



Central Station, Sydney



Bourke Street Mall, Melbourne

Infrastructure Australia:

Urban Transport Strategy

December 2013



Australian Government
Infrastructure Australia



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Domestic Airport Station, Sydney

1. Introduction

Infrastructure Australia's focus is on assisting governments to develop a strategic blueprint for unlocking infrastructure bottlenecks and modernising the nation's economic infrastructure. Its role is to advise governments, investors and infrastructure providers on:

- Australia's current and future infrastructure needs;
- mechanisms for financing infrastructure investments; and
- policy, charging / pricing and regulation and their impacts on investment and on the efficiency of the delivery, operation and use of national infrastructure networks.

As Governments experience a significant fiscal gap, decisions about managing existing infrastructure and prioritising new infrastructure investment come to the fore. Prioritisation needs to be seen in the context of increases in the size of our cities and the implications of growth for productivity.

'Urban transport infrastructure' encompasses the roads, railways and interchanges that support passenger and freight transport in our cities.

The present lack of a widely accepted, national framework for planning, financing and managing urban transport infrastructure is an impediment to effective transport and city productivity.

A strategy to improve this framework would target improved city planning, better use of transport services, and better investment in road and rail infrastructure. It would complement national ports, airports and freight strategies.

In conjunction with national infrastructure audits, such a strategy would aim to improve proposals for inclusion on the national infrastructure priority list. However, it would not merely deal with projects. This paper raises some issues regarding such a strategy and offers suggestions as to key principles.



2. Key Points

2.1. Purpose of an urban transport infrastructure strategy

An urban transport infrastructure strategy would:

- i. propose a series of principles and criteria to assist planning for urban transport systems and the identification of infrastructure projects; and
- ii. reflect those criteria in Infrastructure Australia's assessment and prioritisation of urban transport projects for the national infrastructure priority list.

The purpose of a strategy would be to provide clear signals about economic, social and environmental criteria that need to be addressed by urban transport projects. This should improve the quality of submissions to Infrastructure Australia.

There should be stronger ties between urban transport infrastructure investment and national objectives. A schematic is outlined in Appendix 1.

To create such ties, this paper proposes some further evolution of the approach to identification and assessment of urban transport project proposals:

- i. a greater focus on integrating proposals into transport systems and on the effect of projects on system wide performance and national outcomes;

- ii. a greater focus on integrating transport systems with long term land use plans;
- iii. modelling of proposals on the basis of – as if there was – efficient transport charging, even if such charging is not in place and there is no current intention of its introduction;
- iv. assessment of projects to be more independent of how proponents suggest they should be funded; and
- v. recognising that it may be desirable to attach some system wide conditions to project funding, for example, conditions regarding transport service standards.

2.2. The scope of urban transport

To date, debates in Australia about urban transport have focused either on roads (especially car use) or public transport, emphasising local issues. Urban transport has not been viewed as an integrated system dealing with both people and freight flows.

Key issues include: integrating transport systems; integrating long-term infrastructure planning and land-use planning; the impact of urban transport systems on productivity; the importance of urban access and equity; coherent and consistent funding and financing; consistent measurement and reporting of results.

These issues need to be seen in the context of continued growth in our cities.

Any debate about urban transport infrastructure needs to take a long term perspective. Infrastructure has a long life, with the core of many of our current systems having been in place for over a century. Provision of infrastructure also affects land use patterns which evolve over long periods.

Large infrastructure projects are not the only issue in urban transport, but can be very influential on system performance and on land use over time.

2.3. An approach to urban transport

In Australia, the frameworks for land use and urban transport decisions have promoted use of urban transport beyond that which would have occurred if travellers were faced with all costs, including costs of service provision and external costs.

To address these issues, transport systems need to be better integrated, and land use and transport planning also must be better integrated. A system-wide focus would acknowledge intrinsic links between various transport types and the interaction of transport and land use.

An urban transport infrastructure strategy should aim for the best use of land and of transport via complementary land use and transport planning.





This would include planning that considers the impact of the location of households, employment and industry.

It also would take into account the land used for transport purposes including corridors, freight terminals and passenger interchanges, and parking spaces.

A critical matter is recognising urban transport as a system that seeks equilibrium. To effect a durable change in performance, for example to reduce road congestion in a particular location, it is necessary to rebalance the system, undertaking a range of actions influencing both the supply of and demand for transport services. Acknowledgement of an 'optimal' amount and type of urban travel is critical, as well as acknowledgement that urban travel in excess of optimal levels can be inefficient. This proposition is linked to the view that beyond some level, there are adverse impacts of travel on productivity and the economy, and social and environmental outcomes.

An optimal approach would consider systemic responses to issues including active management of vehicle flows, actions on alternative routes, priority for high value activities, attracting freight to low cost pathways, road and public transport alternatives, and charging.

A balanced approach would encourage best use of existing transport infrastructure and selective investment in new infrastructure. The right balance between private car use and public transport use is a key issue which impacts not only on travel, but also on freight.

A pragmatic approach is needed. Acknowledgement of the fiscal gap being experienced by all levels of government is critical. Already very substantial sums are allocated by governments to the operation and maintenance of urban transport systems and to road and rail infrastructure.

On this point, the Office of the National Infrastructure Coordinator believes it is critical that any discussion on urban transport needs to consider roads and public transport together, since greater use of one may result in less use of the other, and funds allocated to one are not able to be allocated to the other.

Other key elements of a pragmatic approach include assessment and reporting of performance, and development of pathways for acceptance of long term reforms such as to road and public transport charging.





2.4. Urban transport and national productivity

Productivity is affected by how well transport systems support economic activity. As Australia is highly urbanised, urban transport strongly affects national productivity. Two key influences on national productivity are agglomeration (industry clusters) and road congestion impacts on economic activity.¹

Productivity is influenced by the amount and type of travel undertaken as well as freight movements. Travel and freight are influenced by where people live and work and the convenience and user cost of transport options such as walking, car, or public transport.



Table 1: Factors influencing travel

| Factors | Need to travel | Choice of travel mode |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Main factor | Need to be somewhere else at a particular time. | Relative cost and convenience to traveller. |
| General influences include | Location of home, of work etc. Desirability of residential location, incomes, availability of work. | Road traffic conditions, petrol prices, availability of public transport, service quality, fares. |
| Policy framework influences include | Land use zoning. Provision of infrastructure and services to areas e.g. schools, roads. Availability of alternatives to travel, e.g. telecommunications. | Road infrastructure provision and charges, parking policies, public transport provision and fares. |

Land use decisions have long term implications for travel patterns and urban transport. Over many years, Australia's metropolitan regions have grown very extensive suburban areas with only small areas of concentrated development. Policies for land use, transport and infrastructure have contributed to these urban forms.

As Australia's cities grow and land use intensifies, the demand for travel is likely to increase, and this underpins projections of substantial increases

in congestion costs. However, in recent years aggregate road traffic growth in each metropolitan area has been substantially below forecasts, and well below population growth. Traffic has been reported to fall and congestion decrease in some cities.²

In contrast there has been a resurgence of ridership on public transport.³

¹ The road congestion of interest is that affecting business travel and freight, rather than all road congestion.

² Bureau Of Infrastructure Transport and Regional Economics, Infrastructure Yearbook 2013, State of Australian Cities, 2013.

³ Ridership on urban rail increased by 31% over the 7 years to 2011-12; Australasian Railways Association, Australian Rail Industry Report 2011-12. Total metropolitan passenger vehicle kilometres travelled in trains, buses, and light rail increased by 25.4 percent in the same period, however, total passenger kilometres travelled in cars increased by only 2.6 percent.



Southern Cross Station, Melbourne

The amount of freight is expected to rise as the economy grows. However, growth in heavy freight vehicles is unlikely to greatly add to congestion. Rather, freight is more likely to be adversely affected by car use. Increases in freight vehicle travel times and delays will have negative economic effects.

There are differences in policy approaches between cars and public transport which create a risk of lack of coherence in urban transport policy and planning which may lead to distortions in a national infrastructure plan.

Adoption of the ideas of integrated planning and better urban transport charging could see city planning models use a range of scenarios, including optimal charging and regulation, to generate a suite of integrated urban transport projects. This approach is consistent with the recommendations of Australia's Future Tax System Review (2010, *the Henry review*).

2.5. Social considerations

The Office of the National Infrastructure Coordinator recognises that the issues of access and equity are pertinent to any discussion on urban transport. Rather than identifying this as being only a social consideration, it is a complex social and economic issue. To solely attribute urban transport disadvantage to poor transport infrastructure is simplistic and fails to identify the broader factors that impact land settlement patterns.

There is a direct link between low-income households and the need to travel greater distances in order to get to places of employment, services and activities.⁴

The benefits of enhancing accessibility, mobility and encouraging economic participation of the transport disadvantaged can be particularly large.⁵

2.6. Government

Governments strongly influence the use and provision of urban transport and the infrastructure it needs. Urban transport is largely a state and territory responsibility, although Australian Government policies do affect the level and pattern of urban travel demand.

The Australian Government should have a strong interest in ensuring that urban transport systems as a whole allow for productive national outcomes. This would include an interest in ensuring that such systems are planned in conjunction with land use plans.

⁴ Kate Rosier & Myfanwy McDonald, (2011) 'The relationship between transport and disadvantage in Australia', CAFCA,

⁵ John Stanley, Janet Stanley, David Hensher (2012), Mobility, Social Capital and Sense of Community: What Value? *Urban Studies* December 2012

While urban transport systems as a whole are nationally significant, certain urban transport infrastructure is especially important because of the locations it serves.

Some roads are of the highest national significance. While the Australian Government has a designated national land transport network, that network does not cover every road that could be considered nationally significant; for example most of the Tullamarine Freeway in Melbourne and the Eastern Distributor-Harbour Bridge-Pacific Highway in Sydney are excluded.⁶

Some of Australia's public transport sub-systems are world scale, and influence the performance of urban roads and national freight systems. Very

little of Australia's urban railways are included on the Australian Government's national transport network.

Governments are in the best position to oversee the public reporting of urban transport performance. At present, there is little nationally consistent reporting of outputs or outcomes, and very little information enabling independent diagnosis of urban transport systems. The forthcoming national infrastructure audit may need to consider this in more detail.

Figure A2 in Appendix 1 illustrates a possible approach to national reporting to support infrastructure funding requests for some urban transport.



⁶ <http://investment.infrastructure.gov.au/whatis/network/>

2.7 Funding

States and territories are largely responsible for arranging urban transport infrastructure funding. Australian Government funding is seen as discretionary.⁷

Funding is one of the mechanisms state and territory governments use to control urban transport and set the structure of service provision. Governments can provide funds to infrastructure owners and transport service providers under franchises and contracts which require the recipient to provide certain assets or services.

The Australian Government may make specific purpose payments to urban transport infrastructure. The recent context of Australian Government specific funding of land transport infrastructure is shown in Figure 1. This figure shows recent outlays to have been historically high.

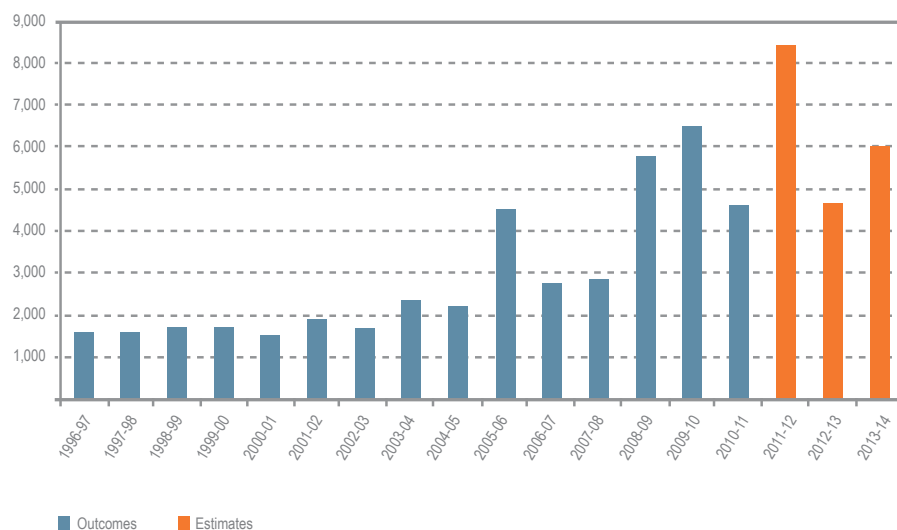
However, these outlays are far less than the estimated cost of transport infrastructure projects proposed to Infrastructure Australia. The estimated capital cost of transport projects in the 2013 national infrastructure priority list was over \$75 billion⁸



⁷ States and territories are responsible for: major roads, public transport infrastructure; public transport operations. Local governments are responsible for local roads.

⁸ The financial cost of land transport projects in urban areas identified in Infrastructure Australia's most recent report to the Council of Australian Governments exceeds \$50 billion. This does not include projects for which cost estimates are not available, such as Melbourne Outer Metropolitan Ring Road; projects which were not placed on the priority list for 2012-13, such as potential second harbour rail crossing projects in Sydney; non-urban land transport projects such as Pacific Highway or Bruce Highway upgrades. In addition, the history of transport projects (road and public transport) around the world is that initial cost estimates are often found to understate the true cost of the project.

Figure 1 Australian Government outlays on land transport infrastructure \$million



Source: Infrastructure Australia (2012)

A general risk of Australian Government infrastructure funding is that it is seen as a 'gift' to help delivery of a project or support a state rather than an exchange to improve national outcomes.



A further risk of Australian Government funding only major infrastructure projects, or certain types of infrastructure projects, include that states and territories may unduly focus on such projects at the expense of wider perspectives, or without fully considering alternative or smaller projects.

Risks of not considering opportunities for operational improvements could be large as even major infrastructure projects are likely to add only a small increment to existing networks and in some circumstances their effectiveness may rely on modifications to wider networks.

These risks could be mitigated by routine public reporting of matters such as system assessment and modelling, overall system performance and land use.⁹

Road funding has long been a contentious issue among governments in the context of relative tax and spending between levels of government. It is becoming a pressing financial issue for all governments as total Australian road expenditures are outstripping road revenues. The Henry review recommended a national roads agreement in part to address this matter.

The Infrastructure Finance Working Group report considered other sources of infrastructure funding. It noted examples of taxing increases in the values of properties adjacent to urban transport projects and government partnering with the private sector to create revenue streams for major rail station developments. Such ideas could extend to other rail and bus rapid transit systems.¹⁰

There also may be the potential for city wide levies to support some new projects that are integral to urban transport at a system level.

It will be important to look for innovative mechanisms to finance urban transport projects such as public-private-partnerships which make use of land and commercial development opportunities, and this might need to involve cooperation among the tiers of government.

The best approach to urban transport funding may be to source all funds directly from users or beneficiaries. The aim would be to encourage optimal travel behaviour and moderate demand, as well as provide finance for services and infrastructure. In an ideal world revenues would be higher than financial costs in order to account for externalities.¹¹

However, such an approach has not been adopted. Also, it may prove infeasible; for example in some circumstances it may be more efficient to collect taxes than user charges.

The optimal approach to public transport charging depends on arrangements for road charging. For places where road users do not directly face financial and external costs, fares that seek to recover the full financial costs of public transport is not a viable option. Attempts to fully recover costs would reduce the significant benefits that public transport delivers to non-users of public transport. It also would increase freight costs.

⁹ It is possible that there are a number of low cost initiatives that would substantially contribute to the outcomes sought by public transport performance. See for example: Goodwin P. (2000) 'Valuing the Small: Counting the Benefits; joint report for CPRE, CTC, Living Streets, Slower Speeds Initiative, Sustrans and Transport 2000' CPRE, London (2004); Victoria Transport Policy Institute (January 2011) 'TDM Encyclopaedia' at <http://www.vtpi.org/tdm/index.php>.

¹⁰ Infrastructure Finance Working Group (2012), 'Infrastructure Finance and Funding Reform'.

¹¹ Some sources estimate total road economic costs to be multiples of road construction and maintenance expenditures: John Stanley and David Hensher (2011) Environmental and social taxes: Reforming road pricing in Australia ITLS WP 11-17



Kwinana Freeway, Perth, Western Australia

An effective urban transport strategy would provide for road network charging and regulation, for example as outlined by the Henry review. It would:

- i. aim to facilitate the introduction of efficient road network charging;
- ii. seek land use and transport outcomes – including mode choice – that would occur under efficient transport charging and regulation, even if such reforms are not introduced; and
- iii. remain cognisant of issues of social equity and access.

2.8. National infrastructure priority list

Infrastructure Australia has previously made clear that proposals for inclusion in the national infrastructure priority list should be scoped in line with efficient road charging / pricing principles, and / or provide for tolling or charging to recover project financial costs.¹²

A refinement of this would be to emphasise the importance of urban transport network modelling, and of assessing project proposals under scenarios such as ‘with’ and ‘without’ efficient road charging and regulation. As part of this refinement, it is worth considering the modelling of (less than full) cost recovery for public transport infrastructure, to enable balanced consideration of needs.¹³

The purposes include:

- taking a long term view of urban transport and its interaction with productivity;
- ensuring that a national infrastructure audit recognises impediments to productivity;
- encouraging identification of urban transport needs and infrastructure projects that would assist in addressing them;
- demonstrating the system wide impacts of project proposals;
- enabling such projects to be brought on stream when needed;
- ensuring that community has realistic expectations of what can be funded;
- differentiating between project assessments (which should include price based demand network modelling etc) and views on proponent propositions on how they should be funded.

¹² See for example the principles set out in Infrastructure Australia's 2011 and 2012 reports to the Council of Australian Governments.

¹³ Along the lines suggested in: Independent Pricing and Regulatory Tribunal (2008), 'Review of CityRail fares 2009-2012'.

2.9. Mutually supported strategies

A national urban transport infrastructure strategy, a national ports strategy and a national land freight strategy need to be mutually supportive. The basis for this mutual support is the national transport policy framework. The framework's objectives relate to: efficient movement of people and goods; safety; social inclusion; protection of environment and health; integration with urban and regional planning; transparency in funding and charging.

Key directions for the national ports and freight strategies are to improve freight flows by:

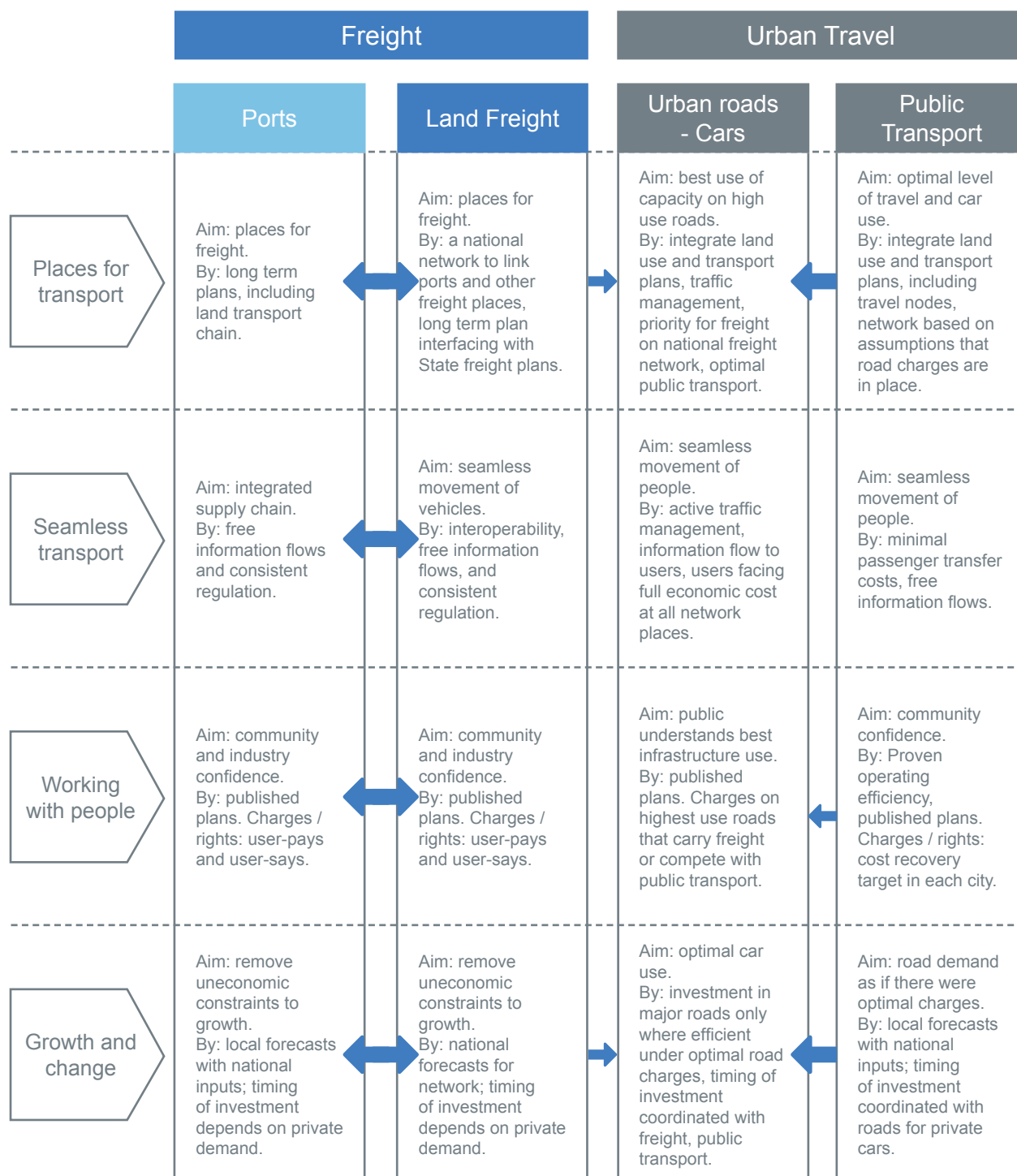
- appropriate freight vehicle access, priority and investment on infrastructure;
- optimal charging for all vehicles, freight and passenger, particularly on roads, to ensure this access and investment;
- infrastructure planning integrated with 'supply chain' (land use) considerations;
- regular public reporting of nationally consistent indicators of network performance.

These directions should apply to the urban transport infrastructure most important for freight. However, at present this is not the case. In such circumstances there should be recognition that improving public transport can yield more sustainable improvements to freight flows than can the provision of unpriced general use road lanes.

Themes for ports and freight are: a place for freight; seamless transport; working with people; and accommodating growth and change. Figure 2 shows how freight and urban travel might be aligned through national strategies.



Figure 2 Potential alignments of national strategies for ports, freight and urban travel



Source: Office of National Infrastructure Coordinator



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3. Conclusion

The following draft principles are proposed to guide the development of an urban transport infrastructure strategy. The draft principles encompass:

- systems criteria;
- economic criteria;
- social criteria;
- environmental criteria; and
- governance criteria.

3.1. Systems criteria

- i. Analyse and assess urban transport performance in a systems context.
- ii. Approach long term planning (including investment) in urban transport in an integrated and holistic manner, encompassing public, private and active transport.
- iii. Adopt a mode neutral approach to urban transport and land use planning, investment and management.
- iv. Integrate urban transport planning, investment and management decisions with land use planning decisions, including through the use of the same assumptions.
- v. Underpin decisions on urban transport planning, investment and management

with the broader aim of moving towards optimum levels of travel.

3.2. Economic criteria

- vi. Make infrastructure investments, and maximise capabilities of existing infrastructure, in order to increase national productivity.
- vii. Ensure that urban transport infrastructure decisions are underpinned by considerations of project and life cycle cost, procurement and transition to new technologies.
- viii. Underpin decisions on urban transport infrastructure planning, investment and management with the assumption that efficient pricing should apply across all modes; including pricing that reflects economic costs such as congestion at particular times and places.
- ix. Use mechanisms, such as road pricing and taxation reform, to moderate urban transport demand and address distributional issues.
- x. Explicitly identify, assess and address risks and uncertainties, including those in relation to energy supplies, when developing transport plans and when assessing transport infrastructure proposals.

3.3. Social criteria

- xi. Acknowledge the likely social impacts of urban transport infrastructure proposals, including impacts on inclusion, access and equity.
- xii. Engender community support and confidence in urban transport planning, investment and management through transparent decision-making processes.

3.4. Environmental criteria

- xiii. Factor in the potential impacts of climate change and other environmental impacts when making decisions on urban transport planning, investment and management.

3.5. Governance criteria

- xiv. A national approach to decision making in urban transport to ensure consistency across Australia.
- xv. Recognise that the Commonwealth has a role in influencing the quality of planning in our major cities, investing in urban transport infrastructure, and encouraging a consistent national approach to decisions on urban transport.
- xvi. A national approach to minimum information collection and analysis, and to public reporting on the performance of urban transport systems.



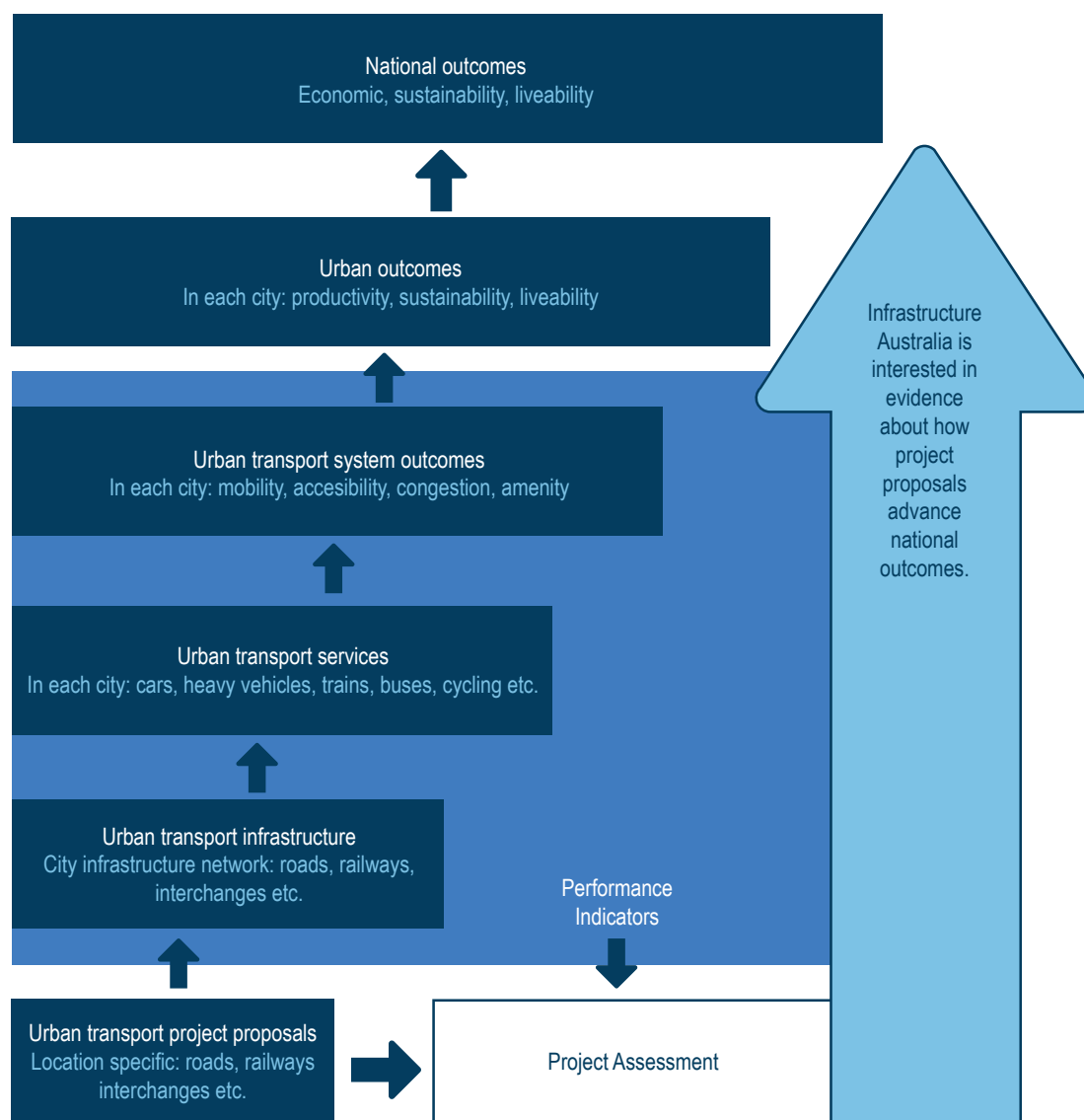
4. Appendix 1

Links between project proposals and national outcomes

This paper highlighted the interest in ensuring that proposals for urban transport infrastructure projects – including those for roads and public transport – support national goals. To provide assurance that proposals advance national goals, a ‘chain of causality’ needs to be demonstrated and assessed. Figure A1 shows this chain.



Figure A1 Demonstrating the link between project proposals and national outcomes



Evidence about how project proposals advance national goals would include comparisons of performance indicators 'before' and 'after' a project comes on stream.

The performance indicators or metrics may relate to each of the links up to urban outcomes in the above diagram; from project proposals to urban transport system outcomes.

The 'before' case may be assisted by regular public reporting of performance indicators dealing with issues previously agreed by Ministers; efficiency, reliability, productivity and social and environmental performance of urban transport systems.

Work commissioned for Infrastructure Australia regarding public transport performance metrics is relevant here.¹⁴ This suggested that metrics need to be:

- relevant and measurable;
- forward looking;
- readily collectable;
- comparable across modes and cities; and
- predictable.

Figure A2 (over) outlines some possible current metrics that might be included to demonstrate these matters at the urban transport system level.

Typically infrastructure investments aim to affect transport services by changing:

- service capacity;
- service coverage;

- service quality; and/or
- service efficiency.

In addition to metrics on these matters, there may be more direct metrics, and metrics applied at the sub-system level such as:

- customer / motorist satisfaction;
- route service frequency;
- route delays / service punctuality / congestion on specific roads;
- public transport system farebox cost recovery / cost per passenger;
- peak / off peak differentials in services, crowding, delays;
- available capacity / service km; and
- truck and freight train delays and queues.

Such metrics also may be used in the identification and ordering of 'transport need' within an urban area. For this reason, there is a strong case for indicators to be regularly reported on a nationally consistent basis as agreed by Ministers in 2009.

¹⁴ LEK (2011) Aspects of Public Transport

Figure A2 Possible urban transport metrics

| L.E.K | | Project 1 | |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The following metrics could potentially be used to support infrastructure funding requests | | | |
| Illustrative | | | |
| Investment Benefit | Benefit sought | Possible service or outcome metrics | Currently reported by |
| Service Capacity | <ul style="list-style-type: none">Reduced crowding on current PT Infrastructure | <ul style="list-style-type: none">Passengers / m2 in peakPassengers load factor (% capacity)% passengers standing 20mins from the CBD | <ul style="list-style-type: none">RailCorp, NSWMetro (rail operator), VICTranslink, QLD |
| | <ul style="list-style-type: none">Reduced congestion on current road systemReduced car dependency and increased PT mode shareSupporting anticipated patronage and population increase | <ul style="list-style-type: none">Average speed on major arterialsVTK and PT mode share% household daily trips by car# annual peak period passenger trips | <ul style="list-style-type: none">DoT NSW; DTMR QLDDoT NSW; DTMR QLD, Dot VICDoT NSW; Dot VICDoT NSW; Dot VIC, Translink QLD |
| Service Coverage | <ul style="list-style-type: none">Improved network coverage in growth centersImproved accessibility to public transport, especially for socio-economic disadvantaged areasGuiding urban form to achieve agglomeration benefits | <ul style="list-style-type: none">% houses within 500m of PT stopSEIFA indexJob density by region | <ul style="list-style-type: none">PTA WA; DoT VIC*ABSData not sourced (mentioned in Melbourne Metro 2 submission) |
| | <ul style="list-style-type: none">Savings in PT journey timeProviding safer public transportImproved on-time running and reliabilityImproved accessibility to stations / stops | <ul style="list-style-type: none">Average journey timeIncidents per million service km% services arriving & departing on time% vehicles / infrastructure complaint with DSAPT^ | <ul style="list-style-type: none">BTS NSW; Dot VICPTA WADoT NSW; Translink QLDDoT VIC (until 2008) |
| Service Efficiency | <ul style="list-style-type: none">Improved asset utilisationImproved reliability of infrastructureMore efficient vehicles having lower GHG emissions | <ul style="list-style-type: none">% peak vehicle utilisationService faults per 100,000kmCO₂ emissions per passenger km | <ul style="list-style-type: none">Sydney Ferries, NSWState Transit Authority NSWDoT VIC |

Note: * Victoria uses % of population within 400m of a bus / tram stop, 800m of a train station; ^ Disability Standards for Accessible Public Transport (national standards)

Source: NSW govt submission (2010); Melbourne Metro 1 and 2 submissions (2009). Council of SEQ mayors submission (2010); ACT govt submission (2008); Yarra City Council submission (2008); Bureau of Transport Statistics; L.E.K. Analysis; Infrastructure Australia. Projects 1 & 2.



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