



THE MCKELL INSTITUTE

Getting us there

**FUNDING THE TRANSPORT
INFRASTRUCTURE OF TOMORROW**

November 2014

About the McKell Institute

The McKell Institute is an independent, not-for-profit, public policy institute dedicated to developing practical policy ideas and contributing to public debate. The McKell Institute takes its name from New South Wales' wartime Premier and Governor-General of Australia, William McKell.

William McKell made a powerful contribution to both New South Wales and Australian society through significant social, economic and environmental reforms

For more information phone (02) 9113 0944 or visit www.mckellinstitute.org.au



The opinions in this report are those of the authors and do not necessarily represent the views of the McKell Institute's members, affiliates, individual board members or research committee members.
Any remaining errors or omissions are the responsibility of the authors.

THE MCKELL INSTITUTE

Getting us there

FUNDING THE TRANSPORT
INFRASTRUCTURE OF
TOMORROW

November 2014



About the authors

EMILIO FERRER



Emilio has worked in public policy for almost 30 years in a range of areas including planning, housing, health and economics.

He is currently a partner at Sphere Company, a consultancy firm specialising in financial and economic modelling

in public policy. His clients include government, NGOs and the private sector. Prior to this, Emilio was Director of Policy in the office of the NSW Premier and a Senior Manager at the Macquarie Group.

He holds a Bachelor of Arts and Master's Degrees in Public Policy and Mathematics; and has a particular interest in public finance and affordable housing.

Emilio was born in Barcelona and has lived in Sydney since 1983.

SEAN MACKEN



Sean has over 20 years' experience advising on urban affairs, infrastructure and planning. Sean Macken has conducted a number of research projects for the Mckell Institute since 2013, including as co-author of the Mckell Institute's inaugural *Homes for All* report

on housing affordability.

Sean is currently Managing Director of Macken Planning Solutions, specialising in advising on public policy and urban affairs. Prior to this, Sean was the Director of Development and Infrastructure at Hawker Britton for over a decade. Prior to that he was Senior Advisor to the Minister of Planning in NSW.

Sean served as a Councillor on South Sydney Council from 1993-2000. He chaired the Council's Planning Committee and oversaw the development and implementation of the Green Square Masterplan, Council's Comprehensive LEP and the Cities Social Plan. He has a Master's in Public Policy and a Bachelor of Arts in History.

He lives in Sydney with his family.

SAM STEWART



Sam is the Senior Policy Coordinator at The Mckell Institute and has played an integral role in overseeing and undertaking research at the Institute since its inception in 2013.

As the Institute's senior in-house researcher, Sam has extensive

policy experience across a broad range of policy areas including housing affordability, infrastructure delivery, state and federal taxation, economic productivity, economic modelling, social service delivery, workplace safety and workers entitlements. Sam also assists with in-house research for a number of Mckell Institute sponsors.

Prior to his role at The Mckell Institute, Sam Stewart was Policy Advisor to the NT Minister for Trade, Small Business, Youth and Seniors. He has also worked as a staffer to the Chair of the Senate Legal and Constitutional Committee.

He lives in Sydney with his fiancé.





Maghsafe Area

Maghsafe Area

Maghsafe Area

Contents

Foreword	8
Executive Summary	9
Recommendations	12
The challenge of shrinking revenue and growing costs	16
The three P's - Population, Participation & Productivity	18
Defining the size of our infrastructure challenge.....	19
Classifications of infrastructure & their impacts on the budget	20
The three classes of infrastructure investment	22
Has NSW been underinvesting in infrastructure?.....	24
Case Study: Action for Transport 2010	28
For whom the road tolls	30
Public transport: where art thou?	31
Conclusions from our case study	31
How does Sydney's transport system actually stack up?	32
The cost of not investing in infrastructure	38
Issues with funding new transport projects through higher levels of debt	40
Will revenue be sufficient to fund new transport projects?	43
Tackling the funding problem	48
Efficient and popular hypothecated taxes	48
Charging the users of rail and roads	50
Expanding the use of value capture In Australia	53
Bringing Tax Increment Finance to Australia	55
Joint Property Development	56
Asset recycling, a downward spiral	58
Financing appropriately funded transport projects	60
Understanding the decline in appetite for greenfield transport projects	62
Superannuation investment in greenfield projects	63
The Inverted Bid Model	64
A new governance model and longer term politics	66
A new narrative	70
Footnotes	71

Foreword

One of the key challenges facing policymakers is the question of how to fund new transport infrastructure in an increasingly fiscally restrained environment.

Infrastructure expenditure is already failing to keep up with community infrastructure, and population growth is driving demand for new services. Meanwhile, state governments are increasingly restricted by the need to ensure that their credit ratings remain strong.

This challenge will only grow as Australia's demographics continue to shift. By 2050, the ratio of workers to non-workers will decline from 5-to-1 today to 2.4-to-1. Whilst the biggest impact of this demographic shift will be felt by the federal government through reduced income tax revenue, state governments will also be impacted through a proportional decline in payroll tax receipts.

The impact of this decline should not be underestimated. Payroll tax currently comprises 30% of total state government revenue and is expected to raise \$34.3 billion for the New South Wales (NSW) Government over the forward estimates. Were the ratio of workers to non-workers the same today as is forecast to be the case for 2050, all other things being equal or held constant, payroll tax receipts would be almost \$18 billion lower.

As government continues to balance growing costs and proportionally declining revenue, competition for scarce budget dollars will increase and infrastructure investments will be increasingly judged on their long-term financial cost to government.

This will prove particularly challenging for transport infrastructure projects that are unable to generate sufficient revenue to cover recurrent operational costs, let alone repay the up-front costs of construction.

Many transport assets fall into this category. Whilst investments in water or energy assets can generally be recouped through higher user charges, differences in demand elasticity means that investments in transport assets are rarely able to be recouped in the same manner.

To ensure that vital new transport infrastructure is not left off the table in future government budgets, this report has examined a number of options available for boosting the revenue streams associated with currently cost-inhibitive infrastructure classes.

By utilising innovative new funding models including tax-increment financing, joint project development, increased user charges and other value capture schemes, the long-term cost to government budgets from new transport investments can be substantially reduced. These recommendations will help ensure that new transport infrastructure can be developed to meet the future needs of NSW's growing community.

NSW also needs new a new governance framework to restore confidence in our state's infrastructure strategy.

In addition, a new narrative will be required to engage the community in a realistic discussion about the long term challenges facing infrastructure delivery in NSW.

This report hopes to be the beginning of that conversation.



The Hon John Watkins
CHAIR,
MCKELL INSTITUTE



Sam Crosby
EXECUTIVE DIRECTOR,
MCKELL INSTITUTE

Executive Summary

Most people in NSW generally accept the common assertion that we are experiencing an infrastructure crisis. It is often argued that recent years have seen a chronic underspend by state and federal governments on vital community infrastructure.

Political commentators complain that our cities are suffering from a “lost decade” of infrastructure underinvestment. In addition, there is now a widely held perception that what little infrastructure has been built, has been poorly designed and poorly delivered.

In short, the community has lost faith in our Government’s ability to deliver the infrastructure assets and associated services required by a growing society.

There is no shortage of differing perspectives on how this infrastructure shortfall should be addressed. Some commentators have argued that we should simply borrow more and treat any additional expenditure as an investment rather than an additional cost on the government’s budget balance sheet. Others have suggested that we should raise taxes or design new ones in order to fund the infrastructure needs of tomorrow. An alternative approach involves the privatisation of state owned assets in order to “recycle” their capital value into the development of new transport assets.

Various industry sectors have proposed alternative solutions, ranging from a greater use of superannuation funds in the financing of new projects, reforms to the existing Public Private Partnership (PPP) structures to enhance competition during tendering, alternative risk-sharing arrangements, and the converting of infrastructure bonds.

This report seeks to examine the infrastructure shortfall through a different lens, by examining its root causes in order to determine a series of recommendations on the future funding of transport infrastructure.

The report examines the data over the past twenty years and determines that there has not been an overall decline in expenditure on infrastructure. Indeed for most years (except the last two) spending on infrastructure has been consistently growing, both in real terms and as a proportion of public expenditure.

Instead, this report notes that it is the type of infrastructure which is funded that has changed. While there has been an overall increase in capital expenditure, it is increasingly invested in areas that are less immediately obvious to the public. Government Trading Enterprises (GTEs) such as Sydney Water and the electricity networks have expanded their services and improved their networks considerably.

At the same time, the proportion of investment in other classes of infrastructure has not been maintained. This is particularly true for many forms of transport infrastructure. In that sense, the public perception of today’s “infrastructure crisis” is actually a reflection of the reality that a growing proportion of infrastructure investment is delivered into areas that are less immediately obvious to the daily lives of NSW residents.



This report then examines why some infrastructure classes have received a growing proportion of public expenditure and why others have languished.

Successive governments have allocated a greater proportion of infrastructure expenditure to those service providers that can make a return on their investment while also repaying their initial upfront capital.

Logically, it makes sense to finance a new desalination plant for Sydney, which once built, can either be privatised at a profit to taxpayers, or provide a healthy revenue stream for government. It makes sense, at least financially, even if we don't immediately need a desalination plant. It also makes sense to expand and improve the electricity network, given its status as a profitable entity that can easily repay the cost of capital expenditure while also providing an expanding dividend stream to the NSW Treasury.

Conversely, governments have been less willing to expand infrastructure that does not make a financial return, particularly if that infrastructure requires a recurrent subsidy to meet its ongoing operational costs.

This report seeks to define the major infrastructure programmes into three broad categories based on their capacity to make a financial return and whether or not they require recurrent financial support from Treasury.

- Category A infrastructure investments are those that can fully repay the cost of capital and subsequently provide a recurrent profit on their initial investment.
- Category B are those which cannot repay the cost of capital but do generate enough revenue to cover their recurrent operational costs.
- Category C are those which cannot repay the cost of capital and which also require an ongoing subsidy from Treasury to meet recurrent operational costs. It is this category that has seen a decline in the proportion of total capital expenditure over the past two decades.

Critically, Category C infrastructure assets tend to be those types of infrastructure which are most visible to the public eye, most notably our roads and trains. It is the shortage of expenditure in these areas which is creating the broader community perception of a growing infrastructure deficit.



This report also examines some of the solutions put forward to help address the infrastructure shortfall, including the greater use of superannuation funds to finance new infrastructure, the issuing of infrastructure bonds, an increase in government borrowing, the raising of new taxes, user charges, and the privatisation of existing state-owned assets.

For each of these proposals, the authors seek to make no political judgement on their validity. There is a case that can be made for each of these proposals under the right circumstances. However, this report also notes that many of these proposals fail to specifically address the issue of securing appropriate funding for Category C infrastructure, that is, the requirement for government to provide a recurrent subsidy in order to adequately cover basic operational costs.

It is fiscally imprudent to borrow in perpetuity to fund recurrent expenditure. It makes less sense to privatise profitable enterprises in order to fund non profitable services. That is the road to a Greece style collapse of public coffers.

This report contends that Category C infrastructure will continue to receive a smaller proportion of overall infrastructure funding for so long as there remains a substantial need for recurrent subsidies. If the government and the community wants to see more Category C type infrastructure then both will have to face some difficult choices.

The solution resides in changing the financial and funding arrangements supporting these investments so as to move Category C infrastructure over into the Category A, or at a minimum, Category B.

This report examines how other cities have managed to achieve this through value capture mechanisms, joint property development, tax increment financing, hypothecated taxes, tolling, and other user charges.

The report also concludes that NSW needs more than just a change in how it funds and finances new transport infrastructure. It concludes that what is needed is a new, long term governance structure that will support long term decision making and reliable project delivery.

Recommendations

RECOMMENDATION 1

That a transport summit be held in order to develop a consensual approach to planning and delivering long-term improvements to the state's transport network.

The summit would include representation from all political forces with parliamentary representation in NSW and would also include participation from transport experts, key public servants, industry stakeholders and community leaders.

The format for the transport summit should be partially modelled on the highly successful 1999 NSW Drug Summit.

RECOMMENDATION 2

That the NSW Government trial a pilot value capture scheme to secure additional revenue streams that can support the funding of new transport projects.

The ideal method for capturing land value increases that result from the delivery of new transport infrastructure would be to introduce a levy similar to the Business Rates Supplement (BRS) currently used by Transport For London.

Ideally the levy would be set at a low rate with a broad base and minimal exceptions. However, government may wish to implement a land-value threshold below which the levy would not be payable so as to exempt small and medium sized businesses from any additional impost. Provided a similar threshold were made available for residential property, a Sydney Rates Supplement could also be applied to residential properties within the immediately benefitted area.

Different models should be trialled in different regions to determine which overall model would be most appropriate for NSW.

RECOMMENDATION 3

That the NSW Government conduct further research into the international experience of Tax Increment Financing (TIF) in order to determine how government might best be able to introduce this model into the Australian context.

Although widely used to finance infrastructure in both the UK and USA, this model of financing is relatively undeveloped in Australia. Government should examine the wide range of existing evidence on this topic to see if such models can be introduced into the Australian context.

RECOMMENDATION 4

That the NSW Government direct UrbanGrowth to investigate whether Joint Property Development (JPD) could be used as a means of securing private funding for transport infrastructure upgrades across the Sydney rail network. That the broader use of JPD only be pursued following planning reforms that will incentivise more Transit-Oriented Development.

The NSW Government should examine the funding models used by Hong Kong's Mass Transit Railway Corporation (MTRC) in order to determine the most appropriate method for attracting private funds into the development and redevelopment of rail assets.

UrbanGrowth should look beyond the commendable Central to Eveleigh redevelopment project to consider whether similar projects are feasible elsewhere on the Sydney rail network.

To secure more favourable revenue streams from any future JPD agreements, the NSW Government should enact planning reforms that facilitate easier access to rezoning and a greater use of "code assessable" development in the areas immediately surrounding train stations.

RECOMMENDATION 5

That the Commonwealth Government further investigate the Productivity Commission's hybrid-financing model – based on Industry Super Australia's Inverted Bid Model – as a worthwhile reform to enhance the capacity of the superannuation sector to invest in new transport infrastructure.

Currently, most superannuation funds and other large investors are unwilling to invest in greenfield transport projects. Greenfield projects represent a higher risk investment than the purchase of an existing brownfield transport asset.

The hybrid-financing model would help make greenfield investment risk more manageable for potential financiers, potentially increasing the number of competing investors tendering for greenfield transport projects. The increased competition that would arise from this reform is likely to deliver more favourable bidding outcomes for the Government and taxpayers, including lower availability payments or reduced levels of recurrent government funding.

RECOMMENDATION 6

That the NSW Government consider the introduction of a both a Metropolitan Transport Levy and a CBD Congestion Tax in order to help cover the unfunded recurrent cost of expanded transport services.

Any funding obtained through new levies and charges should be entirely hypothecated towards improving transport services and strictly quarantined from being absorbed into consolidated revenue.

RECOMMENDATION 7

That the NSW Government pursue the greater use of user charges on all new major roads and rail projects.

Though scope for increased user charging on rail transport remains limited by the high price elasticity of rail fares, government should nevertheless continue to examine whether additional revenue can be raised through marginal changes to some fare structures. Government should also embrace toll-roads as the new norm for major road projects in NSW. Where tolls are applied to road freight, there needs to be a clear mechanism in place to pass all additional costs on to the primary contractor and end user.

To strengthen community support for increased user charges, new rules should be introduced to ensure that all transport revenue is strictly hypothecated towards the funding of transport services.

To ensure taxpayers dollars are allocated efficiently and appropriately, improvements will need to be made to patronage forecasting and cost-benefit analysis processes.

RECOMMENDATION 8

That Government reduce the risk of being burdened with poor value infrastructure by securing more accurate patronage forecasts and by publicly releasing cost-benefit analyses for all major transport projects.

The Government should also consider the wider use of reference class forecasting to provide a second-layer analysis of the likely costs associated with new transport projects.

RECOMMENDATION 9

That the NSW Government establish a new transport delivery agency that is well funded and appropriately empowered to further enhance Sydney's transport network. The agency should be semi-independent and reportable to the Parliament.

The new agency could be modelled on Transport for London or the recently reformed UK Highways Agency. This could be done either by establishing an entirely new agency or through expanding the powers of Infrastructure NSW.

The agency would be responsible for the long term planning, prioritisation and delivery of new infrastructure. Such an agency should be resourced and empowered to make decisions beyond the three year budget cycle and beyond the four year political cycle.

The agency should be resourced to analyse transport proposal presented to it by both governing and non-governing political parties. All major transport proposals and any proposed long-term infrastructure strategy devised by the agency should be put to the parliament for a non-binding symbolic vote.

A new parliamentary convention should be created under which major projects are only advanced once they have received majority bipartisan support within the parliament. Funding could then be appropriated to the new agency to assist with the delivery of those projects.

RECOMMENDATION 10

That the NSW Government articulate to the community the true costs of transport services in order to strengthen community support for higher user charges.

The recommendations contained within this report are substantially more likely to be accepted by the community if it is fully informed about the scope of the funding challenge facing transport infrastructure in NSW.

Government should seek to educate the community about both the costs and opportunity costs associated with investing in different transport assets. It should also better articulate the social and economic cost of not investing in transport infrastructure.

The benefits of urban consolidation will need to be explained to the community. Urban sprawl has significant consequences for services delivery, the environment, and congestion. A clear public case should be made which demonstrates the link between higher density and better amenity with a particular focus on the capacity to fund new public transport projects in higher density areas.



The challenge of shrinking revenue and growing costs

Like most countries, Australia is experiencing a period of significant economic and social change. Compared to most other developed nations, our ratio of debt-to-GDP is quite low,¹ and Australia is one of the few countries fortunate enough to boast a AAA credit rating from all three major credit ratings agencies.²

Despite this, the ageing of our population will result in a substantial restructuring of the Australian workforce with significant implications for government revenue and expenditure. While in 1970 there were 7.5 people of working age for every person over the age of 65, by 2010 this ratio had fallen to 5 to 1. By 2050, this ratio will fall further to just 2.4 to 1, leaving the government with substantially fewer taxpayers to support a growing contingent of retirees with expensive requirements in both the health care and aged care sectors.³

Similar problems exist at the state government level. As the scales tilt from a worker dominated community to a retiree abundant community, revenue from payroll tax will be increasingly stretched to accommodate the advanced healthcare needs of an older population.

Payroll tax is NSW's largest tax and last year accounted for 30% of state government revenue. Over the forward estimates, the NSW Government is expecting to collect \$34.3 billion in payroll tax.⁴ Were the ratio of workers to non-workers the same today as is forecast to be the case for 2050, all other things being equal or held constant, payroll tax receipts would be almost \$18 billion lower.

While the interaction between an ageing population and state payroll tax receipts is somewhat more complicated than the above calculation would

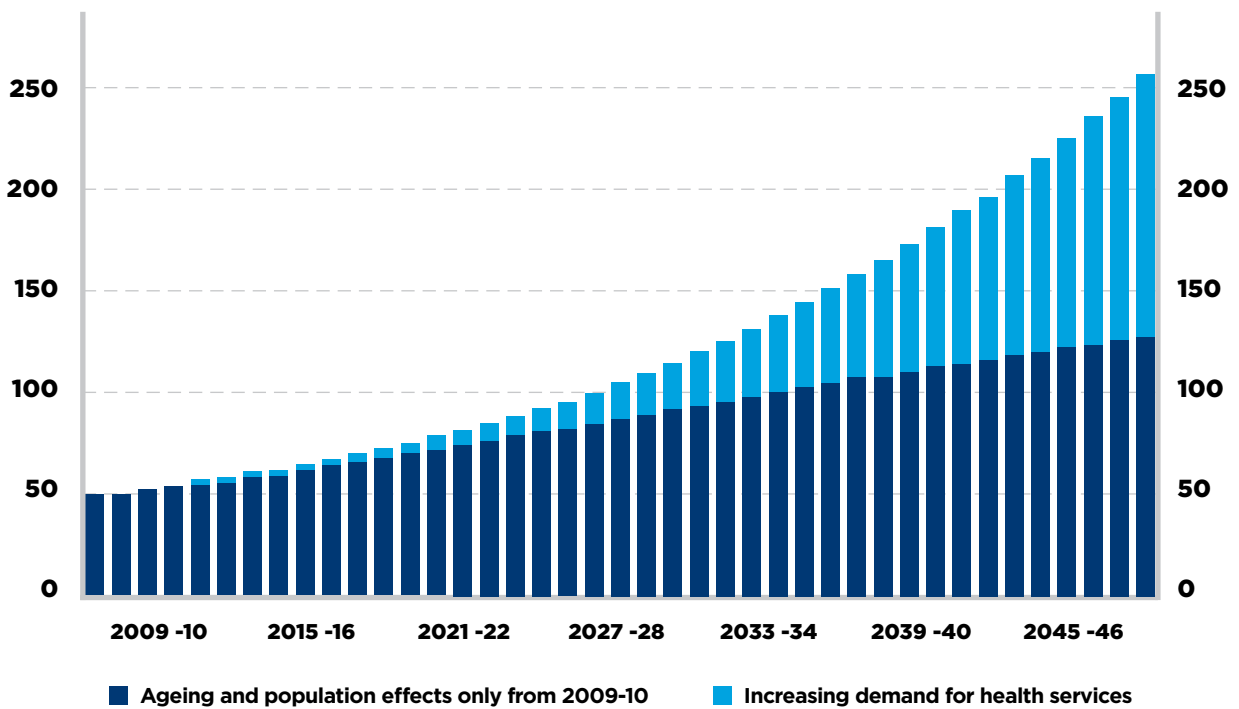
suggest, the broad conclusion is correct. An ageing population will leave state budgets with less revenue at precisely the same time that state governments will need to spend more on the advanced health need of our senior Australians. From 2009–10 to 2049–50, real health spending on those aged over 65 years is expected to increase around seven-fold. Over the same period, real health spending on those over 85 years is expected to increase around twelve-fold.⁵ The number of people with Alzheimer's alone will grow to 900,000.⁶

In addition to these demographic pressures, demand for higher standards of health care will also place added pressure on the Government to increase health expenditure, as will the costs associated with rapid technological innovation.

As state and federal budgets are increasingly stretched by the dichotomy of rising costs and proportionally shrinking revenue, other areas of government spending will face more fierce competition over the allocation of government expenditure. Increasingly, governments will be required to consider not just the cost, but the opportunity cost, of investment in one area versus another. Infrastructure projects will need to be weighed up carefully to consider whether they represent the best possible application of taxpayer dollars.



FIGURE 1:
TOTAL AUSTRALIAN GOVERNMENT HEALTH EXPENDITURE WITH AND WITHOUT
NON-DEMOGRAPHIC GROWTH⁷



The three P's - Population, Participation & Productivity

As highlighted in the most recent Intergenerational Report, the extent to which Australia's economy is able to offset the fiscal challenges associated with an ageing population will be heavily determined by the evolution of our '3Ps' – population, participation, and productivity.⁸



Population growth, whether natural or through immigration, will help to ensure that there are new taxpayers coming online as older taxpayers retire. Participation rates will influence tax receipts in much the same way, while productivity growth will influence the wage growth of Australian workers, which in turn influences income tax receipts.

Australia's population is already expected to grow substantially between now and 2040. Forecasts by the Australian Bureau of Statistics (ABS) show that by 2040, NSW's population will increase by 35% to just under 10 million.⁹ This population growth will be necessary to offset a demographic driven hit on state and federal government budgets, though this will also have other implications for state and federal policy makers. The most obvious of these is that there will need to be a substantial increase in new transport infrastructure.

Ensuring that transport infrastructure remains both accessible and reliable for NSW residents will

be critical to ensuring that participation rates are boosted to their highest possible levels.

Targeted investment in infrastructure to remove bottlenecks will also be critical to ensuring that Australian companies remain competitive, which in turn will help achieve that the NSW and Australian economies are able to secure strong productivity growth.

This represents something of a policy dilemma for today's policy makers. While the ageing of our population will increasingly undermine government revenue, the solution to that problem will invariably require an increase in new transport infrastructure. It is hard to envisage Australia boosting its three P's without also investing in new roads, new rail, and new public transport facilities.

Despite this, competition for scarce government resources will remain fierce, adding impetus to the need for policy makers to examine innovative new ways to fund and finance the infrastructure of tomorrow.

Defining the size of our infrastructure challenge

There are numerous estimates which quantify the scale of the infrastructure challenge facing Australia. Infrastructure Partnerships Australia and Citibank have put the amount of infrastructure needed to be built over the next decade at \$700 billion,¹⁰ the Business Council of Australia at \$450 billion to \$770 billion,¹¹ while Infrastructure Australia has provided a more conservative estimate of \$300 billion over the next 10 years.¹²

This report notes that some of these larger estimates precede the substantial transport infrastructure investments that occurred as part of the federal government's response to the Global Financial Crisis.

This report accepts that additional investment is not always the best solution to an infrastructure service shortfall. Evidence suggests that congestion charging for roads in peak periods could reduce Sydney's congestion by reducing and better distributing demand.¹³ This would suggest that it is sometimes possible to reduce infrastructure bottlenecks through a better utilization of existing infrastructure.

Nevertheless, population growth forecasts for Australia would indicate that the scale of the infrastructure challenge facing our country remains immense. Even if the most conservative of these forecasts is used, Australia will need to deliver \$300 billion in new infrastructure over the next decade. As Australia's most populous state, much of this burden will fall on NSW.

Excluding public trading enterprises, the most recent state budget has set aside some \$38.3 billion for infrastructure expenditure over the forecast period.¹⁴ Many of the new infrastructure projects announced in the budget are still in the early stages, awaiting the outcome of planning and feasibility studies. The budget

allocated money for studies into building the F6 extension from Loftus to St Peters, the M9 outer Sydney orbital road in far Western Sydney, a tunnel from the northern beaches, and a Parramatta light rail system.

Whether these projects are delivered remains to be seen. The NSW Government has received some criticism for spending \$700 million on 69 planning and feasibility studies.¹⁵ While it is entirely appropriate that proper planning and scoping is undertaken before committing to new infrastructure outlays, it remains highly unlikely that every single project announced in the budget will be delivered.

NSW has a regrettable history of major projects being announced and never delivered, and many projects are dropped once it emerges that the financial case for an individual project is too weak to justify the additional outlay. Tighter fiscal times mean that the cost-benefit analysis applied to new projects is only likely to become more rigorous. Whether or not new projects go ahead will be increasingly determined by not just their upfront capital costs, but also the ongoing operational costs associated with operating that infrastructure.

Specifically, projects that impose a substantial recurrent cost on government budgets are now less likely to receive government support than those that, at a minimum, are able to generate a sufficient enough return to cover their operating expenses.

Classifications of infrastructure & their impacts on the budget

When assessing the adequacy of our infrastructure investment, it is important to understand that infrastructure is essentially a platform from which to provide services to the community and to support the economy.

In financial terms this means that, in most instances, government funds capital projects to develop structures and facilities which, once completed, also require ongoing funding in order to deliver services.

For example, a hospital is not just a building but is also an important – though expensive – provider of health services. The choice to provide that hospital was done out of a desire to improve community services, despite a recurrent operational cost on top of the initial upfront construction costs.

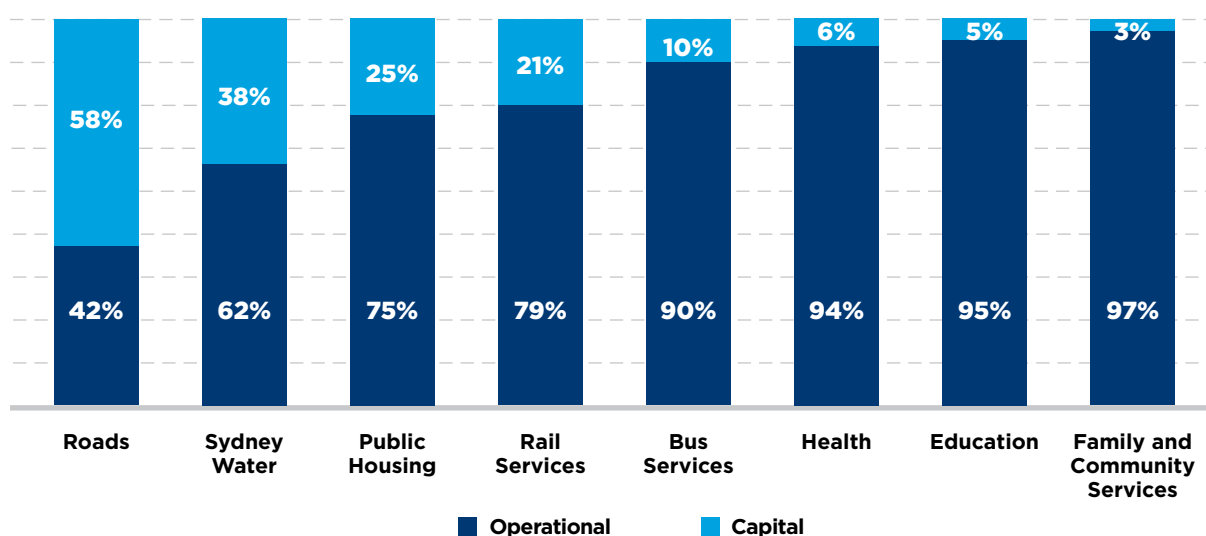
Consequently, any analysis of the adequacy of infrastructure should also consider the resulting affordability of the services delivered by that infrastructure.

Figure 2 provides an analysis of the capital and operational expenditure mix for eight selected services.

Some government agencies have a small capital component in comparison to their operational requirements and others, such as roads, have a major capital component. It is important to draw this connection between these two types of expenditure because the financial impact of infrastructure is not just the initial cost of capital. In many instances there is also a significant ongoing cost.

In the public's mind, this recurrent cost is largely hidden. Most road users only feel the cost of the roads they are using when they hit a toll. Equally, most public transport users don't realise that their tickets are heavily subsidised. For rail users, ticket

FIGURE 2: 2012/13 OPERATIONAL AND CAPITAL EXPENDITURE MIX FOR SELECTED SERVICES



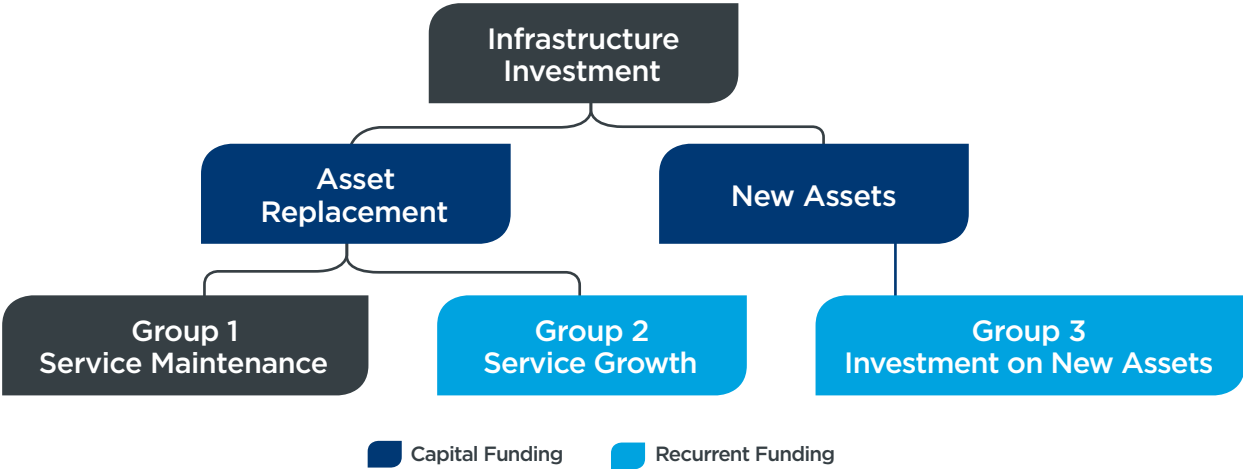
fares recover just 19.8% of recurrent operational costs.¹⁶ The government however cannot forget this cost, nor can potential private investors with which the government might partner.

It is also important to note that not all capital works expenditure is on new infrastructure. Government

also needs to provide capital funding to replace and upgrade existing assets. In some cases this capital also generates a need for recurrent expenditure.

Figure 3 summarises infrastructure investment as it relates to service delivery.

FIGURE 3: RELATIONSHIP BETWEEN INFRASTRUCTURE INVESTMENT AND SERVICE DELIVERY



From this perspective, the three groups of infrastructure investment are:

**GROUP 1:
INVESTMENT ON EXISTING ASSETS - SERVICE MAINTENANCE**

- Replacement of old schools and hospitals in areas with no demand growth
- Replacement of bus fleets on existing routes
- New trains on existing lines – with no capacity increase
- Road maintenance without increasing traffic capacity
- Replacement of public housing

**GROUP 2:
INVESTMENT ON EXISTING ASSETS - SERVICE GROWTH**

- Replacement of schools and hospitals in areas with demand growth
- New, more efficient trains on existing lines – leading to capacity increase
- Road upgrades leading to increased traffic capacity

**GROUP 3:
INVESTMENT ON NEW ASSETS**

- New technology
- New schools and hospitals
- New bus, light rail and train routes
- New public housing

IN GENERAL:

- Infrastructure investment in Group 1 does not lead to additional recurrent costs – in fact, at times the new facilities might be able to achieve operational efficiencies leading to recurrent savings.
- Infrastructure investment in Group 2 leads to additional recurrent cost when the efficiencies and economies of scale of the upgraded facility cannot meet the additional funding requirement of expanded service capacity.
- Infrastructure investment in Group 3 leads to significant additional recurrent cost.

The three classes of infrastructure investment

It is useful to classify infrastructure assets according to the funding requirements they generate – not only in terms of capital expenditure but also in terms of the level of recurrent subsidies that may be required to cover the operational costs associated with delivering services.

In this report we have classified infrastructure investments into three distinct classes:

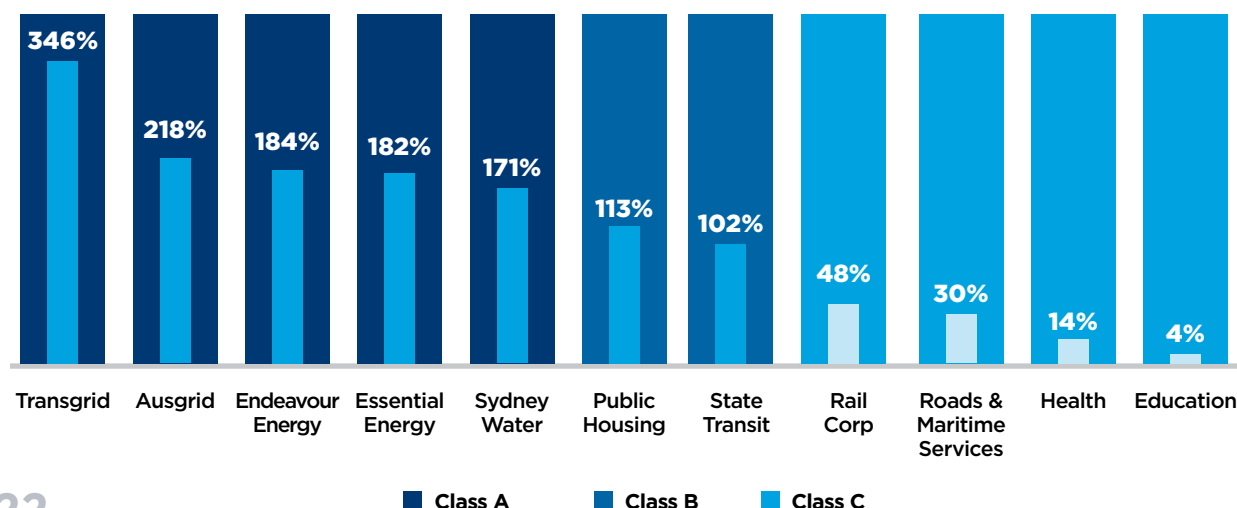
- Infrastructure for services which deliver sufficient revenues to cover operational costs, the cost of capital, and which deliver a **positive financial return** to government;
- Infrastructure for services which deliver sufficient revenue to cover operational costs but which cannot cover the cost of capital investment. This infrastructure requires a **capital subsidy** from government; and
- Infrastructure for services which do not deliver sufficient revenues to cover operational costs. This infrastructure requires both a **capital and recurrent subsidy** from government.

Figure 4 illustrates this classification for eight selected service delivery areas.

Figure 4 reflects that:

- As Category A assets, Sydney Water and NSW electricity companies can and do operate as profitable entities;
- Bus Services and Public Housing are considered Category B assets in that they generate sufficient revenues to cover their operating cost, but not enough to fund capital replacement and expansion;
- While RailCorp does generate significant revenue, it remains a category C asset in that the majority of its operational costs are still funded through a public subsidy; and
- Health and Education generate a low level of revenue in comparison with their service costs and the operational costs of these services are almost entirely funded through a government subsidy. This places them firmly in Category C.

FIGURE 4:
SELF-GENERATED INCOME AS A % OF OPERATIONAL EXPENSES FOR SELECTED SERVICES





Category C is the hardest infrastructure to fund in that it delivers new growth in services which do not operate as a profitable business and which require a recurrent subsidy from government. In the private sector, capital investment occurs so that production can meet product demand and increase profitability. In the government sector, investment in Category C infrastructure projects generally leads to the 'business' model of the government budget becoming even less 'profitable' – as operational subsidies grow with service expansion.

This explains why so much of the growth in recent state infrastructure spending has been directed toward Category A infrastructure programs.

Money spent expanding the electricity network or the desalination plant can make a return to government. Comparatively, investment in public transport can often increase the recurrent liabilities of state government. This goes some way towards explaining why transport infrastructure is left to languish in comparison with other infrastructure classes.

In the following sections we will examine the recent history of infrastructure expenditure in NSW to better understand why some projects simply fail to materialise, despite their obvious need and generally strong levels of community support.

Has NSW been underinvesting in infrastructure?

For some time now, the community in New South Wales has had a perception that there is an infrastructure deficit across the state. Is this true? And if there is a deficit, is this deficit consistent across all types of infrastructure?

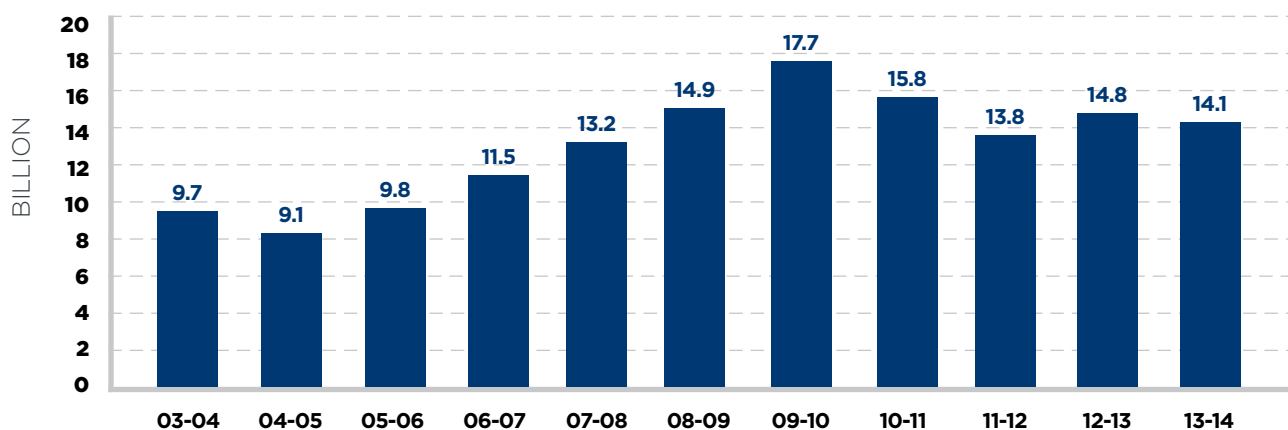
By any measure, NSW has a vibrant and dynamic economy. Its people are some of the best educated and healthiest in the world.¹⁷ Education and health services are universally available. Its cities and towns are rated highly in terms of liveability and amenity.¹⁸ The lights stay on, the streets are mostly safe and clean.

Nevertheless, the widespread perception is that we are suffering from a chronic backlog of infrastructure. From the outset, this report seeks to address the perception that successive governments have failed to keep up infrastructure

spending. Media reports have reinforced a perception in the community that there has been a 'lost decade' in infrastructure spending and that government has failed to keep up with growing demand and a greater population.¹⁹

Despite this perception, growth in infrastructure expenditure has been reasonably consistent. As Figure 5 shows, over the past decade, NSW Government capital expenditure has increased in real terms - at a compound annual growth rate of 3.8% per annum.

FIGURE 5:
NSW GOVERNMENT REAL INFRASTRUCTURE EXPENDITURE 2003-2014



There was a spike in spending following the Global Financial Crisis (GFC), largely attributable to the Commonwealth Government's stimulus package. The only trend towards a lower level of capital works expenditure is found in the last three years - reflecting capital funding returning to pre-GFC levels. In any case, recent expenditure is still significantly higher in real terms than it was a decade ago – more than 45% higher.

It is also worthwhile examining where capital expenditure has occurred. Figure 6 breaks down capital expenditure into two sectors:

- The **General Government Sector (GGS)** which comprises Health, Education, Public Transport, Roads and other Government Departments; and
- The **Public Trading Enterprise (PTE) Sector** which comprises the major water and electricity utilities and public housing.

It is important to note that most capital expenditure has been directed towards the PTE sector, indicating an overwhelming preference for Category A investments.

From 2003-04 to 2013-14, the NSW Government spent \$144 billion on infrastructure, but as Figure 7 shows that more than half of this expenditure occurred in the PTE sector.

Recent PTE capital expenditure has largely been used on upgrading NSW's electricity network in order to improve network reliability and to reduce the number of brownouts and blackouts.²⁰ It has also been used to augment Sydney's water supply through the construction of a desalination plant to help make Sydney drought-proof.²¹

To the public, this is largely 'invisible expenditure' – it means that we continue to have appropriate water supply and that electricity works when

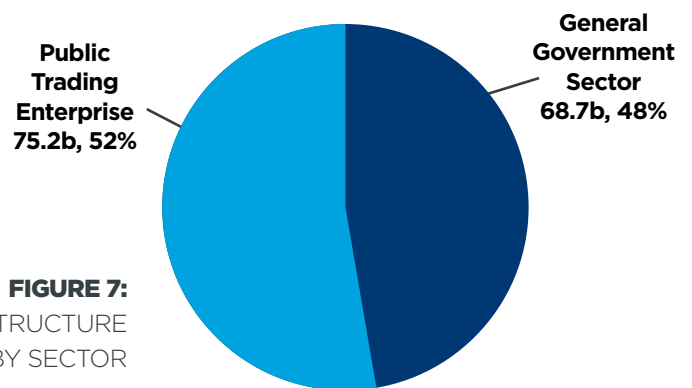
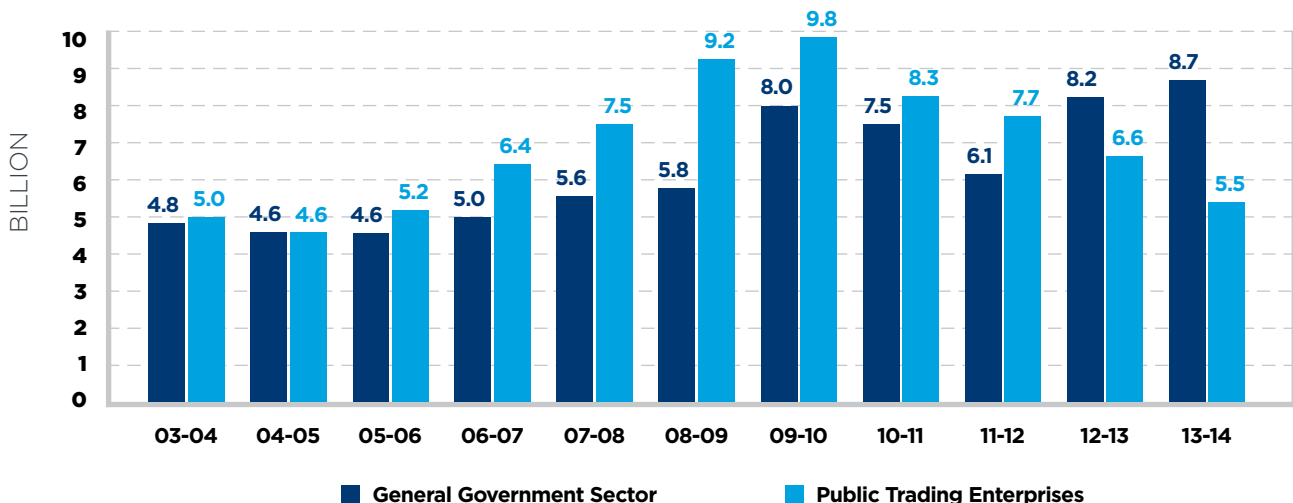


FIGURE 7:
NSW GOVERNMENT REAL INFRASTRUCTURE EXPENDITURE 2003-2014 BY SECTOR

FIGURE 6:
NSW GOVERNMENT INFRASTRUCTURE EXPENDITURE 2001-2013 SPLIT BY SECTOR





we need it. However, it is hard for the public to connect these two concepts, that is, a reasonable expectation to have running water and reliable electricity with the multibillion dollar government investment required to deliver this - \$73 billion over the past 12 years.

This report also notes that over the past two decades there has been a substantial investment in social infrastructure, despite the fact that most classes of social infrastructure would fall into Category C. This would indicate that it is indeed incorrect to state that there has been a 'lost decade' of infrastructure funding. Almost all of Sydney's hospitals have been rebuilt. Our essential services such as water, sewerage and electricity are relatively reliable compared to most other comparable countries. Our schools and universities are also of high international standards.²² While there are occasional failings, much of our infrastructure is very good.

When considering infrastructure expenditure as a whole, it would appear that NSW has been investing strongly, with a particular focus on utility upgrades and social infrastructure. However, it is also true that in some areas NSW struggles to provide adequate infrastructure. This is especially true for transport

infrastructure where, by international standards, Sydney's service levels and costs are poor.²³

There is a legitimate question as to why transport infrastructure has received less support than investments in other Category C investment classes, including social infrastructure investments into schools and hospitals. Schools and hospitals are rated as deep Category C investments in that they require a significant operational subsidy in order to deliver their services. Despite this, they still manage to receive the vast bulk of the State's recurrent and capital expenditure. Combined they consume approximately 50% of state government expenditure.²⁴

A large part of the reason that such projects continue to receive funding despite their long term budgetary impacts is that there is a well-established expectation within Australian society that the provision of these services will be universal and largely equitable. As such, taxpayers are often happy for these services to receive ongoing support through general government revenue. On the whole our citizens expect to experience a long and healthy life with a good level of education.

Both state and federal government funding reflects



this. Notwithstanding changes in the most recent federal budget, both health and education have well established funding formulas to keep these services operating. There are Commonwealth/State funding agreement for both. In some cases these formulas are supported by dedicated revenue streams, such as the Medicare Levy or NDIS levy.

At the community's insistence we have built, funded and maintained a universal health and education system, and despite recent debate over the ratio of federal/state funding, to date there remains a bipartisan political commitment to substantial federal government funding for schools and hospitals.

The same cannot be said about transport services – road and public transport services often require significant operational subsidies but do not have a funding system to ensure universality. There is no Commonwealth/State funding agreement to support transport. When the Commonwealth does provide funding, it is often ad hoc and project specific. The current federal government was elected on a pledge to completely stop Commonwealth funding for public transport.²⁵

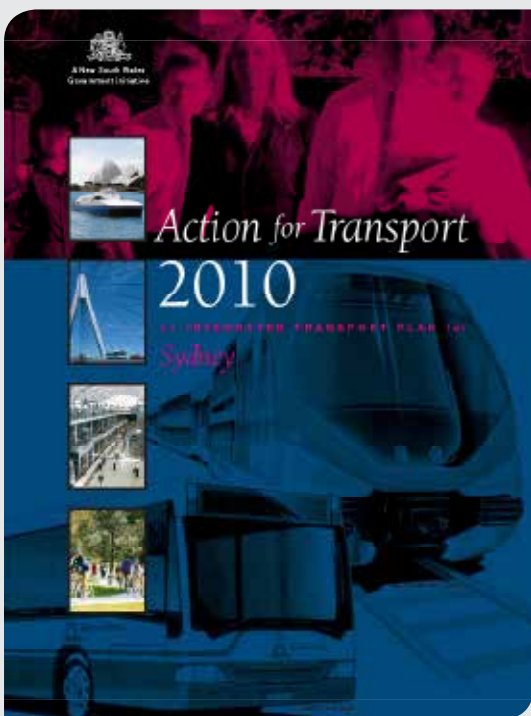
Consequently, the lack of a dedicated federal

government revenue stream to support the transport category of Category C infrastructure has meant that the NSW Government has been generally unwilling to invest in public transport projects that require significant recurrent subsidies.

This can be seen in the litany of projects that have failed to get off the ground after being formally “announced” in previous infrastructure plans. The last few decades have seen numerous plans and schemes announced by successive governments to enhance our State's infrastructure services.²⁶ Some have been large integrated schemes with a comprehensive programme of projects; others have been smaller discrete plans. Successive plans have been launched as a considered, thoughtful, and realistic infrastructure programme with clear priorities. Almost every year has seen the release of a new plan promising bold new schemes to resolve the State's long term transport problems. Each plan claims to be a carefully considered, costed list of infrastructure priorities.

It is worthwhile re-examining which projects have actually been delivered beyond their initial promise. More importantly, it is also worthwhile looking at which categories of infrastructure get built and which don't.

Case Study: Action for Transport 2010



Action for Transport 2010 was a transport planning document launched in the lead up to the Sydney Olympics in 1998. We have chosen to examine this plan because sufficient time has elapsed since its release to be able to assess whether its listed projects have been implemented or not. It was also chosen because this strategy was larger and more comprehensive than many of the others and covered a variety of transport typologies.

The plan sought to articulate the list of transport infrastructure which Sydney would require in a post Olympics period and was trumpeted at the time as Sydney's first integrated transport system blueprint. It promised 25 large new road, and public transport projects including **"a fully funded rail blueprint [that] will deliver eight new rail lines by 2010..."**²⁷

The notable thing about **Action for Transport 2010** was that a large number of its transport projects were projects that would have required recurrent subsidies on top of the initial establishment costs of each project. In the following table we have listed the 25 projects promised in the plan and examined which projects were carried out and which project were not.²⁸

ROADS

TRAINS

BUSES

PROJECT	DESCRIPTION	STATUS
Eastern Distributor	A 6 km link between Sydney CBD, Port Botany and Sydney Airport.	Completed.
M5 East	An Eastward extension of the M5.	Completed
M2 to Gore Hill Motorway	Extending the M2 to link up with the Gore Hill Motorway.	Completed
City West Link	An alternate route for traffic going in and out of the CBD from the western suburbs.	Completed.
M7 (aka Western Sydney Orbital)	A 39 kilometre north-south road linking the M5 and Hume Highway near Liverpool to the M2 at West Baulkham Hills.	Completed.
Cross City Tunnel	1.2 km tunnel Linking the Western and Eastern Distributors.	Completed.
Parramatta Road Upgrade	Major intersection improvements and the final stage of the City West Link.	Superseded by the Westconnex project.
Princes Highway Tidal Flow Scheme	New Canal Road tidal flow system.	Completed.
Victoria Road Upgrade	Numerous small upgrades for Victoria Road.	Completed.
New Transport Management Centre	New technologies to better manage the State's road network and enable quick response to traffic conditions.	Completed.
Sydney Airport Link	PPP rail project.	Completed, but with patronage levels continuing at well below original forecasts.
Bondi Beach Rail Link	Extension of the Eastern Suburb Railway.	Cancelled.
Parramatta-Chatswood Rail Link.	A link between the Western, Northern and North Shore Line.	Half built.
Epping-Castle Hill Line	A new line servicing the North West metropolitan area.	Superseded by the North West Rail Link.
Strathfield-Hurstville Line	First incarnation was the Hurstville-Bankstown line proposed. Later modified to link Hurstville with Strathfield, connecting the Eastern Line with the Southern Line, the Western Line, and the North Shore Line.	Cancelled.
Liverpool Y Link	'Y' shaped link near Granville station, linking South Western Sydney with Western Sydney using existing tracks.	Completed.
High Speed Rail to Newcastle	An \$800 million high speed rail link from Hornsby to Newcastle.	Cancelled.
High Speed Rail to Wollongong	A \$287 million high speed rail link from Sutherland to Wollongong.	Cancelled.
Parramatta-Liverpool T-way		
Blacktown-Wetherill Park T-way		Not built.
Parramatta-Blacktown T-way		Not built.
Blacktown-Castle Hill T-way		Partially built from Blacktown to Parklea.
Parramatta-Rousehill T-way		Completed. Renamed as the 'North-West T-way'.
Penrith-St Marys T-way		Not built.
Parramatta-Strathfield T-way		Not built.

For whom the road tolls

Those projects carried out from *Action for Transport 2010* were overwhelmingly those that managed to augment their recurrent funding either through user charges or by the projects incurring only a minimal recurrent liability. For the proposed road projects, this was predominantly achieved through tolls.



Sydney has had a long history of tolling roads, most famously for the use of the Harbour Bridge. Despite initial and significant opposition to tolls, the community grew to accept that tolls are a necessary impost to building an integrated road network. Toll roads provide a model through which the public and private sector can finance and build new arterial roads.

Over the decade that followed *Action for Transport 2010*, a flurry of Public Private Partnerships (PPPs) financed and built a series of major arterial roads across Sydney. The only exception was the M5 East, which was not tolled for political reasons.

Of the road projects listed in *Action for Transport 2010* over 90% were successfully completed. Only the Parramatta Road upgrade was not completed but this was because it was superseded by the much larger Westconnex project. For the remaining projects, the private sector was able to finance the cost of operating these roads through tolls and user charges, helping to convert these individual pieces of infrastructure into valuable assets. In some of the later PPPs, competition to build, own and operate toll roads became so fierce that the private sector even bid to provide some of the initial cost of capital for construction.

In an environment of cut throat competition, many bidders overestimated patronage numbers or underestimated the construction costs in order to win the bid – this was a misjudgement on the part of the private sector rather than the state government. As a result of this competition, Sydney's Cross City and Lane Cove tunnels failed financially and left their parent company in the hands of administrators.²⁹ It was financial disaster for those who invested, but much of Sydney's arterial roads still got built.

The implications of these failures has not been lost on government. These and other high profile failures interstate have damaged the funding model and tempered private sector appetite for future toll-road projects.

The overwhelming view of potential investors in their submissions to the Productivity Commission's recent inquiry into transport infrastructure was that the Government would now need to take on a larger proportion of both construction and patronage risk should they wish to secure additional private investment into greenfield infrastructure projects in particular.³⁰

Public transport: where art thou?

Of the bus transit ways listed in *Action for Transport 2010*, less than 50% were carried out.

In the case of the bus transit ways, despite having no toll, new investment was expected to result in improved efficiency and profitability for the buses which ran on them.³¹ Where this was demonstrated, the case for funding was made and the transit ways were built. As was highlighted earlier, buses are often able to fund their own operating expenses, and as such do not require recurrent subsidy from Treasury beyond the initial capital outlay.

Of the rail projects, two were fully completed. The Y Link to Parramatta – a relatively low-cost project – was completed 12 years late. The other rail project that was fully completed was the Airport Line, which was undertaken as a PPP. In this instance, poor patronage rates driven by high ticket prices meant that the private sector operators quickly went broke, leaving behind a legacy infrastructure asset which has consistently failed to meet expectations.

One other rail project from *Action for Transport 2010* was partially completed – the Epping to Chatswood line, a smaller portion of the much larger promised Parramatta to Chatswood line which remains unfunded and unrealised. The previous federal government offered to fund \$2.1 billion of the capital cost to complete this project with the rest being matched by the NSW Government. Under this proposal, NSW would have only be required to contribute \$500 million and would have secured a long desired new piece of infrastructure. While politics certainly played a major role in the eventual rejection of this offer, the overriding factor behind the decision not to proceed was the significant recurrent costs which would have had to be borne by the NSW Government in addition to the costs associated with also delivering the North West Rail Link.³² The newly elected O'Farrell Government indefinitely postponed utilizing the Commonwealth's offer, and following the 2013 election, the Abbott Government has quietly shelved the proposal.³³

On the whole, sixteen years after *Action for Transport 2010* was released, less than 20% of the rail projects were carried out.

Conclusions from our case study

***Action for Transport 2010* demonstrates that it is primarily not the cost of capital which is preventing these projects getting built, but rather the recurrent implications of operating them.**

Sixteen years later, the projects which have been left unfunded are predominantly rail projects which would have required substantial recurrent subsidies following their completion. For these projects, the NSW Government was faced with the dual problem of first finding the initial cost of the capital works and then the recurrent subsidy required to provide the services that would flow from them. This is the fundamental problem which plagued *Action for Transport 2010* as well as a substantial number of other transport infrastructure projects both before and since. It is a serious problem which is still plaguing us today.

In many cases the gap between recurrent costs and service revenue could theoretically be funded through greater debt; however it is fiscally irresponsible to fund recurrent costs through debt. Borrowing to fund recurrent expenses is the fast track to a Greece style financial collapse.

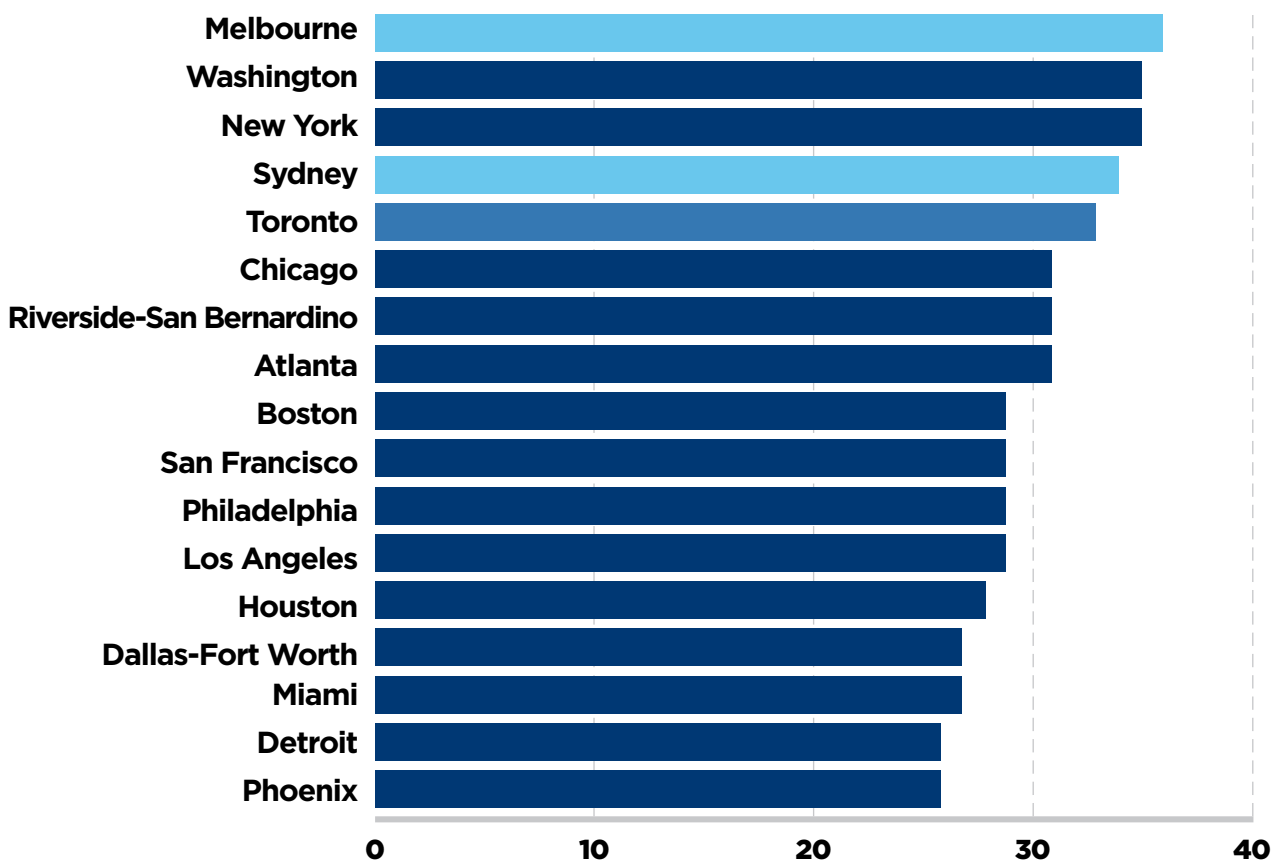
The primary lesson from *Action for Transport 2010* is that, unless we resolve the issue of recurrent subsidies, state governments will continually fail to deliver an important segment of the transport infrastructure we need.

How does Sydney's transport system actually stack up?

When considering the evidence that road projects have been vastly more successful in securing government funding than rail, it is important to acknowledge that commuter transit times in NSW remain substantially worse than in other comparable cities worldwide.

FIGURE 8:

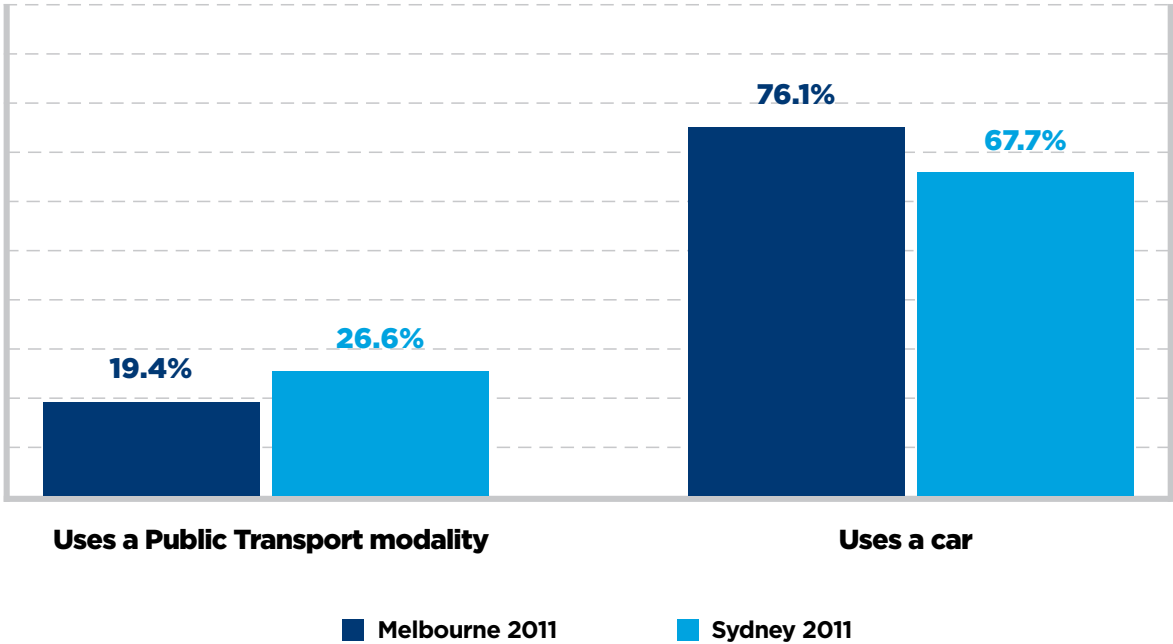
ONE WAY WORK TRIP TRAVEL TIMES: METROS OVER 4,000,000,000 - AUSTRALIA, CANADA & USA³⁴



Sydney's average one-way work trip travel time is 34 minutes. This exceeds that of all similarly sized or larger metropolitan areas across the three countries, with the exceptions of the substantially larger cities of New York and Washington.

Anecdotally, many Sydneysiders also believe that Melbourne has a better public transport system than Sydney. The facts do not support this view. The 2011 Census shows that as commuters, Melbournians are more reliant on cars than Sydneysiders and that a higher proportion of Sydney commuters use public transport during their journey to work.³⁵

FIGURE 9:
MODALITY OF TRANSPORT ON THE WAY TO WORK FOR MELBOURNE AND SYDNEY

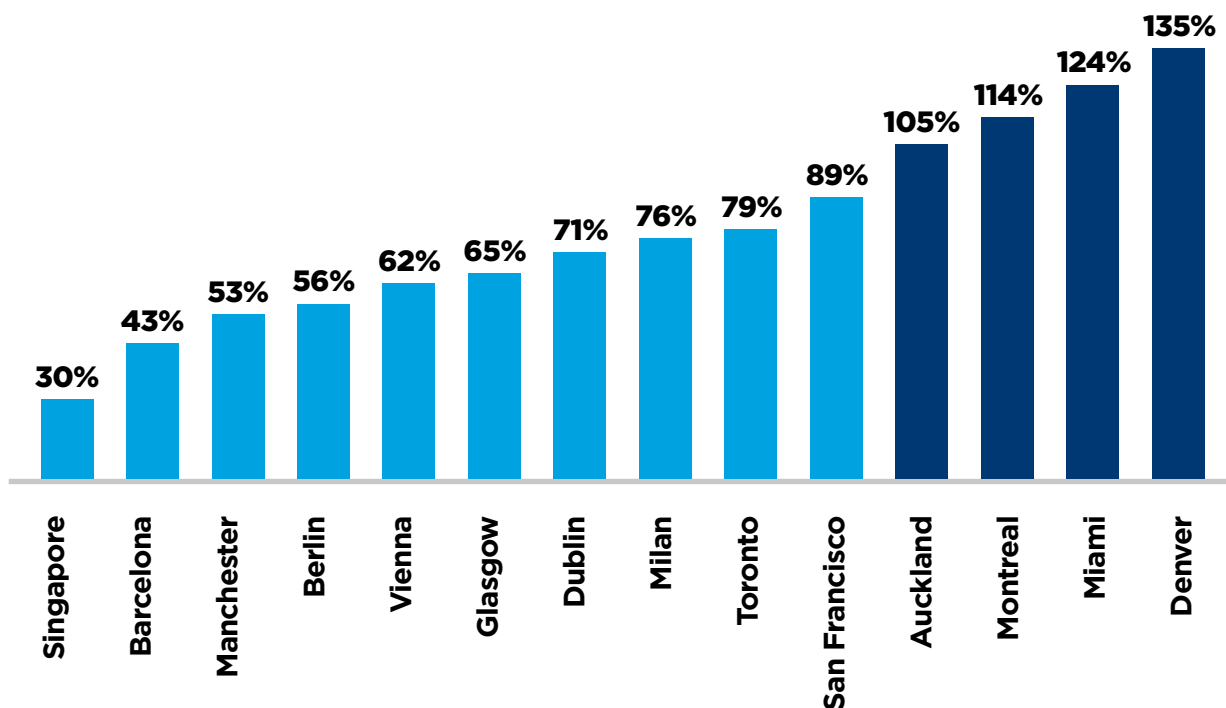


The reality is that Sydney has the most comprehensive public transport system in Australia, though this does not mean that Sydney's public transport system necessarily functions at an adequate level.

Evidence would suggest that our public transport system fails to meet the community's needs and expectations. Our trains, buses, and ferries perform poorly when compared to cities internationally. PricewaterhouseCoopers (PwC) has ranked Sydney 21st out of 30 countries in terms of mass transit coverage, worse even than the vast sprawling city of Los Angeles. This is despite the fact that Sydney also scored second worst on the cost of public transport.³⁶ Many families in Sydney have no public transport within an acceptable distance from where they live. For those commuters experiencing long travel times, this can have a negative effect on both productivity and family life.³⁷

As Figure 10 shows, it is also true that, in comparison with many cities around the world, Sydney has lower population density, which makes the provision of public transport harder and more expensive.

FIGURE 10:
SYDNEY'S POPULATION DENSITY AS A % OF POPULATION DENSITY IN SELECTED CITIES



So while Singapore has a much better public transport system than Sydney, it is also true that, on average, Sydneysiders occupy four times more space than Singaporeans³⁸ and that Singaporeans pay much more to own a car and to use their roads. In addition, Singapore has made a series of long term public policy decisions to favour public transport over the private vehicle.

It is arguable that in Sydney there has been a trade-off between good public transport and a good sized backyard. The average floor area of a free-standing house in Australia is 243 square meters, some 40% larger than 20 years ago. This makes Australian houses officially the largest in the world, with the average floor area now 10% larger than even the land loving Americans.³⁹ Even once apartments are factored in, Australia still boasts the

world's largest average dwelling size of 214 square meters, while NSW dwellings boast an average size of 219 square metres.⁴⁰

The failure to contain urban sprawl has directly undermined the business model of transport infrastructure projects. Buses travel further with fewer customers, train lines need to be built to locations that are farther and farther away, and fewer dwellings are delivered close to major transport routes, further undermining patronage numbers.

Arguably, the failure to contain urban sprawl may well be forcing a number of transport projects deeper into Category C, further undermining the likelihood that they will ever secure government funding. This in turn may be holding back overall patronage rates on Sydney public transport.

Figure 11 shows that over the past decade, train patronage in NSW has only increased modestly by a modest 15%.⁴¹ This is an increase that only barely exceeds population growth over the same period of time.⁴²

FIGURE 11:
ANNUAL TRIPS IN THE SYDNEY TRAINS 2001-2012

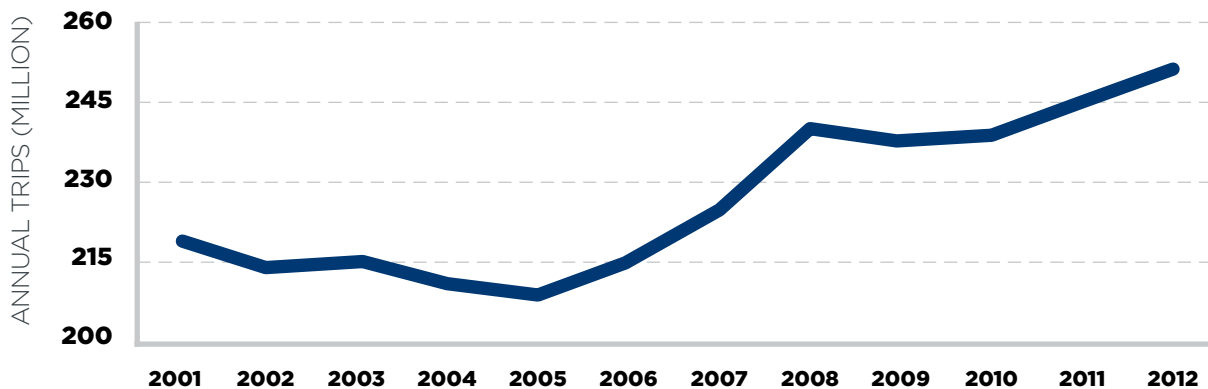
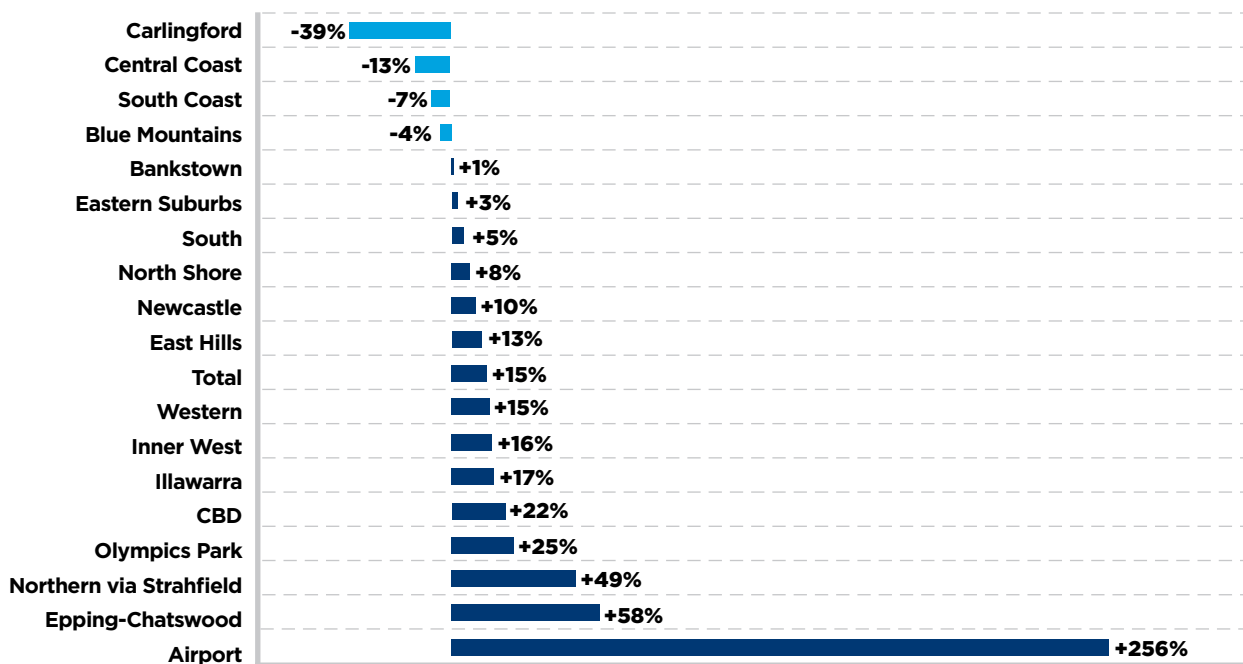


Figure 12 shows that much of that growth has resulted from improved services to and from Sydney airport rather than through substantial additional services to the community. In some regions; the number of trips has even gone backwards in spite of population growth.⁴³

FIGURE 12:
% VARIATION IN ANNUAL TRIPS IN SYDNEY TRAINS 2001-2012

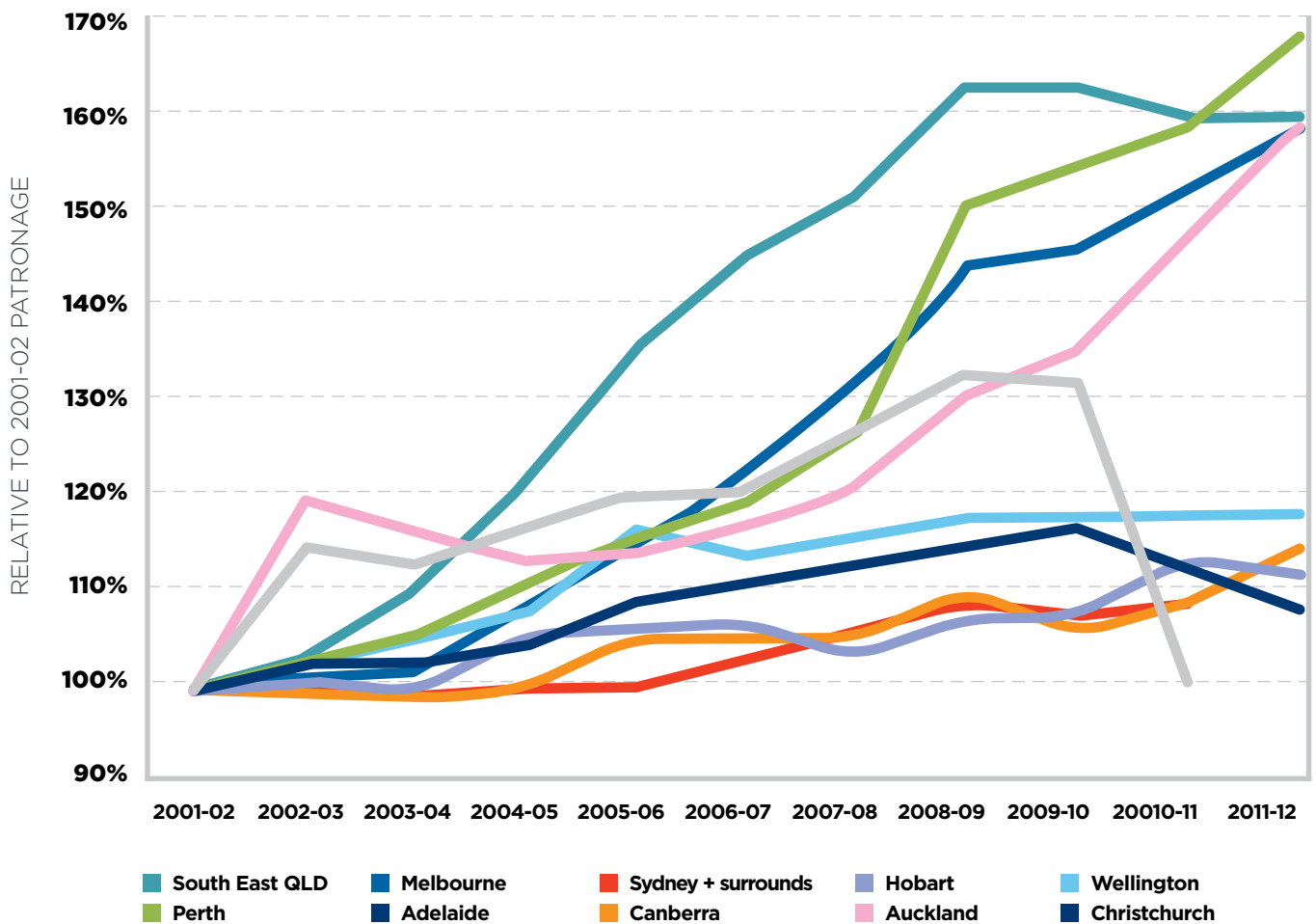


If NSW is to adequately boost productivity and workforce participation rates, particularly in Western Sydney where participation rates are already below average,⁴⁴ the Government will need to invest to ensure that transport services are at a minimum able to keep up with population growth rates.



Sydney's recent growth in patronage also compares unfavourably to the rest of Australia. Since 2001-02, most public transport patronage growth has occurred in other Australian cities.⁴⁵

FIGURE 13:
PUBLIC TRANSPORT PATRONAGE GROWTH BETWEEN 2001-12 AND 2011-12



Evidently NSW is lagging other cities when it comes to enticing its residents to use public transport. Lower patronage growth can also indicate less favourable revenue returns on those services that are provided. It is also possible that the failure to encourage stronger rates of patronage growth could be keeping a number of public transport projects in Category C for longer than otherwise might be the case if growth rates were higher.

The cost of not investing in infrastructure

Notwithstanding the reality that delivering new public transport will often result in an additional recurrent cost to the state government budget, it must also be remembered that a failure to invest appropriately in new transport services can result in a high price being paid for the lack of connectivity in our cities.

The shortage of infrastructure investment in public transport is a serious drain on the productivity of our cities. Workers are stuck in traffic or on unreliable or overcrowded public transport when they could be working or recreating. Congestion costs alone are forecast to cost the Australian economy some \$20.4 billion per year by 2020.⁴⁶ The most efficient of manufacturing and agricultural businesses are too often thwarted in accessing our ports and international markets because of access and traffic issues.⁴⁷

There is also a significant opportunity cost in not providing the infrastructure our city needs. Sydney has recently been ranked the seventh worst city in the world for congestion.⁴⁸ Averaged over the whole day, road congestion results in a time penalty over free-flowing roads of some 33% in Sydney, while the delay nearly doubles during periods of peak travel.⁴⁹

FIGURE 14:
CONGESTION IN SELECTED CAPITAL CITIES IN 2013

City	Congestion	Morning peak	Evening peak	Delay per hour driven peak period	Congestion change 2011 to 2012
Sydney	33%	70%	67%	40 mins	Increase of 1%
Perth	30%	55%	55%	33 mins	Increase of 4%
Melbourne	28%	56%	54%	33 mins	Increase of 1%
Adelaide	28%	50%	45%	28 mins	Decrease of -1%
Brisbane	25%	45%	50%	28 mins	Decrease of -1%
Canberra	18%	41%	34%	22 mins	Decrease of -1%

Note: Percentages refer to the Increase in overall times when compared to a free-flow situation. For example, a congestion level of 12% corresponds to 12% longer travel times compared to a free-flow situation. Delay in minutes per-hour driven during morning and evening peak times is as compared to free-flow situations. For example, 22 minute delay per hour at peak times indicates that a one hour journey driven at free-flow times will take an additional 22 minutes at peak times.

Australia's cities are the powerhouse of its economy. Sydney produces more economic output than the rest of NSW combined and on its own is responsible for some 22.1% of national GDP.⁵⁰ Improving the productivity and functionality of Sydney will have a significant impact on our future prosperity.

There is also a social cost for not providing the connectivity and accessibility that other cities enjoy. It means that people's quality of life is affected as they spend time commuting at the expense of family life and leisure. There is also a growing inequality of access for many communities as growth fails to be supported through concurrent infrastructure investments.

This has left many newer, outer urban suburbs languishing without services or remaining undeveloped. It is in the area of land economics where this cost is felt greatest. Housing supply is affected by many different factors but transport is often the key. Providing new public transport is one of the best ways to increase the yield of housing per hectare or to making available new land for housing.

While Sydney has appropriate funding models and finance to provide water, sewerage, power and telecommunications to support new housing supply, it still struggles to provide the transport necessary to make this housing attractive to potential residents. The result is that much of the recent new land supply for housing has remained undeveloped even though demand for new housing is strong.⁵¹ Sydney residents may already paying for the lack of investment in public transport through increased house prices and rents, as insufficient investment in new transport infrastructure acts to constrict new housing supply. This is particularly concerning given that Sydney is already suffering from a large shortage in residential housing.⁵²

The highest cost that arises from the repeated failure to deliver adequate public transport can be seen in the breakdown of public confidence in the government's capacity to deliver on its infrastructure promises. Decades of over promising and under delivering has heightened community skepticism about future projects. This breakdown

in trust makes it less likely that government and the community will be prepared to undertake the sacrifices necessary to build the mass transport system that NSW needs.

Societies can do and do pay a great opportunity cost for the lack of investment in transport infrastructure both in terms of productivity and quality of family life. This report has already shown that offsetting the fiscal impact of an ageing population will require substantial increases in the nation's population, productivity and participation rates.

Given these economic and demographic forecasts, any evaluation of the merits of an infrastructure proposal purely on the level of recurrent subsidy required to sustain it is likely to be insufficient in adequately capturing the opportunity costs of not investing.

This report is not suggesting that every infrastructure investment is necessarily a good investment for government, but rather that there are indirect benefits that also need to be taken into consideration when determining whether an infrastructure project is worthy of allocating funding to.

Nevertheless, this report acknowledges that the long-term fiscal challenges facing governments will all but ensure that competition for government funding becomes even more fierce. To prepare for this, policy makers will need to consider innovative new proposals to help ensure that we can fund the infrastructure requirements of tomorrow without unduly undermining the fiscal sustainability of the budget.

Issues with funding new transport projects through higher levels of debt

There is often a perception that government is too reluctant to go into debt. It is true that in the past we were able to build the roads and rail we needed by taking a long term, intergenerational view. Funding infrastructure through debt allows the cost of new infrastructure to be spread across the life of the asset.



Nevertheless, NSW Treasury has argued consistently that there is a limit to how much debt the State can carry.⁵³ This view is fundamentally correct and goes well beyond the issue of maintaining the State's AAA credit rating – the capacity of government to borrow is not unlimited and the dangers of over-borrowing are best illustrated through the fate of many European countries following the GFC.

There are also suggestions that government should issue bonds to raise the capital that they need. Issuing bonds is just another way of borrowing money and carries the same risks as other forms of debt.

In addition, for so long as NSW maintains its AAA credit rating, the government can generally raise funds at a much lower cost from the market than from bond investors. For example, this report notes that recent success of the NSW Government Waratah Bonds seems to have had more to do with securing Foreign Investor Visas for overseas investors rather than from any great demand within the community for state infrastructure bonds.⁵⁴

This report acknowledges that NSW is already carrying significant levels of debt. Figure 15 shows the NSW Government's net debt and total net financial liabilities as a percentage of Gross State Product (GSP) for the GGS and PTE sectors as well as for the Non-Financial Public Sector (NFPS). The NFPS comprises the GGS and FTE sectors together.

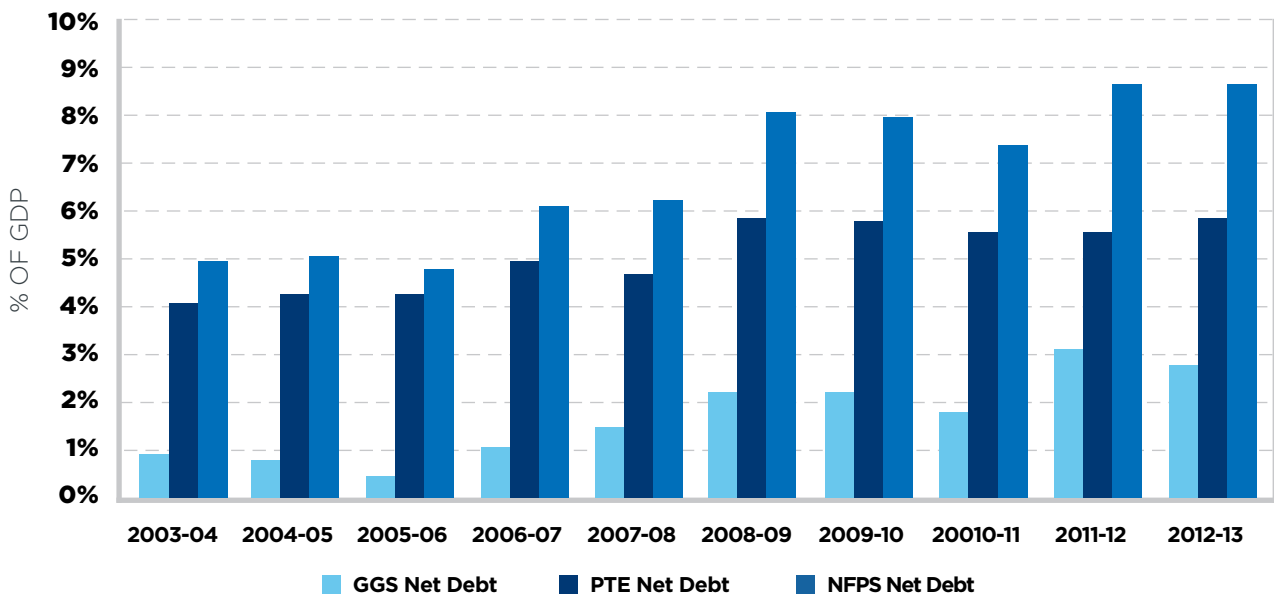
Figure 15 shows that from 2003 to 2013:

- Net debt in the GGS grew from 0.9% of GSP to 2.8% of GSP;

- Net debt in the PTE sector grew from 4.1% of GSP to 5.9% of GSP; and

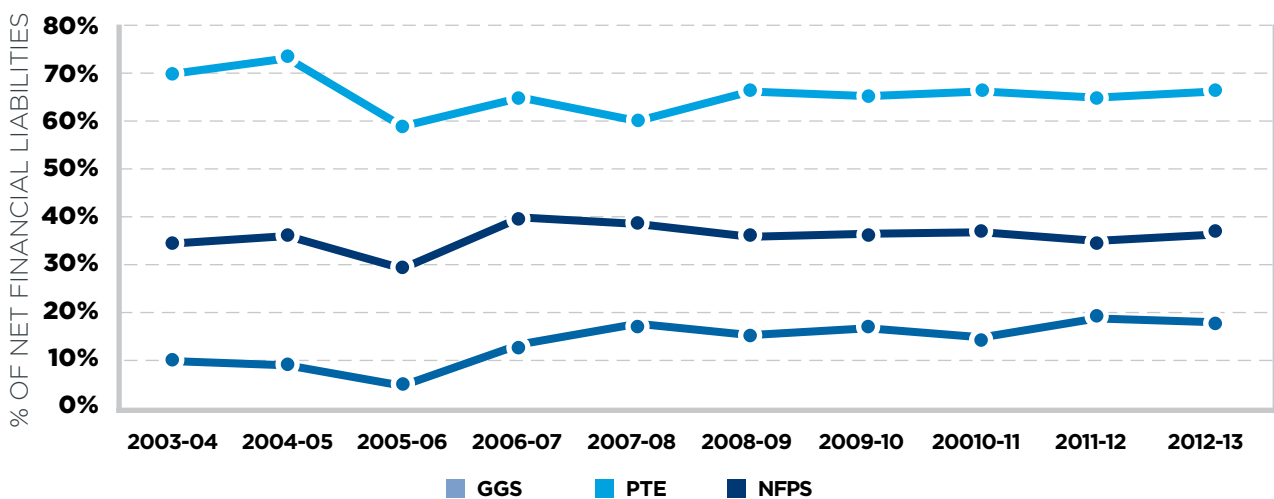
- Overall net debt in the NFPS grew from 5.0% to 8.7%.

FIGURE 15:
NET DEBT AS A % OF GSP 2003-13



Furthermore, as Figure 16 shows, between 2003 and 2013 net debt as a proportion of net financial liabilities in the GGS grew from 10% to 19%. This means that budget sector borrowings (used to fund infrastructure for services like health and education) are now almost twice as significant in their contribution towards the State's liabilities as a decade ago.

FIGURE 16:
NET DEBT AS A % OF NET FINANCIAL LIABILITIES





The evidence suggests that before considering taking on higher levels of debt in order to fund new GGS projects, we must first acknowledge that this is already happening on a heightened scale than previously was the case. Reflecting this view, in 2012 Standard & Poors revised the NSW Government's credit rating to 'negative outlook', and stated:

"In our view, there are increasing pressures on the New South Wales Government to increase its investment in infrastructure, [...] the ratings could be lowered if the state's operating performance continues to weaken and does not provide NSW with the capacity to undertake its infrastructure program while managing its debt burden."

The ratings could be revised to stable if there were a demonstration of revenue flexibility either through a strengthening of ownsource revenues or profitable asset sales, thereby allowing for greater capital investment without increasing the state's debt burden."⁵⁵

Debt will and should continue to be an important source of funding for infrastructure. Notwithstanding that, it is hard to envisage how debt could be used to expand significantly the State's capital program in the absence of increased revenues or without abandoning the prudential constraints that responsible governments should adhere to.

Will revenue be sufficient to fund new transport projects?

It is clear that any decision to expand the state's Category C infrastructure holdings would also necessitate an accompanying expansion in government revenue. As such, it is important to consider the sources of funding available to the NSW Government.

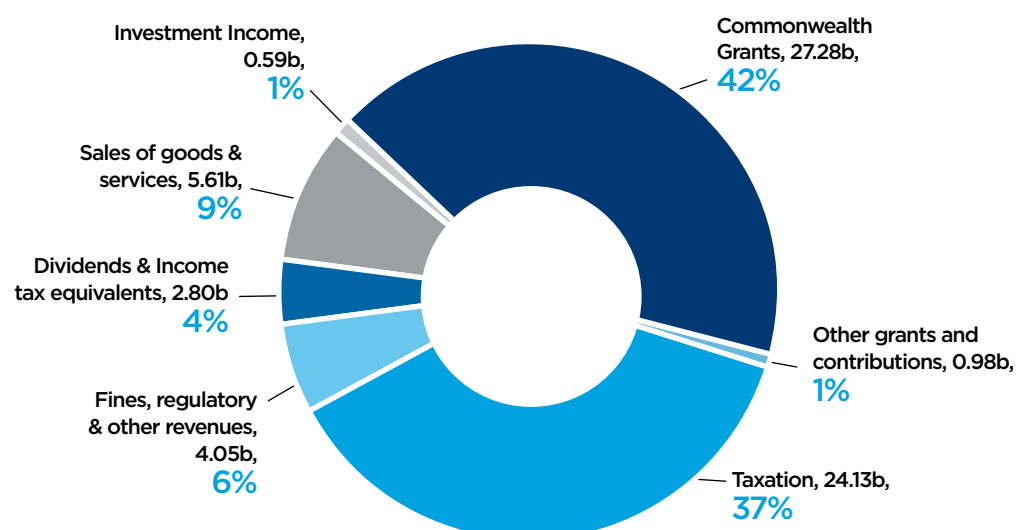
In 2013-14, the NSW Government received \$60.4 billion in income from the following sources:

- **Taxation:** including transfer and stamp duties; payroll tax; land tax; taxes on motor vehicles; and taxes on gambling;
- **Fines, regulatory & other revenues:** Including fines; license and regulatory fees; and royalties;
- **Dividends & Income tax equivalents:** Including dividends from electricity; water; financial services; ports; and the Snowy Hydro Corporation;
- **Sales of goods & services:** Including fees for service; entry fees; rents and leases; patient fees and other hospital charges; court fees and road tolls;

- **Investment Income:** Including returns on managed bond investments (i.e. investments with NSW Treasury Corporation) and interest on bank deposits;
- **Commonwealth Grants:** Including General Purpose Payments (i.e. GST); and Specific Purpose Payments under national agreements and partnerships (i.e. health payments); and
- **Other grants and contributions:** Including contributions by electricity and water providers to the Climate Change Fund; by parents and citizens associations to schools; and payments from the Commonwealth to Home Care.

Figure 17 shows the proportion of income emanating from each of the above sources.

FIGURE 17:
NSW GOVERNMENT
SOURCES OF
FUNDING 2013-14



According to the latest budget figures, roughly 52% of NSW Government income is obtained through taxation, sales of goods and services (user-pays), as well as fines and regulatory revenues. These are the areas that the state government can control directly through fiscal policy. An additional 4% of revenue is obtained through dividends from PTEs.⁵⁶

In 2013-14 dollars, Figure 18 shows the amount of revenue obtained from each of the above sources over the last decade.

FIGURE 18:
NSW GOVERNMENT SOURCES OF FUNDING 2013-14

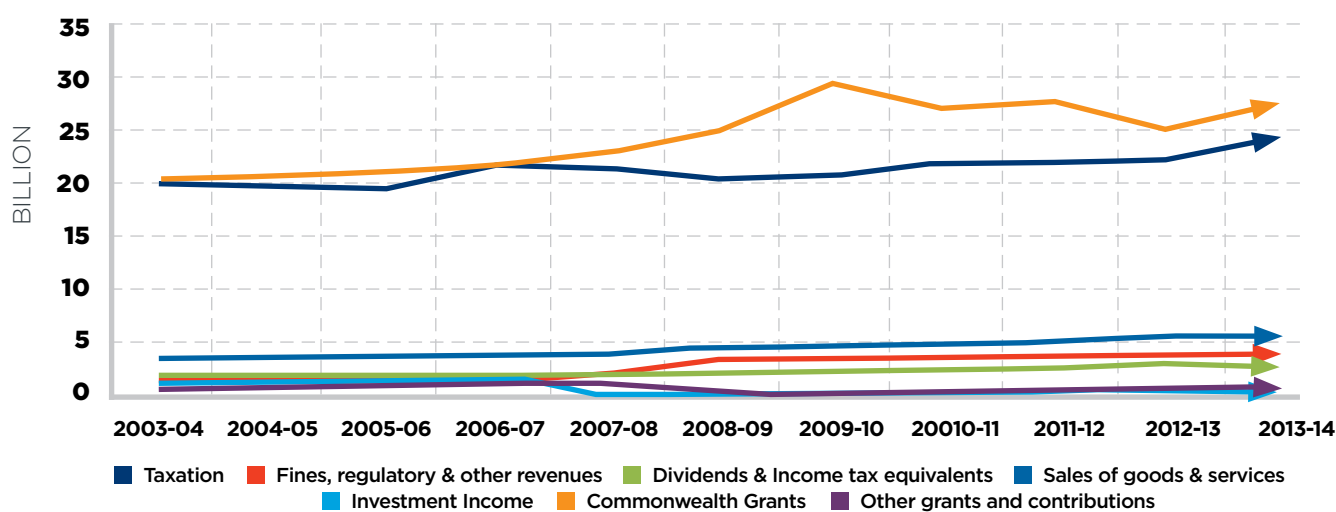
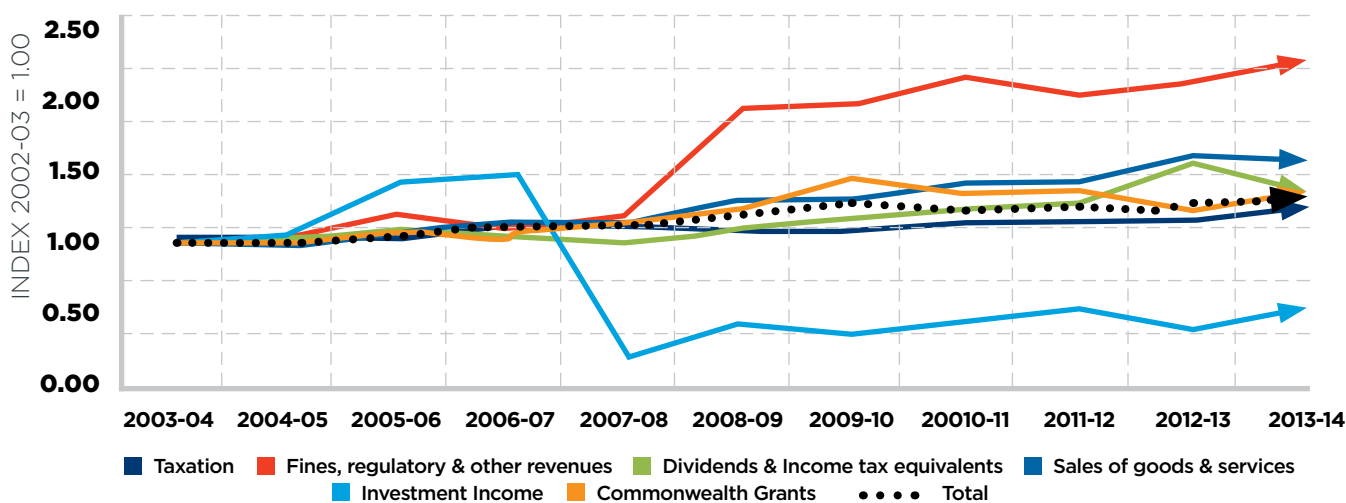


Figure 19 shows the real terms variation of each source over the last decade using 2003-04 as the base year.

FIGURE 19:
REAL TERMS VARIATION IN NSW GOVERNMENT SOURCES OF FUNDING 2003-14



These figures show that over the last decade:

- NSW Government revenues grew by 33% in real terms – a compound average growth rate of 2.89% each year. This compares with an average NSW population growth of 1.13% per annum;⁵⁷
- Fines and regulatory charges as well as user-pays grew above the average. In particular, revenue from fines and regulatory charges has more than doubled in comparison with 10 years ago;
- Revenue from taxation and investment income grew below the average. Returns from

government investments collapsed with the GFC and is now at a similar level as it was ten years ago. Taxation revenue grew by a compound average growth rate of 2.3% per annum; and

- Dividends from PTEs; Commonwealth payments; and other grants and contributions grew consistently with overall revenue growth.

Figure 20 compares the sources of revenue in the first five years of the decade with the last five years. It shows that in this period there was a significant shift in the funding shares away from taxation into user pays, fines and charges.

FIGURE 20:
REVENUE SPLIT COMPARISON 2004-09 AND 2009-14

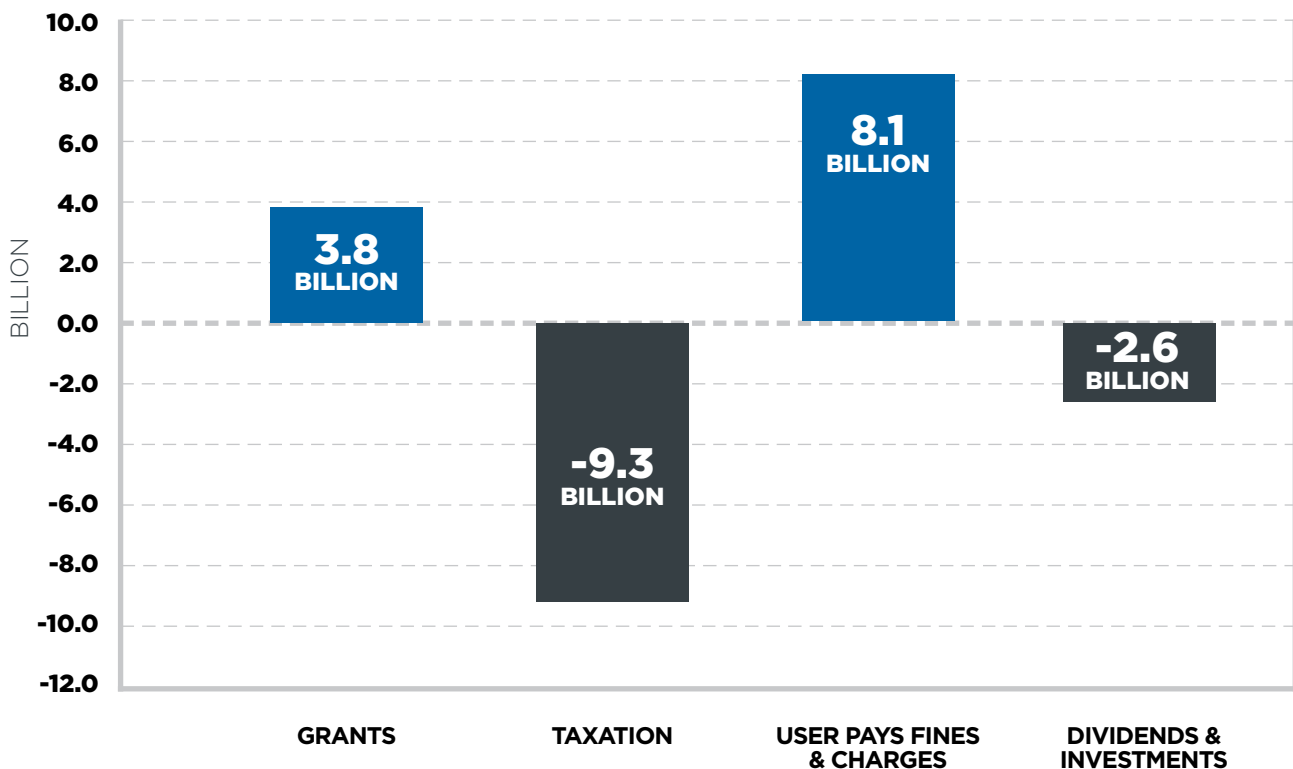
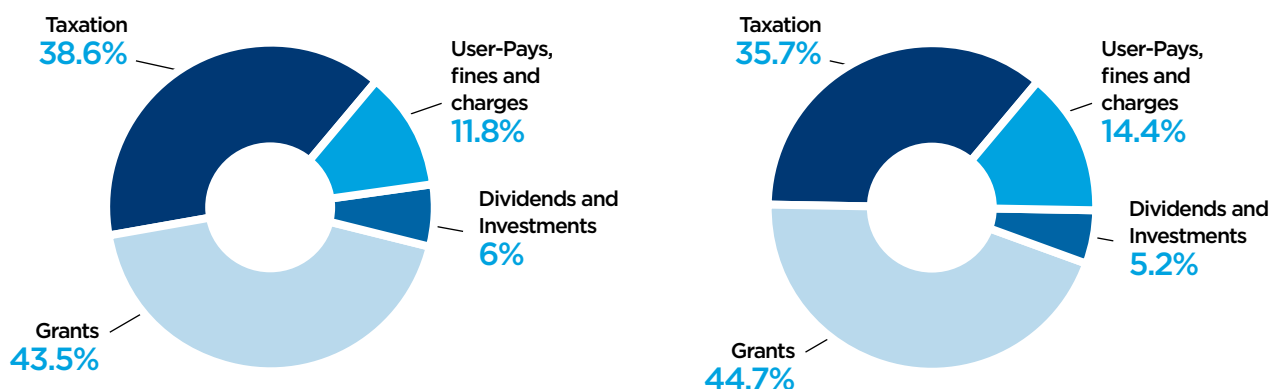


Figure 21 quantifies the shift in revenue sources between the two periods. It shows that if the funding shares in 2008-13 had remained at the 2003-08 levels, there would have been an additional \$11.7 billion collected from taxes (an average of \$2.3 billion per annum) and \$9.3 billion less collected from user-pays, fines and charges (an average of \$1.9 billion per annum).

FIGURE 21:
REVENUE TRANSFERS 2004-09 AND 2009-14



Over the last decade, the NSW Government has been able to increase the revenues it collects. If the delivery of government services is to be maintained and improved, it will have to continue to do so.

Any expansion of Category C transport infrastructure will inevitably require additional sources of recurrent funding. This will be made more difficult by concurrent demand growth forecast for health services, driven by population growth, ageing and technological improvements.⁵⁸ Competition for the growth dollar will be fierce. NSW Treasury estimates that “without policy change, budget expenditure growth will outpace revenue growth every year for the next 40 years”.⁵⁹

It is evident that should the state wish to expand its investment in Category C infrastructure, it will have to either increase revenues, decrease subsidies, and/or cut spending in other areas. In the context of public transport; the state government will either need to either find new ways of collecting additional revenue which can be dedicated to

provide operational subsidies for public transport expansions, or it will have to significantly increase the price of public transport tickets.

If it fails to pursue either of these two options, it will likely have to restrict growth funding in other sectors of public expenditure including health and education – perhaps the least acceptable option of all.

None of these options are politically palatable: tax more, charge more for new services, or cut existing services. From a purely political perspective, the easiest path to take would be to minimise the expansion of Category C infrastructure. Not coincidentally, this is exactly what has happened.

If the state government is to provide the infrastructure necessary for boosting our population, productivity, and participation rates, it will need to find new sources of revenue to close the gap between recurrent costs and revenue on transport infrastructure projects.



Tackling the funding problem

If NSW is going to deliver an appropriate level of transport services, the state will need to find new ways to fund the currently subsidised operating costs associated with Category C transport projects. The state will also need a new funding model which moves these types of infrastructure toward some level of cost recovery.

Category C infrastructure will almost never generate enough revenue on its own to make it a viable financial investment by the NSW Government. The recurrent subsidy for new services combined with the cost of capital puts the price of these projects beyond the state's capacity to deliver without drawing down on an already shrinking revenue base. However, by utilising innovative new funding mechanisms, it is plausible that recurrent costs could be either partially or wholly offset by combining service revenue with other revenue streams.

By closing the recurrent funding gap, a number of transport projects could theoretically be migrated from Category C infrastructure over into Category B. Even if initial construction costs are unable to be recovered, removing a project's recurrent costs from the state budget would substantially increase the likelihood of that project going ahead.

Efficient and popular hypothecated taxes

There are very few international examples of public transport infrastructure which does not require some sort of recurrent subsidy. Even Sydney buses – NSW's most profitable form of public transport – cannot cover their cost of capital. New bus transit ways and buses themselves often require a capital enhancement through the state budget.⁶⁰ Notwithstanding this, other countries have been able to expand their services while maintaining a solvent treasury.

One option for ensuring fiscal sustainability would be to simply increase the tax base to offset the state's increased recurrent liabilities. While this is a perfectly valid solution in its own right, the policy reality remains that this approach would likely be both politically and economically difficult to implement, notwithstanding the constitutional constraints on what states are allowed to tax.

Nevertheless, evidence does suggest that community resistance to new or higher taxes can be overcome if the community believes that the funding will be wholly directed to a clear public good with a tangible social benefit.

London has been able to build broad support for its city wide congestion tax by ensuring through legislation that the full amount of net revenue raised by the tax is

directed towards public transport.⁶¹ The London congestion charge raises over £120 million each year.⁶² Most of this funding is spent upgrading and extending the London Underground.

While the congestion charge does appear to have failed its original policy intention of reducing traffic congestion, it has proven to be politically popular. It has withstood changes in political administrations and changed the economics of public transport in London. Public subsidies are still required to fund expansions and improvements in the network, but the extra recurrent money provided through the congestion tax has made such investment more economically sustainable for both the public and private sectors. As a result, investment in London's public transport network has increased significantly. Even following the GFC, public transport in London is now growing at its fastest rate in generations – both in terms of patronage numbers and network coverage.⁶³

Similarly Singapore has also managed to fund much of its public transport through a range of taxes, charges and fees on private vehicles. Singapore has funded much of its public transport through a congestion tax that has been in operation since 1975 and which is regularly held up as an international example of how to secure recurrent funding for public transport investment.⁶⁴

This report argues that in the future a Central Business District (CBD) congestion tax could be used to raise additional revenue which could then be hypothecated to delivering improvements in state public transport improvements.

In addition to new congestion taxes, a hypothecated *Metropolitan Infrastructure Levy* is one possible option that could help to bridge the recurrent expenditure gap. Land is relatively under taxed in NSW. Most citizens are only liable to pay Local Council rates and NSW has the lowest per capita rates of any jurisdiction in Australia.⁶⁵ An average \$100 levy on each rates notice would raise an estimated \$180 million from 1.8 million residential and non-residential rate payers in Greater Sydney each year.⁶⁶ If this funding was hypothecated directly to expanding and improving

the public transport network it would make a significant impact on the recurrent expenditure gap.

There are obvious equity and fairness issues with such a levy but these may be overcome by localising the levy to certain Local Government Areas or directing them to communities which will benefit the most. It should also be remembered that these levies are aiming to overcome the existing inequality of access within the community with regards to public transport.

Hypothecating such taxes and levies may also make them more politically palatable. As with the London congestion tax, the NDIS, and the Medicare Levy, evidence suggests that people are often prepared to pay more on the proviso that the funds are dedicated to a service that could at some point directly benefit them.

Hypothecated taxes and levies have had a chequered history in NSW. There may exist concern within the community that government will simply take any new revenue raised and fold it into consolidated revenue. This was the case with 3+3 Black Spot Petrol Levy, originally established as a 3 cent levy on every litre of petrol for 3 years with the intention that money collected would be directed to funding urgently needed upgrades at accident black spots on NSW roads. The money raised was far greater than the Black Spot Program needed however, and the excess revenue was used by Treasury for other programs.

If new taxes or levies are to be introduced, the ability to utilise that money for other purposes must be constrained. Road tolling has only become more acceptable and widespread because road users can perceive an immediate benefit from their toll.

If hypothecated taxes are to be accepted by the community, any revenue generated must be strictly spent only on those services for which the revenue was raised. The economic success and public support for London's congestion tax reinforces the contention that people are often prepared to pay additional tax on the proviso that there is certainty surrounding the public benefit that will directly flow from that tax.

Charging the users of rail and roads

RAIL CHARGES

User charges also provide a potential mechanism for closing the gap in recurrent expenditure. Public transport fares in Sydney are already one of the most expensive in the world and the capacity to increase them beyond inflation is limited.⁶⁷ There is also evidence to suggest that a modal shift away from public transport could occur once ticket prices gets too high.⁶⁸

This is supported by the persistently low patronage rates on the Airport Rail Link. Despite competitive travel times, the Airport Link has historically failed to meet patronage expectations. In 2005, the line carried an estimated 14,000 people per day, over 70% less than originally forecast.⁶⁹

This has significantly improved in recent years. Renewed marketing, improved service reliability, upgrades to station infrastructure, and an ownership change in 2008 all contributed to a 25% increase in station activity. Nevertheless, Airport Link patronage still fails to meet original expectations, and growth has to date been insufficient to mitigate increased airport road congestion. This is due to a number of factors; though the most prominent of these is the cost of rail fares.⁷⁰

That Sydney Airport users frequently choose to use private vehicles, taxis, or even walk to more affordable transport options indicates that the price elasticity of public transport is a substantially limiting factor in the capacity to cover recurrent funding costs through heavy fare increases.

In most circumstances, demand for public transport is fairly elastic and people do make choices based

on price. Nevertheless, there may still be some scope for increases in demand based pricing. During peak periods much of our public transport services operate at capacity and overcrowding is common. During these times alternative private transport modes are also likely to be at capacity, reducing commuter options. Consequently, there is less price elasticity during periods of peak demand, indicating that there might be some scope to increase user charges on public transport at certain times of day.⁷¹ The recent introduction of the Opal Card should make it easier for transport agencies to better match pricing to demand. City Rail already has some demand based pricing in its ticketing structure, though there is substantial scope to improve price targeting by expanding it to other transport modes including buses, ferries and light rail.

Infrastructure NSW has previously supported an increase in public transport user charges and is on the record as recommending that:

“Consistent with the NSW Commission of Audit, Infrastructure NSW recommends that the NSW Government reduce the proportion of funding that transport agencies receive from public subsidy to the levels determined as efficient by IPART. This will be achieved through a combination of operational efficiencies and modest fare rises.”

This report acknowledges that Sydney rail fares currently recover just 19.8% of recurrent operation costs.⁷² It is entirely appropriate that Government examine whether further moderate fare increases could be applied to some ticket categories, though any increase in user charges should only be implemented after appropriate consideration of the demand elasticity of the affected fare.

It is important to understand that the scope for increasing user charges on the rail system relates to the time of day, not to distance travelled. There is an increasing socio-economic divide between the inner-city and the suburbs, and those in the suburbs are increasingly sensitive to fluctuations in price. Therefore the old system that charges commuters more, based on the

distance travelled has an unintended consequence of disproportionately affecting middle income Australians.

TOLL ROADS

While increased user charges on public transport could provide some limited improvement in the funding of public rail transport infrastructure, a greater use of road tolling does have a far stronger likelihood of bridging the gap between recurrent costs and project revenue. Currently, just 253 kilometres of the nation's roads are tolled, representing just 0.028% of the Australia's total road network. Given the challenging fiscal environment facing state and federal governments, it is likely that user charges will increasingly become the norm for new road projects. Notwithstanding the high-profile failures of the Cross City Tunnel PPP and the CLEM7 Tunnel, the broader capacity of toll-roads to effectively fund themselves remains undisputed provided that appropriate diligence is taken when forecasting costs and demand.

In most instances, road toll failures have largely been attributable to overly optimistic traffic forecasts being presented by private contractors during the initial bidding process. In 2010, University of Sydney academics Dr. David Hensher and Zheng Li undertook a comprehensive review of 14 Australian toll roads to compare actual and forecast traffic levels on 14 Australian toll roads. The study examined nine motor ways, three tunnels and two bridges, with the majority of these projects delivered via PPPs with varying degrees of government support. On average, actual traffic volumes were found to be 45% below the forecast levels.⁷³

In contrast, a 2005 analysis of 104 international toll roads, bridges and tunnels undertaken by ratings agency Standard & Poor's (S&P) found that patronage forecasts had overestimated traffic levels by an average 23% during the first year of operation.⁷⁴ Whilst this research confirms that the issue of 'optimism bias'⁷⁵ remains a challenge for policy makers world-wide, it is deeply concerning that traffic forecasts for Australian projects have

been substantially less accurate than the global average. Notwithstanding this, there are a number of Australian toll roads that have defied this trend, most notably Sydney's Eastern Distributor and Melbourne's CityLink.

CityLink in particular is worthy of further consideration as it was identified by the Productivity Commission as a best case example. In 1995, the Victorian Government granted an exclusive licence to Transurban to design, build, finance, operate, levy tolls and maintain CityLink for 34 years until 2034.⁷⁶ Under the terms of the license, the majority of the risks associated with CityLink were transferred to Transurban, including patronage risk. This is notable because, unlike other toll roads, patronage on CityLink is actually exceeding forecasts.⁷⁷ Most of the funding for the project is raised through tolling. CityLink uses distance-based tolling which is indexed to the consumer price index. Current toll caps are \$6.93 for cars, \$9.24 for commercial vehicles during the day, and \$6.93 for commercial vehicles during the night. Once the contract expires, CityLink will be transferred to the Victorian Government. Assuming that the state government does not then remove the tolls, revenue from the road should more than adequately cover maintenance and operation costs associated with CityLink, with the high likelihood that there will be additional revenue available to potentially help fund other Category C transport projects.

Given the widely different outcomes that have occurred on previous toll-road projects, it is critical that Government continuously review its PPP tendering processes with a particular focus on securing more accurate patronage forecasts so as to ensure that cost-benefit analyses are able to correctly judge the merits of each transport proposal. That recorded patronage levels have been an average 45% less than their first year forecasts is unacceptable and goes a long way towards explaining why many toll roads fall into Category C. Had initial forecasts more accurately predicted these lower levels of patronage, it is unlikely that many of these projects would have received a favourable cost benefit analysis. When public funds are used to deliver transport assets



that later fail to secure their anticipated level of revenue, the government is often required to apportion additional funding to offset this shortfall, further reducing the capacity of government to invest in other new transport projects.

This report strongly supports the Productivity Commission's recommendation that:

“All governments should commit to subjecting all public infrastructure investment proposals above \$50 million to rigorous cost–benefit analyses that are publicly released and made available for due diligence by bidders. In general, analyses should be done prior to projects being announced. If a project is announced before analysis is done, for example, in the lead-up to an election, this should be conditional on the findings of a subsequent analysis.”

In recognition of the existing disparity between the resources of a party that is in government and a party that is not, this report recommends that the resources of Infrastructure Australia be made available to opposition parties in the same manner that the Parliamentary Budget Office is currently available for other policy costings.

The Productivity Commission has argued that the mandatory public release of all cost-benefit analyses represents the single strongest reform for countering optimism-bias in patronage forecasting.⁷⁸ Releasing a clear statement of the assumptions underpinning the analysis and the reasons for those assumptions will reduce the likelihood of decision makers being misled whilst also allowing for an independent analysis of the results.

One useful tool for independently analysing patronage forecasts can be found reference class forecasting. Reference class forecasting provides a point of comparison by examining the outcomes of comparable past projects. It does not try to forecast the specific uncertain events that will affect the particular project, but instead places the project in a statistical distribution of outcomes based on those actually achieved for a set of similar past projects.⁷⁹

This report recommends that government tackle the widespread issue of optimism bias by agreeing to make greater use of reference class forecasting on all major transport projects. The results of this forecasting should be released along with any other cost-benefit analysis produced by either the Government or its potential partners. The release of cost-benefit analysis should also include the release of any commissioned sensitivity analysis.

In a fiscally constrained environment, reducing expenditure on poor value projects is as important as developing new revenue streams to support state transport projects. By accepting these recommendations, patronage forecasting errors would be substantially reduced. This would decrease the likelihood of future toll-road failures and ensure that government isn't burdened with costly new Class C assets.

Expanding the use of value capture In Australia

Value capture mechanisms may also assist in funding new infrastructure. When government delivers new transport infrastructure to a community, property values in the area increase as a result. Value capture occurs when the government captures some of that increase through new taxation.

The term value capture refers to the identification and quarantining of the lift in rates revenue directly attributed to an infrastructure project. The captured revenue is then hypothecated towards covering the costs of that infrastructure.

Currently, the NSW Government is actively pursuing a new light rail line linking Kensington and Randwick to the City. Much of its business case for recovering some of the cost of capital for this project is through significantly increasing the density around the new light rail terminuses.⁸⁰ The NSW Government is a significant land holder in both of the Kensington and Randwick precincts and has already used its planning powers to push for much greater development potential at these sites.⁸¹ Public transport increases the housing yield of land through greater densification and this yield can then be hypothecated to fund some of the new service costs. Whether this strategy is successful in this instance remains to be seen, though it remains likely that value capture will help recover some of the initial cost of capital and may make a small contribution to recurrent costs by increasing patronage on the service.

This report acknowledges that the politics of value capture can be difficult. The community's resistance to high density development is fierce and there is little recognition within the community that low density housing is often the greatest enemy of good public transport. Consequentially, the success of value capture is heavily linked to the ability of the government to convince the community that

high density development is not just beneficial, but necessary.

Both domestically and internationally, there is a long list of projects that have applied value capture levies on key beneficiary groups without incurring significant community opposition. London's Crossrail project provides a good example of this.

Crossrail is Europe's largest construction project, the Crossrail route will run over 100km from Reading and Heathrow in the west, through new tunnels under central London to Shenfield and Abbey Wood in the east. There will be 40 Crossrail stations including 10 new stations.⁸²

In a massive undertaking which is now being described as a 'London tunnelling marathon',⁸³ a total of eight tunnelling machines are being deployed to clear the way for 42km of new tunnels beneath London. Work started in May 2009 and there are currently over 10,000 people working across over 40 construction sites.⁸⁴

Tunnelling is now over 80% complete. Once complete in 2019, Crossrail will bring an extra 1.5 million people to within 45 minutes of central London and will successfully link London's key employment, leisure and business districts. Crossrail will also support the delivery of over 57,000 new homes and 3.25 million square metres of commercial space. An estimated 200 million passengers per annum will use Crossrail.⁸⁵

The project has an estimated cost £15.9 billion

(just under \$30 billion AUD). Project funding is drawn from a range of sources including the sale of surplus land, developer contributions, and revenue raised from ticket sales. Perhaps the most innovative funding mechanism introduced to help fund this project is the introduction of a new Business Rates Supplement (BRS) – i.e a levy on non-domestic property rates in certain London boroughs – that aims to raise £4.1 billion, or 26% of the project’s total capital cost.⁸⁶

The BRS will apply a levy of 2 pence per pound (2%) on non-residential properties with a (rateable) value of £55,000 or more in London. Over 80% of businesses in London are exempt from the BRS as their rateable value is below this threshold.⁸⁷ Though this was likely done for political expediency, the official policy justification advanced for the levy is that the project will increase commercial office values around Crossrail stations by some 10% over the next ten years above baseline projections.⁸⁸ The supplement is expected to run for 24-30 years, or until the GLA’s initial upfront borrowing is repaid.⁸⁹

This report notes that had the threshold been set at a lower level, a substantially larger proportion of capital costs would have been recouped through the BRS. Equally, had the rate been set at a higher level, project debt would be repaid sooner.

Interestingly, the decision was also taken to not capture any of the value added to residential properties surrounding the Crossrail project despite the significant benefit that will flow to existing owners and property investors. The local housing markets along the Crossrail will inevitably benefit from both improved connectivity and the wider regeneration. Multinational commercial real estate company CBRE has calculated that by the time Crossrail becomes fully operational, house prices in benefitted areas will increase by 13% over and above wider underlying capital appreciation. In Central London, the overall increase is expected to be in the region of 20%.⁹⁰ Nevertheless, a political decision was taken not to capture any of the value added to residential property.

It is impressive that a full 26% of the costs associated with Europe’s largest construction

project are able to be recouped through the use of innovative value capture strategies. It is also worthwhile noting that a substantially higher proportion of costs could have been offset had the decision been taken to apply either a higher rate, a lower threshold, or a rate that was broadened to include residential properties as well. Nevertheless, the capacity for value capture to fund large transport projects has been well demonstrated by the Crossrail project. Equally as important, the method of funding has received bipartisan support and strong community backing.

Australian policy makers should examine these value capture strategies for potential adaptation to the Australian context. It would also be worthwhile to considering whether such a rate supplement should be introduced on a permanent basis as a potential means to bridging the gap between operational revenue and operation expenses.



Bringing Tax Increment Finance to Australia

Another possible mechanism for value capture lies in the use of Tax Increment Financing (TIF). TIF enables governments to collect additional revenue from increases in the value of properties adjacent to new infrastructure projects and to use those ‘incremental’ taxes to finance those projects that have triggered the property appreciation.

The idea is widely used in the United States where forty-nine states have adopted statutory frameworks enabling the use of TIF by local governments.

As part of its inaugural *Homes for All* report, the McKell Institute recommended that the state government examine TIF as a possible enabler of new infrastructure projects in areas slated for new housing supply.⁹¹ The Victorian Government, Urban Development Institute of Australia, and the Bus Industry Confederation have all also recommended a more thorough investigation of the potential to fund infrastructure through TIF as part of their respective submissions to the Productivity Commission’s recent inquiry into public infrastructure.^{92 93 94}

The idea is also gaining traction in the United Kingdom, following substantial research by PwC on the evolution of the funding mechanism to suit the UK context.⁹⁵ The UK TIF model is based on reinvesting a proportion of the future business rates from a designated area back into infrastructure and related development around that region. It applies where the sources of funding available for a program that deliver economic growth and renewal to a region cannot fully cover the initial cost of infrastructure required for regeneration. A local authority, private sector partner or some combination of both, acts as a lead agent and raises the funds upfront in order to pay for infrastructure. The funds are sourced on the basis that the increased business rates resulting from that regeneration will then be used to repay the initial investment. The upfront funding may be borrowed from public or private sources, or it may be provided by the developer engaged to conduct the regeneration from the capital already available to it.

At the request of the Property Council of Australia, PwC has now undertaken research into the possible implementation of a TIF funding mechanism in Australia.⁹⁶ It would be worthwhile for the state government to examine this research further when considering the possible application of TIF in NSW.

In addition to the benefits associated with securing new funding streams to finance transport infrastructure, there are several other benefits to Treasury from pursuing TIF in NSW. Most notably, the state treasury would benefit from higher stamp duty revenues resulting from rising property values, higher income and corporate tax revenues due to more economic activity, and lower health, security and benefits costs as the community enjoys the social benefits of regeneration. Most importantly, the increased revenue from business and residential rates in the designated area will also be made fully available to the Treasury once the initial costs of the infrastructure have been paid off.

There are of course a number of potential drawbacks to TIF that the state government needs to be conscious of, most notably the element of uncertainty over expected rates revenue and the risk that the expected increment fails to emerge. Moreover, unless government is willing to guarantee the returns, the price of borrowing may end up being higher than for standard government debt.⁹⁷

This report recommends that the state government further examine the potential for the future use of TIF in NSW.

Joint Property Development

Another option for value capture lies in the greater use of Joint Property Development (JPD). JPD is where government partners with private developers to create funding opportunities to assist with the building of rail transport infrastructure and surrounding station precincts.

JPD essentially enables an infrastructure provider to capture value through the development of adjacent real estate. Under this approach, the infrastructure provider jointly develops the real estate in and around the infrastructure assets in order to generate a revenue stream that will offset the cost of its provision.

The most common example of joint property development models is where councils make use of the planning process (outside of development charges regimes) to collaborate with developers in the delivery of infrastructure. The “carrot” of planning approval can often be a powerful instrument to persuade private developers to either build or to provide funding towards new infrastructure.

In addition to providing a stable and abundant source of income, by developing residential and commercial property in the precinct immediately surrounding a train station, more residents and employees are likely to use those transport facilities, thereby allowing transport projects to generate efficiencies through greater economies of scale.

Successful examples of JPD include Chatswood in Sydney and Melbourne Central where air rights were used to build major retail and residential complexes in exchange for building station precincts.⁹⁸ Internationally, much more extensive partnerships can be found in Hong Kong, Tokyo and Singapore where JPD has become a critical funding mechanism for both the development and operation of new rail lines.

Hong Kong’s Mass Transit Railway Corporation

(MTRC) is worthy of special commendation in that, unlike most public transport systems in the Western world, Hong Kong’s metro is not perpetually subsidised by Government. Instead the system operator is self-funded through the fare box, commercial station retail rent, joint residential and commercial property development value capture, and other transport oriented developments.⁹⁹ Hong Kong’s MTRC was established in 1975 with an initial capitalization of HK\$500 million.¹⁰⁰ Its entire system now stretches 218.2 km and has 84 stations and 68 light rail stops.

Hong Kong’s MTRC owes its success and profitability largely due to the revenue that is raised through its real estate business. The MTRC has used JPD to allow the development of shopping malls on and around twelve of its stations. As part of this arrangement, MTR Corporation then receives a proportion of the profits from the malls, which is then reinvested back into the network.¹⁰¹ Between 1998 and 2013, profits generated from property operations have doubled that initial amount spent on railway.¹⁰²

Whilst Hong Kong’s significant urban density undoubtedly helps to ensure that Joint Property Developments are financially lucrative for the MTRC, the capacity to utilise similar mechanism in Australia remains strong. In recognition of this, the NSW Government has embarked on an ambitious plan to partner with private partners in a major redevelopment of the rail corridor spanning Central Station to Eveleigh. The Government estimates that over one million square metres of new floor space could be made available along the 3km renewal



corridor, potentially providing space for high density housing, commercial office space, or an expansion of tertiary education facilities.¹⁰³

UrbanGrowth NSW has completed a Baseline Analysis of the existing rail corridor. The Baseline Analysis found that there was a significant presence of government owned land within the Corridor, particularly outside Heritage Conservation Areas.¹⁰⁴ Although consultations are still underway, the Government has announced its ambition to strategically release land packages or sub-precincts to potential developers in multiple stages over a 20 year time frame. It is anticipated that the program will fund major redevelopments at both Central and Redfern Station.

The provision of previously unavailable government land for commercial and residential development, in combination with the granting of air rights above train stations, provides a substantial opportunity for private developers to access one of the last untapped spaces in the Sydney CBD. In delivering the Central-Eveleigh revitalization project, the Government should look to Hong Kong's MTRC as a best-practice model on which it can model its project delivery. When developing similar projects in Hong Kong, the MTRC includes profit sharing mechanisms in each of its agreements with the private developers.¹⁰⁵ For residential projects, MTRC will receive an agreed portion of the profit generated by the sale of those units if the private partner manages to sell all the units before the contractual deadline. Otherwise, MTRC will obtain the unsold units and then determine whether to sell or lease in the open market. For shops and

office units, MTRC generates profits by leasing directly with developers or by keeping part of the assets developed to generate long-term rental income. Similar agreements should be made as part of the Central-Eveleigh redevelopment project, with excess revenue hypothecated back into the broader transport portfolio as a means to covering the shortfall between system-wide operating costs and ticket revenue.

This report also recommends that the NSW Government direct UrbanGrowth to undertake a broader analysis of other railway stations and corridors which could potentially benefit from similar JPD initiatives. The likelihood of further JPD being is heavily correlated with whether or not the Government is successful in facilitating more Transit-Oriented Development (TOD) along Sydney's rail transit network. To that end, planning reform must take into account the need to encourage greater use of TOD through more accessible rezoning of land and a greater use of 'code assessable' development in the areas immediately surrounding train stations.

Locking in planning reform prior to negotiations over future potential JPD will substantially reduce planning and development risk for potential private investors. This would inevitably result in more favourable terms being negotiated within each JPD agreement, further increasing the likelihood that JPDs will deliver addition revenue streams that the NSW Government can then redirect towards bridging the existing transport funding gap.

Asset recycling, a downward spiral

Another mechanism recently being promoted as a means of funding new transport infrastructure is asset recycling. Asset recycling occurs when state-owned infrastructure is privatised in order to raise funds for the construction of new greenfield projects.

Proponents of this scheme have suggested that state and territory governments are well placed to privatise a number of their existing assets, including most commonly those Category A assets which are already operating as a profitable, revenue generating business.¹⁰⁶ Collectively, Infrastructure Australia has estimated that Australian government's collectively possess some \$92 billion in such assets on their balance sheets.¹⁰⁷

Infrastructure Australia has recommended that government 'unlock' the capital invested in these profitable assets in order to 'recycle' that funding into new productivity enhancing infrastructure.¹⁰⁸ This may present a valid option in those instances where the financial gain to government exceeds the net present value of future dividends that the asset would otherwise have produced. However, this report notes that such an outcome is only likely to be achieved when the proceeds of sale are used to generate new Category A investments. The sale of Category A assets to fund Category C projects would unlikely assist the fiscal sustainability of the state government's budget over the long run.

This report accepts that government should not be a museum of public assets – public ownership is not in itself an outcome, it is just a delivery mechanism which often is required to make sure services are available.

The Government has a responsibility to make sure

that the community has the services it needs. Sometimes asset ownership is essential for this purpose and sometimes regulation will suffice. Over time, service needs change and government should respond through different ownership and regulation strategies. Fifty years ago there was no perceivable need for substantial government investment into the construction of a National Broadband Network. Today, only government is in a position to make that upfront investment. Similarly, fifty years ago, only government could make the required investment to deliver airports and a national airline. The important thing is not who owns the assets but rather to make sure that services are delivered safely, appropriately and at a level which meets the community's expectations.

However, this report also recommends caution against asset 'fire sales'. Privatisation of Category A assets can reduce the recurrent income for government obtained through dividends and as a result can also reduce its capacity to carry debt. From the point of view of the State's balance sheet, this strategy can often equate to selling profitable businesses to expand services that make a loss.

It must also be acknowledged that there are a limited number of Category A assets currently owned by the NSW Government. Unless the sale of these assets is used to build new, equally profitable Category A assets, then this approach to funding infrastructure will inevitably reach a point at which the option for "asset recycling" is



no longer available to government.

This report contends that the argument for privatisation should only be made on a case by case basis and in the context of the overall impact on the state's finances – both in the short and long term. Most importantly, it would be useful if public debate on privatisation were conducted in a less emotionally charged environment – with less ideology and more facts. When considering potential asset sales, decisions should be based on the specifics of the proposed sale. It should never automatically assume that:

- Public ownership is the only way to deliver the service;
- The private sector is always better at managing and delivering services; and
- The capital injection to government from the sale will compensate for long term recurrent losses.

Potential sales should also demonstrate that:

- Appropriate and effective regulation can be implemented;

- The sale does not lead to private monopolies;
- Service quality will be maintained;
- The sale results in an equal or improved financial position for the State in terms of available capital, long term recurrent income and future capacity to service debt; and
- The financial benefits of the sale can be applied to areas where government funding is required to improve and expand services.

The last point is of particular importance to ensuring community support for the concept of 'asset recycling'.

Asset recycling, TIF, JDP, and other value capture mechanisms can all be appropriate tools in helping deliver particular types of infrastructure at specific times, though none of them are a panacea on their own. If we want to provide growth in Category C infrastructure we have to face the fundamental truth that it will cost more – and that this cost will not only be capital but also operational. As such, each of these strategies should ideally be adopted in conjunction with an appropriate degree of user charging.



Financing appropriately funded transport projects

There are varied views within business and the community on how to address the current infrastructure shortfall facing NSW and Australia more broadly. These often include more private sector involvement, increased government debt, or increased government revenues.

While both an increase in the level of private sector involvement and an increase in the level of public debt can both play a part in delivering the capital for new transport infrastructure, neither approach will on its own address the funding shortfalls which necessitate recurrent subsidies for Category C infrastructure. The challenges of infrastructure financing and infrastructure funding are quite separate; while the solution to one problem does not necessarily provide a solution to the other.

The distinction between finance and funding needs to be clear: a funding source must be present to support finance. This is a critical point because the availability of capital or financial products does not obviate the funding requirement. Funding refers to how infrastructure is paid for, which in the case of transport infrastructure, will ultimately be sourced from either government investment or direct user charges. Financing on the other hand refers to the way in which debt and/or equity is raised for the delivery and operation of an infrastructure project.

While the challenges surrounding the funding and financing of infrastructure are quite separate, they are also interrelated. The ability to secure financing for the construction of a new road project will be heavily influenced by the strength and source of the revenue stream that will flow from it.

Whilst this report is predominantly focussed on the issue of infrastructure funding, it is also appropriate to examine the costs associated with the financing of major transport projects.

If private financing for a project is unable to be secured in as competitive an environment as possible, the overall cost borne by taxpayers and/or users of that infrastructure is likely to be higher than would otherwise be the case. If a potential Public Private Partnership transport project is put out to tender with an expectation that it will be supported by a negotiable degree of government revenue, then a smaller pool of bidders could potentially result in a higher degree of negotiated government support. This could come in the form of higher availability payments, a greater share of risk being born by taxpayers, or through a higher quantum of public subsidy per user.

For Category C projects that require continuous subsidies to cover their recurrent operational costs, higher than necessary financing costs could also create a larger disparity between service revenue and operational costs.

To appropriately address this issue, it is important to consider whether reforms exist that can help improve the financing prospects of major transport projects. Sourcing finance at appropriate cost and tenor – and in sufficient volume for major transport projects – remains challenging in the current economic environment.

This is particularly true for greenfield projects. Greenfield infrastructure development involves the construction of new assets for which there is no pre-existing demand for the service exists. Greenfield projects also frequently require a degree land acquisition and risk associated with environmental and planning approvals. Consequentially, they not only face higher levels of demand risk arising from the uncertainties inherent

in patronage forecasting, they also involve a substantial degree of construction-cost risk.

By contrast, brownfield projects involve assets for which demand for the service is already known and where construction costs are more predictable.

This large differential in risk means that there are now at least eight major infrastructure investors in Australia that typically will not participate in greenfield PPP projects either as a bid sponsor or primary equity investor.¹⁰⁹ This has obvious implications for new transport projects being put out for competitive tender.

The hesitance of these investors to engage with greenfield transport projects is also heightened by very high bid costs and long procurement processes with 'patchy' deal flow, which limits the number of investors that can afford to dedicate large teams to bidding on those projects.^{110 111}

Making it easier for new organisations to invest in greenfield transport projects would substantially enhance the number of competitors engaged with project tenders. Enhanced competition would likely reduce the scope of negotiated availability payments and recurrent subsidies contained within any final agreement. This in turn could help minimise the discrepancy between service revenue and operational costs on Category C transport projects delivered and operated by the private sector.



Understanding the decline in appetite for greenfield transport projects

Since the onset of the GFC, governments have faced greater difficulty securing private sector finance for greenfield transport projects. The Productivity Commission's report into public infrastructure outlined how during the GFC a range of factors decreased the availability of bond finance, including the repricing of risk and the demise of monoline insurers.¹¹²

Monoline insurance companies sell insurance against default by a bond issuer. Monolines lend their higher credit rating to less creditworthy infrastructure debt issuers in order to provide the bond issuer with a reduction in borrowing costs. Once the guarantee has been provided, each monoline insurer then reinsures a large part of its risk with other insurance companies in the market.

Since the GFC, nearly all of these specialist monoline credit reinsurance providers have suffered significant financial losses and/or exited the market. They are not expected to have the financial resources or capital backing to be able to re-enter the Australian market for another decade.¹¹³

The exit of monoline insurers has left a substantial gap in commercial credit reinsurance markets for greenfield infrastructure in particular, and has meant that bond finance has become unavailable or unaffordable for many PPP projects. Both Lend Lease and the Victorian Government have suggested that this gap has since induced a greater reliance on shorter-term bank debt for the financing of new transport projects.^{114 115}

This report also notes that Australia's corporate bond market is small compared to other major developed economies, making it harder for companies to access public debt markets directly. Westpac's submission to the Productivity Commission highlighted that while the corporate bond market in showing some positive signs that it is continuing to develop, there remains limited evidence to suggest that there is improved investor

appetite for "greenfield" project bonds, with all new greenfield projects since the Global Financial Crisis (GFC) being financed by banks.¹¹⁶

However, Pottinger has cautioned that it is highly unlikely that domestic financing sources will be sufficient to fund all of Australia's infrastructure requirements looking forward. Specifically, Pottinger has warned that "from a debt financing perspective, the total quantum of debt financing that may be required would put significant strain on Australia's big four banks, which are already significantly dependent on overseas financing for a significant fraction of their overall funding".¹¹⁷

A number of industry and government submissions to the Productivity Commission's review of public infrastructure also highlighted the recent high-profile failures of several PPP toll road projects as a substantial disincentive for investors to engage with new transport projects.^{118 119 120 121 122} Toll network operator Transurban has argued that while private sector appetite to take on new transport projects with significant patronage risk does exist, it is becoming increasingly concentrated amongst private investors with a longer investment horizon, most notably superannuation funds.¹²³

The evidence presented to the Productivity Commission's review of public infrastructure would appear to suggest that the solution to the decline in potential appetite for greenfield transport projects lies in a greater involvement by superannuation funds in the financing of transport infrastructure.

Superannuation investment in greenfield projects

Increasing the number of investors that are willing to engage with greenfield transport projects will strengthen competition during tender processes, delivering better outcomes for the government and taxpayers. This in turn should reduce the overall cost to government of building and operating transport projects.

For Category C projects that require a continuing degree of government support, either through availability payments or subsidies per user charge, greater competition should reduce the quantum of that support, helping to shrink the overall funding gap between service revenue and operational costs.

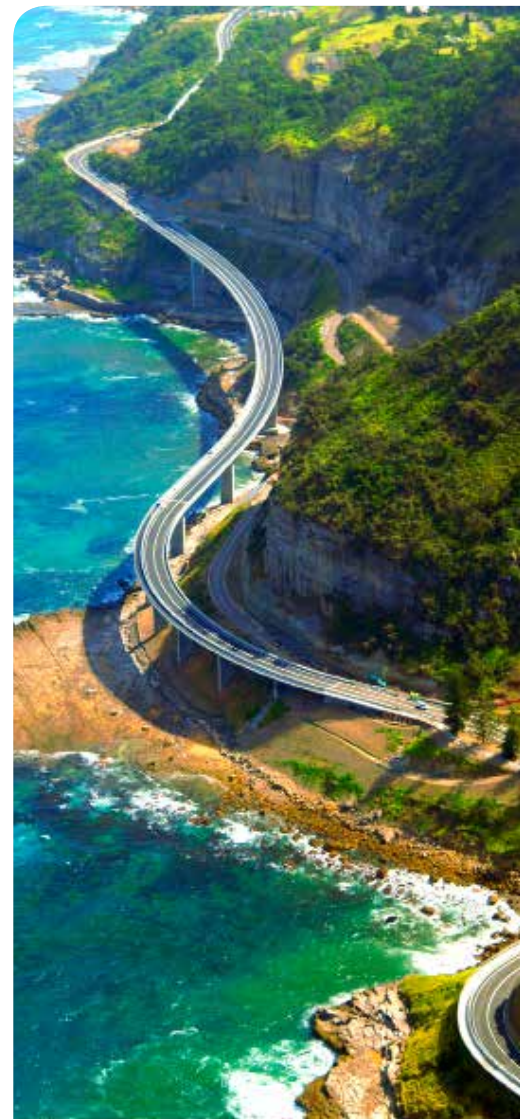
Superannuation funds have indicated a keen interest in expanding their infrastructure holdings. Ironically, the ageing of Australia's population might be driving a new wave of interest in transport infrastructure as superannuation funds attempt to better match an increasing demand for annuity products with new holdings of stable, income generating assets. In its submission to the Productivity Commission's inquiry into public infrastructure, Westpac explained:

“Over the next 10 years or so, baby boomers will move into retirement phase and there should be greater demand for annuity style returns in superannuation. The infrastructure sector is ideally placed to deliver that as the long dated nature of these assets aligns with the long dated nature of super funds' liabilities.”

Evidence submitted by the National Australia Bank (NAB) would appear to support this view, though the NAB noted that the current investing framework was not providing strong incentives for super funds to restructure their asset holdings to include more infrastructure assets. Specifically, NAB noted that:

“Impediments to debt investment include relatively uncertain yields, large and undefined infrastructure assets in the PPP pipeline, and regulations that require superannuation funds to be liquid in order to meet member switching and redemption demands”

This report takes notes that the vast majority of superannuation investment into transport infrastructure has gone towards existing brownfields assets, rather than new greenfield transport projects. Making it more attractive for superannuation funds to invest in greenfield assets will increase competition during project tenders and help reduce the lifetime costs associated with delivering new transport infrastructure.



The Inverted Bid Model

A recent proposal seeks to enhance the capacity of superannuation funds to directly invest in greenfield transport projects: Industry Super Australia's (ISA's) Inverted Bid Model of project financing.

In their submissions to the Productivity Commission inquiry into Public Infrastructure, Industry Super Australia¹²⁴ and superannuation fund CBUS¹²⁵ argued that the high costs of procuring finance was now acting as a significant barrier to the involvement of longer-term equity providers in greenfield transport projects.

Industry Super Australia explained:¹²⁶

“Long-term equity investors like superannuation funds do not see the relative value to divert resources away from pursuing brownfield infrastructure to greenfield PPP projects that involve such a costly, lengthy and uncertain processes. Their long term investment horizon and their appetite for illiquid assets make them ideal partners for such projects, however, the current process is biased towards short term financiers and contractors and requires reform to level the playing field”

To address this issue, Industry Super Australia has proposed an inverted bid model for equity-raising based on bidding the equity rate of return for a project. Under the proposed “inverted bid model”, the traditional bidding process is reversed by securing project financing through an equity funding competition prior to the construction and operation and maintenance (O&M) tenders.

The inverted bid model unbundles the current consortium structure and, having selected an equity provider, replaces it with a sequence of tenders for the various roles within the project.

The intention is to give long-term equity investors – including superannuation funds – enhanced buying

power, potentially lead to some contracts being more competitively priced.

By separating the financing from the construction and O&M tenders, the IB Model will increase the pool of investors and contractors available to the preferred owner-operator. This increased liquidity would then lead to more competitively priced fees and margins, further helping to reduce the cost of new transport projects.

Whilst not directly related to the funding challenges associated with Category C transport infrastructure, this report feels that the Inverted Bid Model is worthy of further consideration in that it has the potential to indirectly reduce the funding gap between operational costs and service revenue. By separating out O&M tenders, it is plausible that operating costs could be contained through a more competitive tendering process. More broadly, by increasing the number of investors willing to consider a greenfield transport investment, governments will be better placed to secure more favourable terms on the recurrent cost of availability payments and other similar items. If both the operating costs of the project and the required government contribution are reduced, the funding shortfall on tendered Category C assets will be substantially improved.

In considering the Inverted Bid Model, The Productivity Commission accepted that the requirement to provide fully financed bids remains a material impediment to the supply of some sources of finance, particular for greenfield transport projects. The Commission also agreed that the finance costs could be improved by unbundling finance from the initial bidding process.



In recognition of these factors, the Commission has given tentative support to trialing a new hybrid model based on Industry Super Australia's Inverted Bid Model. Two critical elements of the hybrid model that absolutely must be maintained are:

- The conduct of robust, comprehensive and transparent cost-benefit analysis of the project that is then made available to all potential bidders. The Commission argued that publishing this analysis – as well as the data and assumptions underpinning it – would help reduce bidding costs and potentially open the tender process to a broader range of participants;
- A key selection criteria for winning bids based on the lowest expected internal rate of return on unlevered equity, which is then used to lock in the revenue arrangements (including tolls and/or availability payments) over the life of the project. The Productivity Commission argued that this would help ensure that the providers bear the risks allocated to them over the life of the project. By ensuring an appropriate allocation of risk is negotiated through a more competitive tender process, any negotiation over tolls and/or availability payments is likely to result in more favourable results for the government and taxpayers; and

By maintaining these two features, competition will be enhanced, bidding costs will be lower, and negotiations over tolls and/or availability payments will be more favourable on the government budget. This should help to reduce the cost to government

of meeting the shortfall between service revenue and operational expenditure on Category C transport projects that are delivered in conjunction with the private sector.

Given the existing limitations on domestic financing, the underdeveloped nature of Australia's corporate bond market, and the existing hesitance of investors to engage with greenfield transport projects, this report contends that the Productivity Commission's hybrid model – based on ISA's Inverted Bid Model – is both timely and worthy of serious consideration.

Despite the strong merits of the above proposals, it must be acknowledged that enhanced competition and reduced government contributions are still unlikely to fully offset the need for recurrent subsidies in most Category C transport projects.

For this reason, this report strongly recommends that the proposed mechanism to improve infrastructure financing be implemented in conjunction with those reforms that are designed to address infrastructure funding. Even a highly favourable financing framework is unlikely to deliver new Category C infrastructure while the issue of recurrent funding remains unresolved.

In order to deliver new transport projects, it is inevitable that government will need to either find new forms of revenue to fund the recurrent subsidies required; or they will need to prepare the community for higher levels of user charging on new and existing transport infrastructure.

A new governance model and longer term politics

Increasing revenue can be politically challenging. Ratepayers are unlikely to accept having to contribute additional funds for transport infrastructure if they believe that their money isn't being spent wisely or appropriately.

This report contends that any new initiative to raise additional revenue will likely require stronger mechanisms to regain the trust of the public. One of the greatest challenges confronting the NSW Government's infrastructure strategy is the loss of community confidence in the capacity of Government to deliver new projects. A litany of failed transport plans have over the years eroded the community's belief that they will ever receive an integrated transport system.

This has been exacerbated by the tendency for major state infrastructure projects to be abandoned, delayed or adjusted with each changes of government at both the federal and state level. The Parramatta-Epping Line is a case in point. The Commonwealth and NSW Governments couldn't agree on which transport projects to prioritise, so while funding was allocated within the federal government's budget, the project was never delivered. It did not survive the electoral cycle. The proposal to build a metro network in Sydney also falls in this category. As was outlined in the *Action for Transport 2010* case study, there have been numerous such failings over the last few decades. Given the history of under delivery in NSW, the community is likely to be reluctant to pay more for infrastructure and services that fails to materialise.

Spending on public transport is a notorious political football and inherently difficult to sell. Planning, financing and building a new rail line can take

several years and sometimes even a decade before the project is fully operational. The 4-year electoral cycle is often too short to implement holistic long-term strategies. Making the case for a government to fund and build a new transport network which will be opened by another government in a generation's time is politically difficult. The frequent result is that only short term projects are able to get political, and therefore financial, support. Much of the growth in new public transport over the past decade has been in light rail, buses and bus transit ways, because they can be provided within one parliamentary term. Funding only short term, politically motivated projects further undermines public confidence in government.

The Inner West Light Rail Extension between Dulwich Hill and Lilyfield provides an obvious example of this phenomenon. The project requires a relatively low cost investment of \$176 million and is able to be delivered over a relatively short timeframe of just 3 years from approval, primarily because the route runs along a disused goods line.¹²⁷ However, this is also a project that increases public transport options in an area which already has some of the best public transport in Sydney, both in terms of trains and buses. From a needs perspective, it is hard to accept that this transport project should be a priority while other regions of Sydney remain heavily underserved by public transport.

In 2008, the Commonwealth Government attempted to address the loss of community confidence in infrastructure delivery by establishing Infrastructure Australia - an independent body at arm's length from the political parties. Infrastructure Australia's task is to advise the Government of the day on what projects to fund and in what order. More recently, NSW has attempted to replicate this model at the state level through the establishment of Infrastructure NSW.

To date both of these organisations have failed to fully restore the community's confidence that infrastructure priorities are being determined independent of political considerations. Infrastructure NSW's first report was explicitly directed to exclude any discussion of the single largest item of public transport expenditure in the State: the North West Rail Link.¹²⁸ While both these advisory bodies represent a step in the right direction, the key decisions on what gets funded

and when are still being made elsewhere. Both organisations stand outside the main infrastructure delivery agencies as mere 'advisors'.

This need not be the case and isn't the case internationally. Public transport in London is now coordinated by Transport for London, an integrated body responsible for London's transport system. It answers to a board appointed by the Mayor of London. It holds and spends money raised through fare box revenues and the London Congestion Tax. While it does still report to its civic leaders, it is also empowered to improve, operate and expand public transport options for Londoners.¹²⁹

Despite being only a little over a decade old, it can already point to considerable improvements including an expanding network and growing patronage. Transport for London recently secured a six year, long term funding package to finance and expand the network to 2020.¹³⁰ Such long term





financial commitments are uncommon in NSW.

Sydney needs a similar agency to coordinate the long-term delivery of new public transport. This could be as simple as expanding the powers of Infrastructure NSW. If we are going to build a city wide, integrated transport system we need an agency which can take the long term planning for infrastructure out of the short term electoral cycle. It must be an agency which can be trusted to collect and spend hypothecated taxes and charges on the services and infrastructure they are empowered to deliver – both capital and recurrent.

In addition to this, NSW will also need to develop a political framework that is consistent with long term planning and implementation. This could be achieved by making the proposed agency accountable to Parliament and not just the government of the day. The agency would seek multi-party political support and input – as well as input from transport experts, industry participants and community members – in developing holistic,

long-term infrastructure plans for NSW. In addition, a new convention could be set in which strong parliamentary approval should be secured for major infrastructure investments above a certain threshold.

Under this proposal, any major transport project recommended by the authority would first be put to the parliament for a vote of support. The vote would be in the form of a motion to support an individual project or series of projects. Though the motion itself could not be binding on the government of the day, the practice of initially putting each recommendation from the authority to a double-chamber vote would provide a good opportunity to test overall parliamentary support for any individual project or series of projects.

Many of the recommendations put forward by the Authority will be palatable to both political parties, though some might receive mixed support. This paper calls for a new parliamentary convention to be set between all parliamentary forces under



which a minimum of two thirds of MPs from both houses must vote in support of a project in order for it to receive funding. Though not strictly enforceable, if both parties were to agree to such a convention, infrastructure projects with longer time frames would be substantially more likely to receive funding.

Such a convention would mean that both political parties effectively share in the benefits and risks of transport investment decisions. If a major transport project were to blow out in costs due to unforeseen circumstances, the opposition of the day would be unable to blame it on the government given that they too had signed up to the project. Conversely, if a larger project is delivered over multiple terms of parliament, any change in government would not therefore mean that the new governing party is able to claim unilateral support for the opening of a project initiated by the former governing party. Once the convention has been accepted by all parliamentary forces, it would also become increasingly difficult for any political party to breach

this convention without also having to pay a substantial political cost.

The rationale for this approach is clear. If a government is to make a decision which will impact the State's finances well beyond its parliamentary term, then it makes sense that the government follow a process which seeks political consensus across political forces in Parliament.

Implementing this idea would require a Premier with enough leadership stature to consult and involve with a range of political parties as part of the new decision making process. It would require a government willing to seek wide parliamentary support before appointing officers responsible for the infrastructure body.

This process should be used to build public confidence in the ability of our political system to deliver long term improvements to infrastructure and the services which will flow from those infrastructure investments.

A new narrative

NSW residents will inevitably need to accept the uncomfortable truth that there are no more easy solutions with regards to funding and financing the infrastructure of tomorrow.



Australia is one of the wealthiest societies in the world and Sydney is a global city with the capacity to build just about anything. What the community needs now is to decide what standard of transport infrastructure it expects to receive and to start a discussion about how to pay for it.

This report has set out to examine what is currently going wrong with the provision of transport infrastructure in NSW. It has set out to examine the root causes of the transport infrastructure shortfall and has examined a range of possible solutions to addressing that shortfall. The problems identified in this report may take decades to correct, yet the task of building a fully integrated transport network must begin now.

The solutions this report has put forward are not cheap. Individuals and businesses will need to pay more through higher taxes and charges. The community will also need to embrace a higher denser city if it is to overcome the existing inequalities and unfairness of the current distribution of transport services.

This will only be possible if NSW is able to develop political processes that will enable the public to regain its trust in government to make the tough decisions necessary to securing the future of the state transport services.

Most importantly, NSW has to build new institutions which can drive and channel money and resources into the intergenerational task of delivering a comprehensive, integrated transport network.

To achieve this will require political maturity across the political spectrum.

We would never have allowed this situation to prevail in health or education. We would never accept a system that saw so many of our fellow Australians go without access to decent healthcare or education. We shouldn't allow it in transport.

Footnotes

1. Australian Parliamentary Library, *Australia's current debt position - December 2013 update*, accessed on 16/09/2014 at http://www.aph.gov.au/About/Parliament/Parliamentary_Departments/Parliamentary_Library/FlagPost/2013/December/Australias_current_debt_position_December_2013_update
2. Trading Economics, *Credit Ratings – Countries – List*, accessed on 16/09/2013 at <http://www.tradingeconomics.com/country-list/rating>
3. Australian Government, Treasury, *Australia to 2050: Future Challenges*, accessed on 16/09/2014 at http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf
4. NSW Government, NSW Treasury, *Budget 2014/15*, accessed on 16/09/2014 at http://www.budget.nsw.gov.au/_data/assets/pdf_file/0015/124314/Ch_6.pdf
5. Australian Government, Treasury, *Australia to 2050: Future Challenges*, accessed on 16/09/2014 at http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf
6. Alzheimer's Australia, *Statistics*, accessed on 16/09/2014 at <http://www.fightdementia.org.au/understanding-dementia/statistics.aspx>
7. Australian Government, Treasury, *Australia to 2050: Future Challenges*, accessed on 16/09/2014 at http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf
8. Ibid.
9. Australian Bureau of Statistics (ABS) 2013, 3222.0, Media Release: Australia's population projected to double by 2075, accessed on 16/09/2014 at [http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/3222.0Media%20Release12012%20\(base\)%20to%2020101?opendocument&tabname=Summary&prodno=3222.0&issue=2012%20\(base\)%20to%2020101&num=&view=](http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/3222.0Media%20Release12012%20(base)%20to%2020101?opendocument&tabname=Summary&prodno=3222.0&issue=2012%20(base)%20to%2020101&num=&view=)
10. PricewaterhouseCoopers, *Funding Australia's Infrastructure – is it as simple as 'ABCD'?*, accessed on 16/09/2014 at <http://www.pwc.com.au/deals/assets/Funding-Australia-Infrastructure-Feb14.pdf>
11. Chartered Accountants Australia + New Zealand, *Deconstructing Infrastructure*, accessed on 16/02/2014 at <http://www.charteredaccountants.com.au/News-Media/Charter/Charter-articles/Economy/2012-04-Deconstructing-Infrastructure.aspx>
12. Australian Government, Infrastructure Australia, *National Infrastructure Plan: June 2013*, accessed on 16/03/2014 at http://www.infrastructureaustralia.gov.au/coag/files/2013/2013_IA_COAG_Report_National_Infrastructure_Plan_LR.pdf
13. ACIL Tasman and the Smart Infrastructure Facility at the University of Wollongong, Discussion Paper: Pricing Congestion in Sydney, accessed on 16/02/2014 at http://www.infrastructure.nsw.gov.au/media/16766/smart_infrastructure_acil_tasman_nsw_road_congestion_pricing_final_25_april_2012.pdf
14. NSW Government, NSW Treasury, *Budget 2014/15: Infrastructure Statement*, accessed on 16/09/2014 at http://www.budget.nsw.gov.au/_data/assets/pdf_file/0003/124257/BP4_Infrastructure_Statement_2014-15_dnd.pdf
15. Hasham N., *Sydney Morning Herald*, NSW Budget: Government could face \$10 billion bill for road, rail, accessed on 16/09/2014 at <http://www.smh.com.au/nsw/nsw-budget-government-could-face-10b-bill-for-road-rail-20140618-zsd6z.html>
16. NSW Government, Auditor Office of NSW, *Transport Overview*, accessed on 16/09/2014 at http://www.audit.nsw.gov.au/ArticleDocuments/291/05_Volume_Eight_2013_Transport_Overview2.pdf.aspx?Embed=Y
17. OECD, *Better Life Index: Australia*, accessed on 16/09/2014 at <http://www.oecdbetterlifeindex.org/countries/australia/>
18. *The Economist*, Daily Chart: The Best Places to Live, accessed on 16/09/2014 <http://www.economist.com/blogs/graphicdetail/2014/08/daily-chart-13>
19. Low A., *Daily Telegraph*, Sydney can't afford another lost decade, accessed on 16/09/2014 at <http://www.dailytelegraph.com.au/news/opinion/sydney-cant-afford-another-lost-decade/story-e6frezz0-1226440640888>
20. NSW Government, 2007 *New South Wales Government Five Yearly Infrastructure Report to the Council of Australian Governments*, accessed on 16/09/2014 at http://archive.coag.gov.au/coag_meeting_outcomes/2007-04-13/docs/infrastructure_reports_nsw.pdf
21. NSW Government, NSW Treasury, *Budget 2009/10*, accessed on 16/09/2014 at http://www.treasury.nsw.gov.au/_data/assets/pdf_file/0006/17664/bp2_8.pdf
22. Australian Education Network, Australian University Rankings, accessed on 16/09/2014 at <http://www.australianuniversities.com.au/rankings/>
23. PricewaterhouseCoopers, *Cities of Opportunity 6*, accessed on 16/09/2014 at <http://www.pwc.com/us/en/cities-of-opportunity/2014/assets/cities-of-opportunity-2014.pdf>
24. NSW Government, NSW Treasury, *Budget 2014/15*, accessed on 16/09/2014 at http://www.budget.nsw.gov.au/_data/assets/pdf_file/0014/124313/Ch_5.pdf
25. Carey A., Gordon J., *The Age*, Abbott warns Victorian Libs: no money for urban rail, accessed on 16/09/2014 at <http://www.theage.com.au/victoria/abbott-warns-victorian-libs-no-money-for-urban-rail-20130404-2h8uj.html>

26. Absolute Astronomy, Proposed Railways in Sydney, accessed on 16/09/2014 at http://www.absoluteastronomy.com/topics/Proposed_railways_in_Sydney
27. NSW Government, Legislative Assembly: Official Hansard, Consideration of Motions to be Accorded Priority, page 27921, accessed on 16/02/2014 at <http://www.parliament.nsw.gov.au/prod/parlament/hansart.nsf/V3Key/LA20101123040>
28. NSW Government, Ministry of Transport, Media Release: Action for Transport 2010, 23 November 1998, accessed on 16/09/2014 at <http://pandora.nla.gov.au/pan/49629/20050503-0000/www.transport.nsw.gov.au/news/media/1998/transport-2010.html>
29. Poljak V., *Australian Financial Review*, Blown-up traffic estimates take their toll, 30 May 2012, accessed on 16/09/2014 at http://www.afr.com/p/business/companies/blown_up_traffic_estimates_take_59tpEZEvODGE7U988eohJL
30. Australian Government, Productivity Commission, Productivity Commission Inquiry Report: Public Infrastructure, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0003/137280/infrastructure-volume1.pdf
31. OzeBus, *Bus Rapid Transport vs Congestion*, accessed on 16/09/2014 at <http://bic.asn.au/information-for-moving-people/bus-rapid-transit>
32. Clennell A., *Daily Telegraph*, Barry O'Farrell to rip up deal for Epping to Parramatta rail link, 11 December 2010, accessed on 16/09/2014 at <http://www.brisbanetimes.com.au/queensland/abbott-drives-home-road-pledge-20121205-2aund.html>
33. Hurst D., *Brisbane Times*, Abbott Drives Home Road Pledge, December 05, 2013, accessed on 16/09/2014 at <http://www.brisbanetimes.com.au/queensland/abbott-drives-home-road-pledge-20121205-2aund.html>
34. New Geography, Commuting in Australia, accessed on 16/09/2014 at <http://www.newgeography.com/content/003587-commuting-australia>
35. Australian Bureau of Statics (ABS) 2013, 4102.0, *Australian Social Trends July 2013: Car Nation*, accessed on 16/09/2014 at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features40July+2013>
36. PricewaterhouseCoopers, *Cities of Opportunity 6*, accessed on 16/09/2014 at <http://www.pwc.com/us/en/cities-of-opportunity/2014/assets/cities-of-opportunity-2014.pdf>
37. Dunn H., The National Roads and Motoring Association (NRMA), *Congestion making us Sick: The NRMA BusinessWise Survey*, accessed on 16/09/2014 at <http://www.mynrma.com.au/about/media/congestion-making-us-sick-nrma-businesswise-survey.htm>
38. City Mayors Statistics, The largest cities in the world by land area, population and density, 6 January 2007, accessed on 28 October 2014 at <http://www.citymayors.com/statistics/largest-cities-density-125.html>
39. Johansen S., *Sydney Morning Herald*, Australian homes still the world's biggest, August 22, 2011, accessed on 16/09/2014 at <http://www.smh.com.au/business/property/australian-homes-still-the-worlds-biggest-20110822-1j5ev.html>
40. Smart Property Investment, Australian home size looks set to fall, accessed on 16/09/2014 at <http://spionline.com.au/home/6320-australian-home-size-looks-set-to-fall>
41. NSW Government, *Transport for NSW, Compendium of Sydney Rail Travel Statistics* 8th Edition v1.1. November 2011, accessed 16/09/2015 on www.bts.nsw.gov.au/.../79/r2012-11-rail-compendium.pdf.aspx
42. Australian Bureau of Statics (ABS) 2010, 4102.0, *Population Growth: Past, Present and Future*, accessed on 16/09/2014 at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features10Jun+2010>
43. NSW Government, *Transport for NSW, Compendium of Sydney Rail Travel Statistics* 8th Edition v1.1. November 2011, accessed 16/09/2015 on www.bts.nsw.gov.au/.../79/r2012-11-rail-compendium.pdf.aspx
44. Montoya D., NSW Government, NSW Parliamentary Research Service, Briefing Paper No. 6 2012: *Western Sydney, an economic profile*, accessed on 16/09/2014 at [https://www.parliament.nsw.gov.au/prod/parlament/publications.nsf/0/1003F4B4BE8C5699CA257A5B00205266/\\$File/Western%20Sydney%20An%20Economic%20Profile%20Briefing%20Paper%2006%202012.pdf](https://www.parliament.nsw.gov.au/prod/parlament/publications.nsf/0/1003F4B4BE8C5699CA257A5B00205266/$File/Western%20Sydney%20An%20Economic%20Profile%20Briefing%20Paper%2006%202012.pdf)
45. Charting Transport, *Public Transport Patronage Trends in Australasian Cities*, accessed on 16/09/2013 at <http://chartingtransport.com/2010/11/13/public-transport-patronage-trends/>
46. Australian Government, Department of Infrastructure and Transport, *State of Australian Cities 2013*, accessed on 16/09/2014 at http://www.infrastructure.gov.au/infrastructure/pab/soac/files/2013_00_INFRA1782_MCU_SOAC_FULLL_WEB_FA.pdf
47. National Farmers' Federation, Australia's Transport Infrastructure Need: Address to the Agricultural Outlook Conference 2009, accessed on 16/09/2014 at https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.nff.org.au%2Fget%2F879.doc&ei=k0sQVJ_IDom_uASW-oLYDw&usq=AFQjCNGwv6ED6iEmULQ8rOjh0XMStgKHQA&bvm=bv.74649129.d.dGc
48. TomTom, *TomTom Australia & New Zealand Congestion Index*, accessed on 16/09/2014 at <http://images.smh.com.au/file/2013/04/10/4179312/TomTom%2520Congestion%2520Index%25202012-Annual-AUNZ.pdf>
49. Australian Government, Department of Infrastructure and Transport, *State of Australian Cities 2013*, accessed on 16/09/2014 at http://www.infrastructure.gov.au/infrastructure/pab/soac/files/2013_00_INFRA1782_MCU_SOAC_FULLL_WEB_FA.pdf
50. SGS Economics & Planning, *Australian Cities Accounts 2013-13*, accessed on 16/09/2014 at <http://www.sgsep.com.au/assets/GDP-by-Major-Capital-City-1213-.pdf>
51. Lawes A., *Sydney Morning Herald*, Sydney land releases fail to meet demand, 3 October 2013, accessed on 16/09/2014 at <http://news.domain.com.au/domain/real-estate-news/sydney-land-releases-fail-to-meet-demand-20131003-2ux2d.html>
52. Williams T., Macken S., The McKell Institute, *Homes for All*, accessed on 16/09/2014 at <http://mckellinstitute.com>

- org.au/wp-content/uploads/2012/04/McKell_HomesForAll_A4.pdf
53. Clennell A., *Daily Telegraph*, Triple A standing is worth billions to NSW, 3 January 2012, accessed on 16/09/2014 at <http://www.dailytelegraph.com.au/news/nsw/triple-a-standing-is-worth-billions-to-nsw/story-fn7q4q9f-1226235088136>
 54. Grigg A., Murray L., *Australian Financial Review*, Rich Chinese feed \$200m infrastructure bond frenzy, 27 May 2013, accessed on 16/09/2014 at http://www.afr.com/p/national/rich_chinese_feed_infrastructure_6oJobsC7szt6BKkdeml1DN
 55. Standard & Poor's, *Research Update: Outlook On Australia's State of New South Wales Revised To Negative; Ratings Affirmed At 'AAA/A-1+',* accessed on 16/09/2014 at http://www.afr.com/rw/2009-2014/AFR/2012/10/25/Photos/aeaebebe-1e6c-11e2-b733-809d348cd356_NSW%20RU%20Oct2012.pdf
 56. NSW Government, NSW Treasury, *Budget 2014/15*, accessed on 16/09/2014 at http://www.budget.nsw.gov.au/_data/assets/pdf_file/0015/124314/Ch_6.pdf
 57. Australian Bureau of Statics (ABS) 2012-13, 3218.0, *Regional Population Growth: Australia*, accessed at 16/09/2014 at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/797F86DBD192B8F8CA2568A9001393CD?opendocument>
 58. Australian Government, Treasury, *Australia to 2050: Future Challenges*, accessed on 16/09/2014 at http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf
 59. NSW Government, NSW Treasury, *NSW Long-Term Fiscal Pressures Report: NSW Intergenerational Report 2011-12*
 60. http://www.budget.nsw.gov.au/_data/assets/pdf_file/0018/124281/bp3_09trans.pdf
 61. NSW Government, NSW Treasury, *Budget 2009/10*, accessed on 16/09/2014 at www.parliament.uk/briefing-papers/sn01480.pdf
 62. C40 Cities Climate Leadership Group, Case Study: London's congestion charge cuts CO2 emissions by 16%, accessed on 16/09/2014 at http://www.c40.org/case_studies/londons-congestion-charge-cuts-co2-emissions-by-16
 63. Greater London Authority, Media Release: Mayor secures 'unprecedented' transport settlement for London to support long-term economic growth, 26 June 2013, accessed on 16/09/2014 at <http://www.london.gov.uk/media/mayor-press-releases/2013/06/mayor-secures-unprecedented-transport-settlement-for-london-to>
 64. International Technology Scanning Program, Reducing Congestion and Funding Transportation Using Road Pricing in Europe and Singapore, accessed on 16/09/2014 at international.fhwa.dot.gov/pubs/pl10030/pl10030.pdf
 65. Local Government Association of NSW and the Shires Association of NSW, Submission to the Independent Local Government Review Panel's Strengthening Your Community, September 2012, accessed on 16/09/2014 at <http://www.lgnsw.org.au/files/imce-uploads/90/Submitino%20to%20the%20Independent%20Local%20Government%20Review%20Panels%20Strengthening%20Your%20Community%20Sept%2012.pdf>
 66. NSW Government, Department of Premier and Cabinet, Division of Local Government, Comparative Information on NSW Local Government Councils 2009/10, accessed on 16/09/2014 at http://www.dlg.nsw.gov.au/dlg/dlghome/documents/Comparatives/Comparatives_2009_10.pdf
 67. PricewaterhouseCoopers, *Cities of Opportunity 6*, accessed on 16/09/2014, <http://www.pwc.com/us/en/cities-of-opportunity/2014/assets/cities-of-opportunity-2014.pdf>
 68. Litman T., Victoria Transport Policy Institute, *Transit Price Elasticities and Cross-Elasticities*, 3 April 2014, accessed on 16/09/2014 at www.vtpi.org/tranelas.pdf
 69. Tourism and Transport Forum, Unlocking the full potential of Sydney's airport rail link, accessed on 16/09/2014 at www.ttf.org.au/DisplayFile.aspx?FileID=1556
 70. Tourism and Transport Forum, submission to the NSW Government's inquiry into removing or reducing station access fees at Sydney airport, November 2013, accessed on 16/09/2014 at [http://www.parliament.nsw.gov.au/Prod/Parliament/committee.nsf/0/dd1323075dc063eeca257c24001846f7/\\$FILE/0028%20Tourism%20&%20Transport%20Forum.pdf](http://www.parliament.nsw.gov.au/Prod/Parliament/committee.nsf/0/dd1323075dc063eeca257c24001846f7/$FILE/0028%20Tourism%20&%20Transport%20Forum.pdf)
 71. Charles P., Liu Y., Australasian Transport Research Forum 2013, Spreading peak demand for urban rail transit through differential fare policy: A review of empirical evidence, accessed on 16/09/2014 at http://www.atrf.info/papers/2013/2013_liu_charles.pdf
 72. NSW Government, Auditor Office of NSW, *Transport Overview*, accessed on 16/09/2014 at http://www.audit.nsw.gov.au/ArticleDocuments/291/05_Volume_Eight_2013_Transport_Overview2.pdf.aspx?Embed=Y
 73. Zheng L., Hensher D., Toll Roads in Australia: An Overview of Characteristics and Accuracy of Demand Forecasts, *Transport Reviews*, 30: 5 (2010)
 74. Bain, R., Polakovic, L., Standard & Poor's, *Traffic Forecasting Risk Study Update 2005: Through Ramp-Up and Beyond*, 2005.
 75. Australian Government, Department of Infrastructure and Transport: Bureau of Infrastructure, Transport and Regional Economics, *Review of Traffic Forecasting Performance Toll Roads*, 2011, accessed on 24 October 2010 at https://www.infrastructure.gov.au/infrastructure/public_consultations/files/attach_a_bitre_literature_review.pdf
 76. Victorian Government, Victorian Auditor General, *Funding and Delivery of Two Freeway Upgrade Projects*, December 2007, accessed on 24 October 2010 at <http://www.audit.vic.gov.au/publications/2007/20071205-Two-Freeway-Upgrade-Projects.pdf>
 77. Australian Government, Productivity Commission, *Productivity Commission Inquiry Report: Public Infrastructure*, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0005/137282/infrastructure-volume2.pdf

78. Australian Government, Productivity Commission, *Productivity Commission Inquiry Report: Public Infrastructure*, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0003/137280/infrastructure-volume1.pdf
79. Australian Government, Productivity Commission, *Productivity Commission Inquiry Report: Public Infrastructure*, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0005/137282/infrastructure-volume2.pdf
80. Champion V., *Daily Telegraph*, Sydney rezoning plans attacked for lacking transparency, January 30, 2013, accessed on 16/09/2014 at <http://www.dailytelegraph.com.au/news/nsw/sydney-rezoning-plans-attacked-for-lacking-transparency/story-fnb5f12x-1226565338060>
81. NSW Government, Department of Planning and Environment, Randwick Urban Activation Precinct, accessed on 16/09/2014 at <http://www.planning.nsw.gov.au/randwick>
82. UK Government, Crossrail, *Crossrail in Numbers*, accessed on 27/10/2014 at <http://www.crossrail.co.uk/benefits/crossrail-in-numbers>
83. UK Government, Crossrail, New Crossrail Images Show 'London Tunneling Marathon' Underway Beneath the Capital, accessed on 27/10/2014 at <http://www.crossrail.co.uk/news/articles/new-crossrail-images-show-london-tunnelling-marathon-underway-beneath-the-capital>
84. UK Government, Crossrail, *Crossrail in Numbers*, accessed on 27/10/2014 at <http://www.crossrail.co.uk/benefits/crossrail-in-numbers>
85. UK Government, Crossrail, *Crossrail in Numbers*, accessed on 27/10/2014 at <http://www.crossrail.co.uk/benefits/crossrail-in-numbers>
86. UK Government, Crossrail, *Crossrail Business Rates Supplement Initial Prospectus Published*, accessed on 27 October 2014 at <http://www.crossrail.co.uk/news/articles/crossrail-business-rates-supplement-initial-prospectus-published-gla-release>
87. Greater London Authority, Mayor exempts 4,000 businesses from Crossrail business levy, 29 January 2010, accessed on 27/10/2014 at <https://www.london.gov.uk/media/mayor-press-releases/2010/01/mayor-exempts-4000-businesses-from-crossrail-business-levy>
88. UK Government, Crossrail, *Crossrail Predicted to Increase Property Values by £5.5 Billion*, October 2012, accessed on 27 October 2014 at <http://www.crossrail.co.uk/news/articles/crossrail-predicted-to-increase-property-values-by-55-billion>
89. Greater London Authority, *The Crossrail Business Rate Supplement: Summary of initial prospectus, 2010*, accessed on 27 October 2014 at www.london.gov.uk/sites/default/files/summary.rtf
90. CBRE, *Crossrail: The Impact on London's Property Market, Winter 2013/14*, accessed on 27 October 2014 at <http://www.propertyweek.com/Journals/2013/12/09/q/s/Crossrail-The-Impact-on-Londons-Property-Market.pdf>
91. Williams T., Macken S., The McKell Institute, *Homes for All*, accessed on 16/09/2014 at http://mckellinstitute.org.au/wp-content/uploads/2012/04/McKell_HomesForAll_A4.pdf
92. Victorian Government, Victorian Government submission to the Productivity Commission's Inquiry into Public Infrastructure, January 2014, accessed on 16/09/2014 http://www.pc.gov.au/_data/assets/pdf_file/0018/131913/sub081-infrastructure.pdf
93. Urban Development Institute of Australia (UDIA), UDIA submission to the Productivity Commission's Inquiry into Public Infrastructure, January 2013, accessed on 16/09/2014 at www.udia.com.au/LiteratureRetrieve.aspx?ID=154604
94. Bus Industry Confederation, *Public Infrastructure: Solutions for Moving People*: Submission by the Bus Industry Confederation the Productivity Commission Public Infrastructure Inquiry, December 2013, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0003/131619/sub043-infrastructure.pdf
95. PricewaterhouseCoopers (PwC), *Funding Infrastructure: Time for a new approach?*, June 2011, accessed on 16/09/2014 at http://www.pwc.co.uk/en_UK/gx/psrc/pdf/infrastructure_funding.pdf
96. PricewaterhouseCoopers (PwC), *Tax Increment Financing to fund infrastructure in Australia*, Draft Report for the Property Council of Australia 2008, accessed on 16/09/2014 at http://www.infrastructureaustralia.gov.au/public_submissions/published/files/486_propertycouncilofaustralia_sub2.pdf
97. Australian Government, Productivity Commission, *Productivity Commission Inquiry Report: Public Infrastructure*, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0003/137280/infrastructure-volume1.pdf
98. Australian Government, Infrastructure Finance Working Group, *Infrastructure Finance and Funding Reform*, April 2012, accessed on 16/09/2014 at http://www.infrastructure.gov.au/infrastructure/iff/files/IFWG_Report.pdf
99. Australasian Railways Association, *Innovative funding and financing for public transport: A review of alternative, sustainable funding and financing sources*, February 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0005/131639/sub058-infrastructure-attachment.pdf
100. Australasian Railways Association, *Innovative Funding and Financing for Public Transport: A review of alternative, sustainable funding and financing sources*, February 2014, accessed on 27 October 2014 at [http://www.parliament.nsw.gov.au/Prod/Parliament/committee.nsf/0/56d487c5266e8fbcca257c60007cb2e7/\\$FILE/AQON_Australasian%20Railway%20Association%20Inc.pdf](http://www.parliament.nsw.gov.au/Prod/Parliament/committee.nsf/0/56d487c5266e8fbcca257c60007cb2e7/$FILE/AQON_Australasian%20Railway%20Association%20Inc.pdf)
101. Australian Government, Infrastructure Finance Working Group, *Infrastructure Finance and Funding Reform*, April 2012, accessed on 16/09/2014 at http://www.infrastructure.gov.au/infrastructure/iff/files/IFWG_Report.pdf
102. Verougstraete M., Zheng H., United Nations Economic and Social Committee for Asia and the Pacific, *Public-Private Partnerships: Case Study - Land Value Capture Mechanism: The Case of the Hong Kong Mass Transit Railway*, July 2014, accessed on 27 October 2014 at <http://www.unescap.org/sites/default/files/Case%204-%20Land%20Value%20-%20Hong-Kong%20MTR.pdf>

103. NSW Government, *UrbanGrowth, Central to Eveleigh: Global Precinct Opportunity*, 2014, accessed on 27/10/2014 at http://www.urbangrowthnsw.com.au/downloads/file/NewsReleases/20130709hh-BO4_PROP_C2E_GlobalPrecinctOpportunity_PRINT.pdf
104. NSW Government, *Urban Growth, Central to Eveleigh Urban Renewal and Transport Program Stage 1 Report: Baseline Analysis*, 2013, accessed on 27/10/2014 at http://www.urbangrowthnsw.com.au/downloads/file/ProjectSalesPlans/140617_BaselineReport_WbViewVersion-v2.pdf
105. Verougstraete M., Zheng H., United Nations Economic and Social Committee for Asia and the Pacific, *Public-Private Partnerships: Case Study - Land Value Capture Mechanism: The Case of the Hong Kong Mass Transit Railway*, July 2014, accessed on 27 October 2014 at <http://www.unescap.org/sites/default/files/Case%204-%20Land%20Value%20-%20Hong-Kong%20MTR.pdf>
106. Australian Government, Parliament House, Media Release: Treasurers agree to boost infrastructure, 28 March 2014, accessed on 16/09/2014 at <http://jhb.ministers.treasury.gov.au/media-release/010-2014/>
107. Australian Government, Infrastructure Australia, *Australia's Public Infrastructure Update Paper, Balance Sheet Impacts of Sell To Build*, December 2013, accessed on 16/09/2014 at http://www.infrastructureaustralia.gov.au/publications/files/Balance_Sheets_Impacts_of_Sell_to_Buy_Update_Paper.pdf
108. Australian Government, Infrastructure Australia, *National Infrastructure Plan: June 2013*, accessed on 16/03/2014 at http://www.infrastructureaustralia.gov.au/coag/files/2013/2013_IA_COAG_Report_National_Infrastructure_Plan_LR.pdf
109. Industry Super Australia (ISA), *ISA Supplementary Submission to the Productivity Commission inquiry into Public Infrastructure*, February 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0007/134962/subdr114-infrastructure.pdf
110. Australian Government, Productivity Commission, *Productivity Commission Inquiry Report: Public Infrastructure*, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0003/137280/infrastructure-volume1.pdf
111. Industry Super Australia (ISA), *ISA Supplementary Submission to the Productivity Commission inquiry into Public Infrastructure*, February 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0007/134962/subdr114-infrastructure.pdf
112. Australian Government, Productivity Commission, *Productivity Commission Inquiry Report: Public Infrastructure*, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0003/137280/infrastructure-volume1.pdf
113. Pottinger, *Building Australia: new models for financing infrastructure*, April 2013, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0016/131308/sub008-infrastructure-attachment.pdf
114. Lend Lease, *Submission following the public draft release of the Productivity Commission's inquiry into Public Infrastructure*, March 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0008/136286/subdr201-infrastructure.pdf
115. Victorian Government, *Victorian Government supplementary submission to the Productivity Commission's inquiry into Public Infrastructure*, April 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0015/136032/subdr196-infrastructure.pdf
116. Westpac Group, *Submission to the Productivity Commission Inquiry into Public Infrastructure*, December 2013, accessed on 28 October 2014 at http://www.pc.gov.au/_data/assets/pdf_file/0020/131627/sub051-infrastructure.pdf
117. Pottinger, *Building Australia: new models for financing infrastructure*, April 2013, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0016/131308/sub008-infrastructure-attachment.pdf
118. Business Council of Australia (BCA), *BCA Submission to the Productivity Commission's inquiry into Public Infrastructure*, December 2013, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0017/131615/sub039-infrastructure.pdf
119. Australian Government, Department of Infrastructure and Regional Development (DIRD), *DIRD Submission to the Productivity Commission's inquiry into Public Infrastructure*, December 2013, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0015/131721/sub064-infrastructure.pdf
120. Lend Lease, *Lend Lease submission to the Productivity Commission's inquiry into public infrastructure*, 23 December 2013, accessed on 17/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0015/131622/sub046-infrastructure.pdf
121. University of Wollongong Smart Infrastructure Facility, *Submission to the Productivity Commission's inquiry into Public Infrastructure - Green Paper: Infrastructure imperatives for Australia*, 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0005/132719/sub094-infrastructure.pdf
122. Victorian Government, *Victorian Government submission to the Productivity Commission's Inquiry into Public Infrastructure*, January 2014, accessed on 16/09/2014 http://www.pc.gov.au/_data/assets/pdf_file/0018/131913/sub081-infrastructure.pdf
123. Transurban, *Transurban Submission to Public Infrastructure Inquiry*, 23 December 2013, accessed on 28 October 2014 at http://www.pc.gov.au/_data/assets/pdf_file/0019/131716/sub061-infrastructure.pdf
124. Industry Super Australia (ISA), *ISA Submission to the Productivity Commission's inquiry into Public Infrastructure*, December 2013, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0018/131715/sub060-infrastructure.pdf
125. CBUS, *CBUS submission to the Productivity Commission's inquiry into Public Infrastructure*, accessed on 16/09/2014 http://www.pc.gov.au/_data/assets/pdf_file/0016/131731/sub067-infrastructure-attachment.pdf
126. Industry Super Australia (ISA), *ISA Supplementary Submission to the Productivity Commission inquiry into Public Infrastructure*, February 2014, accessed on 16/09/2014 at http://www.pc.gov.au/_data/assets/pdf_file/0007/134962/subdr114-infrastructure.pdf

127. NSW Government, Transport for NSW, Media Release: Getting on with the job: Inner West Light Rail extension another step closer, 26 February 2014, accessed on 16/09/2014 at <http://www.transport.nsw.gov.au/media-releases/getting-job-inner-west-light-rail-extension-another-step-closer>
128. NSW Government, *Infrastructure NSW, First Things First, The State Infrastructure Strategy 2012-2032*, accessed on 16/09/2014 at http://www.infrastructure.nsw.gov.au/media/16961/sis_report_introduction_print.pdf
129. Transport For London, How are we funded?, accessed on 16/09/2014 at <https://www.tfl.gov.uk/corporate/about-tfl/how-we-work/how-we-are-funded?intcmp=2685>
130. Greater London Authority, Media Release: Mayor secures 'unprecedented' transport settlement for London to support long-term economic growth, 26 June 2013, accessed on 16/09/2014 at <http://www.london.gov.uk/media/mayor-press-releases/2013/06/mayor-secures-unprecedented-transport-settlement-for-london-to>









www.mckellinstitute.org.au