sydney, Melbourne and Brisbane.

b. Overcoming network incompatibilities

i. Double-stacking

On some corridors targeted investments should be made to address the legacy issues restricting the use of double-stack containers. The investments required to allow more double-stacking deliver long term productivity gains by shifting more freight from road to rail and, thereby, reducing road freight-induced pollution and congestion. The spillovers internalized by increasing rail productivity will not be taken into account by a commercial investment appraisal which strongly suggests investment by government is necessary.

Recommendation 4: Infrastructure upgrade to allow double-stacking on more routes.

ii. Increasing locomotive envelopes

Adjusting the Australian railway network for the operation of "off-the-shelf" locomotives would yield a number of advantages. "Off-the-shelf" locomotives are less costly than the current custom-made locomotives and at the same time more powerful which enables to carry more freight. The latest overseas locomotives tend to be more fuel-efficient than their current Australian counterparts.

The use of US or Chinese locomotives requires:

- minor adjustment to height clearances – in the Sydney metro, with the change to constant tension catenary the work required to achieve the vertical clearance

under the wire would be small for most of the network. A limited number of fixed points would need to be addressed;

- width adjustments to tunnels and some platforms, implementation of new standards in replacement of life-expired bridges; and
- rerailing to 60kg rail to allow 32 tonne axle loads (for US locos), or limited upgrading to enable 25 tonne axle loads (for Chinese locos).

The cost of infrastructure changes to allow for use of world class standard gauge rollingstock is currently being assessed and will be provided to Infrastructure Australia in the near future.

Recommendation 5: Infrastructure upgrade to suit overseas "off-the-shelf" locomotives.

c. Brisbane Townsville corridor

For a seamless and productive intermodal Melbourne to Cairns freight corridor, issues north of the Queensland border also need to be addressed. Apart from upgrades to the passenger and freight rail network in metropolitan Brisbane this includes changes to grades and loops.

The easing of ruling grades, e.g. between Brisbane and Rockhampton, and the resulting ability to haul greater loads per locomotive would be part of the solution to make the rail freight system more competitive. However, infrastructure for longer trains also needs to be provided. Train lengths on Queensland's North Coast Line are limited by the length of the smallest loop (currently 682 metres).

These upgrades are likely to deliver rail freight volume increases by allowing rail operators to improve their competitiveness and provide an improved price and service to customers. Additionally, signaling improvements and other works in the metropolitan area to allow for 1,500 metre trains would improve freight and passenger service reliability.

With respect to increasing pressure on the ability of the existing Brisbane - Townsville/Cairns narrow gauge rail infrastructure to service demand, longer term policy should aim for:

- a seamless eastern seaboard network (Melbourne-Cairns); and
- capacity for longer train lengths & crossing loops (increased from 650 to 1500 metre lengths).

Recommendation 6: Infrastructure upgrade to allow longer trains Brisbane-Townsville.

d. Support for new planning approaches

Apart from direct investments, new approaches to planning are necessary. While competing in some markets, road and rail services are often complimentary with investments in one having effects on the utilisation of the other mode. Reviewing and developing road, rail, urban congestion and land use policies in isolation will not solve the problems facing the rail industry or the problems facing our cities as they continue to grow. Therefore, new approaches to planning should be intermodal rather than piece-meal. Transport mode or corridor-specific plans are not able to cope with the requirements of today's interlinked transport infrastructure.

Further, inter-modal planning requires a long-term approach which considers projections of economic development and population growth in excess of the next 50 years. The current bottlenecks surrounding intermodal infrastructure can be blamed on a lack of long-term planning.

Transport policies should be framed to achieve efficient markets in transport services; not the promotion of particular delivery modes. By pricing efficiently, including recognising externalities such as carbon emissions and congestion, particular services at particular localities will be provided by the transport mode that has comparative advantage. The social costs of the resources used to provide the services have to be taking into account.

5 Conclusion

QR believes that Infrastructure Australia should consider embracing a National Intermodal Vision to establish world class freight infrastructure for each of our major transport corridors. The long-term goal should be to create a world class national general freight rail system, complementing our world class national highway system.

The first steps towards this vision are:

- The Northern Sydney Freight Works;
- Metropolitan Brisbane rail upgrades (including the Inner City Rail Capacity project);
- Terminal developments in Sydney, Melbourne and Brisbane;
- Infrastructure upgrade to allow "double-stacking" on more routes;
- Infrastructure upgrade to suit overseas "off-the-shelf" locomotives;
- Infrastructure upgrade to allow longer trains Brisbane-Townsville; and
- New approach to long-term planning based on:
  - Inter-modal planning with long horizons (in excess of 50 years) rather than piece-meal and transport mode or corridor specific plans
  - Integration of an 'inter-modal' approach throughout planning processes (urban, port, rail, road, capital budgeting)
  - Recognition of carbon, urban and congestion externalities in planning, investment and pricing
  - Clear account taken of the effects of policies which inefficiently distort competition between transport models.

The growing problems of the freight bottlenecks and urban congestion must be considered jointly. Investments to improve the efficiency of freight transport in and through major urban centres will have important implications for road traffic volumes and congestion. Likewise, policies to address urban congestion will be significantly hampered if they do not address freight issues.

Most of the suggested infrastructure projects are small or medium scale and are essential to pursue longer-term large-scale projects such as the Brisbane Inner City Rail Capacity upgrade. However, they promise a step improvement in the rail transport efficiency and open the way for large-scale infrastructure projects.

Table 1 provides an indication how the suggested infrastructure projects would contribute to Infrastructure Australia's strategic priorities. We are happy to provide further detail on the basis for these conclusions.

Table 1 Rating of Projects

Project	Expand Australia's productive capacity	Increase Australia's productivity	Diversify Australia's economic capabilities	Build on Australia's global competitive advantages	Develop our cities and/or regions	Reduce greenhouse emissions	Improve social equity, and quality of life, in our cities and our regions	Linkages
Northern Sydney Freight Works	✓	✓	✓	✓	✓	✓	✓	
Metropolitan Brisbane rail upgrades	✓	✓		✓	✓	✓	✓	
Terminal developments	✓	✓	✓	✓	✓	✓	✓	
Double-stacking on more routes	✓	✓				✓		
Overseas "off-the-shelf" locomotives	✓	✓		✓		✓		
Longer trains Brisbane-Townsville	✓	✓				✓	✓	

1. Dwell and transit times in Sydney

Table 2 Analysis of dwell and transit times in Sydney

Segment	Average total dwell (minutes)	Average dwell in Sydney (minutes)	Proportion of total dwell in Sydney (per cent)	Average total duration of journey (hours)	Average duration of journey in Sydney (hours)	Proportion of total journey in Sydney (per cent)
Adelaide-Brisbane	1245	639	49	57:16	9:15	16
Brisbane-Adelaide	789	427	54	53:50	11:02	21
Brisbane-Melbourne	441	116	27	36:45	5:50	16
Brisbane-Sydney	192	53	28	18:46	3:59	21
Melbourne-Brisbane	501	188	32	36:28	5:46	16
Melbourne-Sydney	173	0	0	16:04	0:54	6
Perth-Sydney	727	10	2	70:12	1:15	2
Sydney-Melbourne	209	23	11	17:15	1:52	11
Sydney-Perth	573	1	0	60:56	1:54	3

Note: Estimates based on data provided by infrastructure managers: ARTC, RailCorp and WestNet.

Source: BITRE (2008)

2. Terminal constraints

Table 3 provides information from an Australian Logistics Council study on intermodal terminals in Australia and their main physical limitations.

Table 3 Intermodal terminals

Terminal Location	Ownership	Access/Users	Track Length	Physical Limitations
On-dock Sydney port-oriented facilities				
Port Botany	P&O Ports	Patrick Portlink, Southern & Silverton, Lachlan Valley Freight Rail, ARG and Pacific National	340m (x 3 tracks)	Significant road congestion; short sidings mean trains must be broken up in Botany Goods Yards, which itself has physical limitations. Line for Cooks River to Botany not fully duplicated.
Port Botany	Patrick	Patrick Portlink, Southern & Silverton, Lachlan Valley Freight Rail, ARG and Pacific National	600m (x 2 tracks)	Significant road congestion; short sidings mean trains must be broken up in Botany Goods Yard, which itself has physical limitations. Line for Cooks River to Botany not fully duplicated.
Port Botany	P&O Transport Australia (NSW) Pty Ltd	Patrick Portlink, Southern & Silverton, Lachlan Valley Freight Rail, ARG and Pacific National	445m (x 2 tracks)	This facility acts mainly as an empty container storage facility. However, most of the containers come in via the road for repositioning by rail to the port or rural exports.
Urban Sydney port-oriented facilities				
Cooks River	MCS	Pacific National, Patrick PortLink, Lachlan Valley rail	Max. 515m (12 tracks)	In the morning and afternoon peak periods, there is local road congestion and there are restrictions for freight trains which have to share the passenger networks. Mainly used for empty container storage and for repositioning by rail to the port or rural exports.
Minto	Macarthur Intermodal Shipping Terminal Pty Ltd	Lachlan Valley Rail	390m (extension)	The site is situated adjacent to the Sydney – Melbourne line. However, it has a short track length of only 390m. Undertaking provided by Toll to ACCC as part of Patrick acquisition will result in significant extension of this siding.
Yennora	Patrick	Patrick Port Link and QR	950m	Capacity will become an issue, as QR is now using the site to operate trains to Melbourne and Brisbane.
Camellia	Patrick Portlink	Patrick and Toll	680m	Size and poor configuration of terminal acts as a physical impediment. Also, rail services connecting with passenger trains on the rail network –including curfews- is another constraint.
Melbourne port-oriented facilities				
North Dynon	Pacific National	Pacific National	500m	Cargo is moved from the terminal to the Port of Melbourne by road
West Swanson	P&O Transport Australia	ARG, Pacific National and SSR	565m	Train lengths within the port precinct remain an issue for this terminal operator.
Shepparton	Patrick	Pacific National	480m	Terminal is limited in size and is

Terminal Location	Ownership	Access/Users	Track Length	Physical Limitations
				located in the centre of city.
Somerton	P&O Ports	-	2000m	-
Brisbane port-oriented facilities				
Acacia Ridge (1)	QR	Pacific National	1000m	Other than being land-locked, Acacia Ridge suffers from some flooding issues in times of high rainfall.
Acacia Ridge (2)	QR National	QR National	400m	Issues in times of high rainfall
Brisbane Multi-Modal Terminal	Port of Brisbane Corporation	Pacific National and QR National	650m	The main limitation to growth of the terminal in the longer term is expected to be constraints on available rail paths to and from the terminal.
Cairns	QR National	QR National		The Cairns terminal is built on landfill and therefore not suitable for large forklift operation – this requires the utilisation of rubber tyred gantry cranes to lift containers.
Interstate freight oriented terminals in NSW				
Chullora	Pacific National	Pacific National	450m	There are problems in gaining freight paths to Brisbane during the day as passenger trains have priority and all movements are therefore required to be at night.
Parkes	FCL Interstate Transport Services Pty Ltd	Australian Southern Railroad and Pacific National	600m	Parkes is the first point west of Sydney from where containers can be double-stacked on rail wagons to Adelaide or Perth.
Blayney	FCL Interstate Transport Services Pty Ltd	Patrick and Pacific National	600m	Not identified
Belfield	Sadleirs Transport Co. Pty Ltd	Pacific National	260m	Very short siding. However, the shunting arrangements work well, to the point that greater productivity is available within the terminal.
Camilla	Patrick	Patrick and QR	950m	The size and configuration of terminal both land for terminal operations and rail marshalling tracks are a constraint. Also, rail services interact with passenger trains on the rail network resulting, amongst other things, in curfews.
Interstate freight oriented terminals in Victoria				
Melbourne	Pacific National	Pacific National	1500m	The lack of a dedicated heavy haul road to the port from Dynon, as well as the lack of heavy haul roads in the region. Inability to double stack containers to Adelaide or Sydney.
Altona	QR National bough out CRT Rail Operations Pty Ltd in 2005	QR National, CRT Rail Operations Pty Ltd	560m	Lack of available land to develop an expanded terminal site and freight paths are the two biggest issues with time to travel 5km to the port taking up to 5 hours each way.
Altona	SCT Logistics	SCT	1500m	None

Interstate freight oriented terminals in Queensland

Acacia Ridge	QR National	QR National, Pacific National	850m	Quality of the rail network between Melbourne and Brisbane.

Source: Meyrick and Associates (2006), Appendix to Infrastructure Action Agenda: Supply Chain Case Studies. Prepared for the Australian Logistics Council.