The State Infrastructure Strategy 2012 – 2032



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Chairman's foreword

It is with great pleasure that I provide the State Infrastructure Strategy to the NSW Government on behalf of Infrastructure NSW, in accordance with the Infrastructure NSW Act 2011.



Infrastructure NSW was created in July 2011 for the purpose, in the words of the Premier, "to set New South Wales back on the path of investment in world's best practice infrastructure planning and delivery to improve the lives of our citizens across this State. The people of New South Wales want our State to be number one again. ... Providing the

infrastructure that New South Wales needs and deserves is the first step".

The State Infrastructure Strategy is central to Infrastructure NSW's purpose as it provides the Government with independent advice on the infrastructure needs of the State over the next 20 years. It looks across a broad range of sectors and identifies specific strategies and projects for priority consideration, complementing the work of line and specialist agencies focusing their efforts in specific sectors.

There is a fundamental link between sound infrastructure investment and a healthy, productive State economy that makes for a successful, attractive society. Infrastructure networks enable people to gain access to jobs and prosperity. It enables services to be provided and goods to be delivered to markets locally and globally.

It is a matter of record that in recent times, NSW has handled this essential task poorly. The costs to the State can be seen most starkly in the erosion of public confidence in Government to plan and deliver major infrastructure successfully and in the retreat of private investors from the infrastructure sector.

The effects on daily life in NSW are yet more profound. For every dollar that has been wasted on abandoned or poorly scoped projects, there is a commuter whose train journey is significantly longer than it should be and a business whose road freight transport costs could have been reduced by well-directed investment. There are countless lost opportunities for NSW in terms of productivity, efficiency and quality of life as a result of investment that has been misdirected or withheld.

These failures of policy making have come as a result of overly politicised, short-term and insufficiently contestable processes for defining and pursuing infrastructure investment priorities. They have led, among other unhelpful consequences, to false perceptions regarding the state of our infrastructure.

While there have been some unforgiveable wasted opportunities, NSW also has good building blocks within its infrastructure networks that position us well against our global competitors, if we now look afresh at what the State really needs in order to succeed.

What Infrastructure NSW has sought to do is to set aside orthodoxies of opinion and see the bigger picture. It has sought, through research and wide engagement both within Government and across industry, to understand what can be done to make

NSW number one again as quickly as possible.

Simply put, being number one again requires infrastructure investment that will drive the State economy and create the biggest return to taxpayers. Given the limitations on available public funding, it requires prioritisation – of dealing with first things first to gain the earliest possible return to the State – and on leveraging private capital and expertise wherever possible.

We trust that this report will, with the work of other agencies undertaking complementary sectoral planning processes, contribute to a more robust and contestable approach to infrastructure investment. On behalf of Infrastructure NSW, I wish to thank all the agencies that have contributed their time and expertise to this process.

The work of Infrastructure NSW has been greatly assisted by the advisory Board, which has extensive experience and specialist knowledge. As Chairman, I would like to thank the Board members for their work and comments, which have been extremely helpful to the Infrastructure NSW Chief Executive to meet his challenge of developing the State Infrastructure Strategy.

The Honourable Nick Greiner AC Chairman

Much Grain

CEO'S Statement

The Nobel Prize winning economist Paul Krugman famously said that "productivity isn't everything, but in the long run it is almost everything". The State Infrastructure Strategy has been underpinned by this notion, so that NSW will be in better shape in the future than it is today.



In the past decade, the NSW economy had the slowest growth in Australia and grew 25 percent more slowly than the Australian average. Sliding productivity is the most significant public policy issue challenging NSW. Sustained economic growth and individual prosperity for everyone in NSW can only be driven by increasing productivity. The right decisions about infrastructure investment are critical to achieving this goal.

The State Infrastructure Strategy is Infrastructure NSW's independent advice to Government on the priority infrastructure investments and reforms needed to reverse current productivity trends.

A sustained improvement in economic performance requires the basic platforms for growth to be in place; in other words it needs a 'first things first' approach. As such, the Strategy concentrates on the State's infrastructure networks: the transport links that connect people with jobs and goods with markets, and the utilities that supply power, water and data across NSW. It also ensures that the fundamentals of community wellbeing, especially health and education, will be addressed.

Effective implementation of this Strategy would increase the size of the NSW economy by over \$50 billion and add over 100,000 more jobs.

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You have to imagine the future to understand the decisions we need to take now. So Infrastructure NSW has defined a vision for a better NSW in 2032.

NSW 2032

In 2032, NSW is characterised by its diverse employment choices and quality of life; built on a platform of world class infrastructure. The State offers an active, healthy and culturally rich lifestyle that attracts talented people from around the world. Long term economic prosperity has been delivered statewide; trade and employment growth has exceeded what was predicted 20 years ago.

Regional areas are thriving. Economic diversification beyond the traditional areas of agriculture and mining has been enabled by increased connectivity. High quality regional roads and railways connect communities with each other as well as to Sydney, and allow our producers to efficiently access world markets. Better bridges and local road improvements throughout regional NSW have significantly increased its economic competitiveness.

Newcastle is booming, with its increased economic footprint underpinned by significant population growth in the Lower Hunter. Upgrades to the F3, and increased efficiency at the port, have made the movement of passengers and freight around the Hunter seamless, meeting the needs of the resources industry.

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Wollongong has reinvented itself – service industries have leveraged its strong education sector, while Port Kembla has expanded its capacity for the bulk export of commodities. Improvements to passenger rail services and the F6 Extension mean that Sydney can now be reached quickly for employment and recreation.

Long term improvements in health have been delivered for a larger and older population. This includes hospital upgrades and more flexible models of care, including e-health.

Sydney 2032

At the heart of NSW and driving its economic success is Sydney: a global city of international significance. In the past two decades, Sydney has strengthened its leadership in high value add service industries, serving customers across Australia and Asia-Pacific.

Investing in the completion of our strategic road network has made strangling congestion on inadequate arterial routes a thing of the past. The pay off to the State from investing in the **WestConnex** motorways project exceeded all expectations. The efficient flow of goods from Port Botany and Sydney Airport to the logistics hub in Western Sydney and to regional areas has been secured.

Sustained investment in **effective public transport** now provides people with real choices about how they move around the city every day. Rail services are operated to world class standards. Metro-style rapid transit services run on the busiest routes and Wynyard and Town Hall stations have been redeveloped. Fast and reliable express services have opened up new travel options from the outer

suburbs and beyond.

The CBD is a world class location for work and play because traffic no longer dominates. Buses have largely been removed from the streets by the construction of the underground **bus rapid transit project**, which was completed 10 years ago.

The enduring appeal of our global city is supported by its **fusion of culture and business**. Barangaroo and the new convention, exhibition and entertainment facilities at Darling Harbour have been a triumph. The Arts Ribbon around the CBD provides a wide range of attractions for residents and has helped support a doubling of the visitor economy.

New high density communities have provided more **housing options** within easy reach of the CBD, particularly along a regenerated Parramatta Rd and in the South Eastern suburbs. Meanwhile, in Greater Sydney, more than 600,000 new homes have been delivered, meeting the needs of a growing population. School places have also kept pace with residential growth.

Parramatta has become the heart of Sydney, supported by significant transport improvements that have enabled more business growth. The two cities of Liverpool and Penrith are now realising their full potential for economic and population growth. **Flood mitigation measures** have already protected people and property in the Hawkesbury Nepean Valley.

Reflection 2032

In 2012 the NSW Government made tough decisions to concentrate on first things first. Facing sliding

productivity, they made decisions which were not universally popular.

The most recent OECD reports (2028-2032) have ranked Sydney among the top five cities in the world with respect to both productivity and liveability. NSW has enjoyed a sustained period of growth and is outperforming all other States in terms of both standards of living and population growth.

NSW is number one again.

Paul Broad Chief Executive Officer

With thanks to The Hornery Institute for assisting with Welcome to the Year 2032.

Executive Sumary

The State Infrastructure Strategy: 'First Things First' is an assessment of priority infrastructure problems and solutions for the next two decades for the NSW Government, the community, business and all who have an interest in the success of NSW. The Strategy builds on the NSW Government's existing public commitments and outlines a forward program of more than 70 urban and regional projects and reforms across transport, freight, aviation, energy, water, health, education and social infrastructure that should take priority over the next five, 10 and 20 years. Taken together, this program will improve the performance of the NSW economy.

According to Deloitte Access Economics, effective implementation of the Strategy would increase the size of the NSW economy by more than \$50 billion (present value). This represents around a 2.4 percent increase to the economy and some 100,000 extra jobs.

The NSW economy is the largest and most diversified in Australia. Sydney alone contributes more to Australia's economy than the whole of the country's mining sector.

NSW is now largely a service-based economy dominated by the finance and insurance sectors. It will retain the same shape to 2032 with service industries expected to increase as a share of the overall economy.

As an internationally-facing economy, NSW is vulnerable to global competition and rapid changes in technology, which will continue to change the way we both live and work over the next 20 years. This is both an opportunity and a threat.

We need the infrastructure to support jobs, housing and services for over nine million people given the State's population is forecast to grow by an additional two million people in the next 20 years, mainly in Sydney.

Growing the economy at a greater rate than the population and in a way that supports our service-based industries will enable NSW to continue to provide and improve the quality of key services, including transport, health and education.

The Strategy recommends infrastructure investments necessary to encourage the economy to grow at a greater rate than the population, supports our service-based industries and lifts the poor productivity of the last decade.

The right infrastructure will connect, build resilience and be cost effective and therefore will allow NSW to realise its potential as one of the best places in the world to live and work.

Infrastructure NSW

Established by the Infrastructure NSW Act 2011, Infrastructure NSW is tasked with preparing the 20 year State Infrastructure Strategy (the Strategy) for the Premier. The Act states that the Strategy must assess the current state of infrastructure in NSW and the strategic priorities for infrastructure for the next 20 years.

This Strategy is Infrastructure NSW's independent advice to Government on the specific infrastructure investments and reforms needed to make NSW number one again.

Need for the Strategy

NSW has spent an enormous amount on infrastructure in recent years: more than \$70 billion in 2006-11, compared with \$35 billion in 2001-06. In particular, there has been a step change in the levels of investment in the public transport and electricity distribution sectors. However, simply spending money does not mean that critical infrastructure needs are being met efficiently.

A targeted infrastructure planning and investment strategy is critical to reversing NSW's relative economic decline. Despite record spending on infrastructure, NSW has suffered in recent years from:

- A lack of coherent planning that responds to fundamental long term trends and economic realities
- Projects have been poorly scoped, or scoped with insufficient regard to budgetary constraints
- Inefficient operating practices and high cost bases in some areas that have prevented the benefits of new infrastructure being fully realised
- Projects that have been poorly delivered with frequent delays and cost overruns.

Strategic Framework

Infrastructure NSW's framework makes economic impact a key test in determining funding priorities.

Emphasis has been placed on the need for more intensive use of existing assets and incremental improvements before making commitments to extremely expensive new infrastructure. Priority is given to those regions and sectors where high growth potential is being constrained by inadequate infrastructure.

Potential projects have been subject to multi-criteria assessment to gauge strategic fit, economic benefit and delivery risk.

Taken together, these approaches provide a framework for increasing the quality of infrastructure spending in NSW.

Infrastructure Challenges

The population of NSW is expected to grow by two million people by 2032, taking the State's population to over nine million. New infrastructure is required to deliver high quality housing, jobs and services to areas experiencing growth.

NSW must remain a liveable and attractive place that attracts talented people and businesses in a competitive global marketplace. This requires connected and resilient infrastructure.

Infrastructure NSW's assessment of the State's existing infrastructure has highlighted critical infrastructure deficiencies in urban road capacity. It has also identified major deficiencies in the capacity of bus and train services to the CBD, regional rail, regional water and wastewater, flood mitigation and in the capacity of hospitals and schools.

Spatial Analysis

The Strategy has analysed NSW in three parts:

- Global Sydney comprising the Sydney CBD and the inner suburbs, Global Sydney is home to over half of Australia's globally competitive service sector jobs and contributes 41 percent to Gross State Product (GSP). It will remain NSW and Australia's most important economic, social and cultural hub for the foreseeable future. It also includes the international gateways of Port Botany and Sydney Airport
- Greater Sydney comprising the rest of metropolitan Sydney and the Central Coast. The region is home to 46 percent of the State's population and contributes 34 percent of GSP

 Regional NSW - NSW has the highest regional population and largest and most diversified regional economy of any State. Regional NSW supports world class primary industries as well as important manufacturing and tourism industries. More than a third of NSW citizens live and work in regional NSW. About 25 percent of the GSP is produced in the regions.

Global Sydney, Greater Sydney and Regional NSW are inseparable. The Strategy recommends infrastructure investments that have a positive impact across the whole State. For example, addressing the congestion around Sydney's gateways provides benefits for the movement of freight and people all around the State.

Urban Roads

Sydney's road network serves 93 percent of passenger journeys, and most growth in transport demand over the next 20 years will be met by roads under any plausible scenario. New road capacity is urgently required to meet the challenge of population growth and substantial increases in freight volumes. New roads will relieve legacy arterial roads such as Parramatta Rd, Pennant Hills Rd and Princes Highway, and permit urban regeneration in these areas.

The most pressing investment needs occur on the M4 and M5 corridors because of their importance to the freight and business transport task; connecting Global Sydney and the international gateways with the industries and residential areas in the West and South-West.

Infrastructure NSW has developed a scheme called "WestConnex", which it proposes as Sydney's next motorway project. WestConnex integrates the M4 Extension from Parramatta towards the Airport

with an expansion of the M5 East. Regeneration of the Parramatta Rd corridor and public transport improvements are integral parts of the scheme. WestConnex is proposed to be delivered in stages over the next 10 years at a target cost of \$10 billion.

The F3-M2 link and F6 Extension are also highly desirable to bring connections North and South of Sydney up to motorway standard. These roads are scheduled for development between years 10 and 20, but may be accelerated if the private sector can provide financing.

Buses and Light Rail

The principal issue facing bus services is congestion in the CBD. However, Infrastructure NSW has concluded that a high capacity light rail service on George St is likely to be incompatible with a high quality pedestrian boulevard, and the negative impacts on bus passengers from inner suburbs may be considerable.

Infrastructure NSW recommends the development of an alternative solution: a CBD Bus Rapid Transit (CBD 'BRT') tunnel from the Sydney Harbour Bridge to the Town Hall area, modelled on the underground bus way that already operates in Brisbane. Wynyard and Town Hall Stations would be reconstructed as rail/bus transport interchanges, and the central part of George St would be fully pedestrianised.

Outside the CBD, Infrastructure NSW supports the construction of light rail from Central to Moore Park and the University of NSW via Anzac Parade. This development will improve the quality of transport to these important activity centres and take advantage of a route that was purpose-built for trams. However, in order

to deliver value for money, the scope of this project will need to be carefully controlled.

Passenger Rail

Trains are essential to the economy of NSW, particularly for commuters to Global Sydney. In future, the passenger rail system will have three tiers: rapid transit, suburban and intercity. The North West Rail Link (NWRL) will introduce the rapid transit model to Sydney.

Additional capacity will be required in the core of the rail network, particularly the CBD, over the next 20 years. This must be provided using existing assets wherever possible, given the extremely high cost of new construction. Accordingly, Infrastructure NSW recommends increased use of the City Circle to provide additional capacity for suburban services in the CBD within 10 years.

Beyond year 10, the extension of rapid transit from the NWRL to the CBD over the Sydney Harbour Bridge and then on to Strathfield is recommended. This approach requires the re-signalling and reconfiguration of existing lines. It will allow faster and more frequent services to the CBD for passengers on the Western, Northern and Southern Lines and high capacity metro-style services on the most congested parts of the network.

An incremental program to accelerate journey times on regional intercity routes is proposed, with a target of one hour journey times to Sydney from both Wollongong and Gosford. Accelerating journey times and more frequent services to the Hunter is recommended in the longer term.

International Gateways

Sydney Airport and Port Botany will grow rapidly over the next 20 years, and transport networks need to be upgraded to meet this challenge. Some important steps can be taken in the short term, including cheaper train fares to the airport, more bus services and improvements at key road pinch points.

Most travel to and from the international gateways is forecast to remain on road for efficiency reasons. Accordingly Infrastructure NSW's medium term strategy is the construction of the WestConnex scheme. Upgrades of rail links and intermodal terminals are also supported as part of a balanced approach.

Regional and Interstate Transport

Transport infrastructure is essential for the economy and quality of life in regional NSW. The State is home to the world class Hunter Valley coal export industry and vital agricultural supply chains, both of which rely on rail for bulk movements. Outside these sectors the road network is the backbone of regional transport.

Duplication of the Pacific Highway and the Princes Highway (to the Jervis Bay turnoff) are critical for economic growth along the coast. Inland, freight access needs to be improved through a bridge replacement program and investments to fix identified bottlenecks on both railways and roads.

Energy

Improving energy affordability and security will require significant reform in the energy sector. Changes to the regulatory process are expected to better balance the interests of network businesses and electricity users.

Infrastructure NSW supports the Commission of Audit's recommendation that the Government undertakes a study that considers the scope and implementation strategy for privatisation of the distribution networks, and also supports consideration of options for the Government's stake in Snowy Hydro.

Water

Infrastructure NSW recommends a comprehensive program of new and upgraded dams across regional NSW to mitigate the impact of future droughts. Additionally, regional town water and wastewater systems should be brought up to national standards.

Augmentation of water supply in the Hunter region is needed within the next 10 years, with potential augmentation in Sydney before 2032.

The NSW Government should review flood mitigation options available in the Hawkesbury Nepean Valley, including raising the Warragamba Dam wall and upgrading roads in the valley.

Health Infrastructure

NSW's health system faces growing demand from the ageing population, lifestyle diseases and new care technologies. This will require new models of care, including more beds in smaller, specialist medical facilities and repurposing community health centres.

The Northern Beaches Hospital should be delivered as a 'healthcare precinct' combining both public and private service provision in an integrated fashion.

Social Infrastructure

Population growth means that NSW's school population will continue to rise. Infrastructure NSW

recommends that 90 percent of additional places are accommodated within existing schools, leveraging the existing infrastructure and achieving the better learning outcomes associated with larger schools.

Arts infrastructure will be upgraded over time, with a focus on Sydney's Arts Ribbon where upgrades are proposed at the Opera House, the Art Gallery of NSW and new developments at Walsh Bay and Barangaroo. In conjunction with the new Sydney International Convention, Exhibition and Entertainment Precinct, these investments will contribute to the growth of NSW's visitor economy.

Funding and Delivery

All new infrastructure is ultimately funded via taxation or user charges. Private financing in its own right does not create more money for infrastructure development. Infrastructure NSW proposes its priorities are delivered within a sustainable budgetary framework by using the following six funding strategies:

- Tolls on new and upgraded motorway links
- Restart NSW funding using net proceeds of assets sales and other windfall gains
- Reduction of public transport subsidies, consistent with regulatory determinations
- Limited reprioritisation of current capital plans
- Commonwealth contributions for projects that align with Infrastructure Australia's key themes
- Value capture from beneficiaries of new infrastructure, where feasible.

WestConnex is proposed to be predominantly user funded, with limited Government financial support in the early years.

Recommendations

Infrastructure NSW's recommendations have been made for each class of infrastructure and are phased between 2012-17, 2017-22 and 2022-32. The principal recommendations are summarised on the next page. The full list of recommendations is set out in Section 15 of the Strategy.

The recommendations have been developed to be realistically affordable and capable of being delivered.

The scoping estimate for the priority projects and programs (excluding existing Government commitments) is \$30 billion. After deducting assumed user funding of \$10 billion, the incremental cost to the State is \$20 billion over 20 years. This averages about \$1 billion per annum, compared with total NSW Government capital expenditure of approximately \$15 billion per annum.

These investments are necessary to allow the economy to grow at the level required to maintain and improve living standards for a larger population. Delivery of the right infrastructure will allow NSW to realise its potential as one of the best places in the world to live and work.

	Global Sydney	Greater Sydney	Regional NSW
Facts	 41% of the economy and 17% of population Global Sydney is an international leader in high value, knowledge-based service industries Sydney Airport and Port Botany are NSW's principal international gateways 	34% of the economy and 46% of the population Employment and housing patterns are generally dispersed and low density Over 93% of journeys are on road	 25% of the economy and 37% of the population Australia's largest and most diversified regional economy Internationally significant primary producer: coal, grain, livestock, viticulture, etc
Conclusions	Landside transport infrastructure around the port and airport requires expansion Global Sydney must out-compete other cities in terms of liveability and business attractiveness Urban regeneration will help meet the housing challenge and improve our competitiveness	Investment in new and upgraded roads is essential to meet the transport task in Greater Sydney Many people in Greater Sydney will continue to work in Global Sydney, requiring expansion of both road and rail capacity Parramatta and other centres require investment to realise their potential	Regional producers require efficient and reliable access to markets Regions adjacent to Sydney will benefit from better transport links to the capital city Improvements to water security and quality are required
Infrastructure	NSW's principal recommendations		
Now (0-5 Years)	• Start construction of WestConnex: plann	Fix Regional freight pinch points: road and rail Pacific Highway and Princes Highway: review scope and costs, then continue construction*	
	Fix road pinch points and improve public transport in the Port Botany and Sydney Airport precinct Construct the new Sydney International Convention, Exhibition & Entertainment Centre*	Fix road pinch points in Parramatta and other growing centres Hawkesbury Nepean floodplain: implement mitigation measures Construct Northern Beaches Hospital Healthcare Precinct* Construct F3-M2	Complete Northern Sydney Rail Freight Corridor (Stage 1) upgrades* Bridges for the Bush program: targeted bridge upgrades to improve freight efficiency

Sydney Orbital

Next (5-10 Years)

2012-2017



2017-2022

- Completion of the North West Rail Link*
 - Completion of WestConnex
- Unlock City Circle spare capacity to relieve CBD station congestion

University of NSW

in the CBD

• Construct underground bus rapid transit in CBD

• Anzac Parade light rail from Central to Moore Park and

• Improve rail off-peak price incentives to spread demand

- Rebuild Wynyard and Town Hall interchanges
- Pedestrianise and revitalise George Street
- Invest in Sydney's Arts Ribbon: Opera House, Art Gallery of NSW, Walsh Bay
- Introduce metro-style rapid transit services from Chatswood to Strathfield via the Harbour Bridge - extend NWRL services
- Plan Eastern Suburbs Railway extension to Randwick and Maroubra
- Continue investment in Sydney's Arts Ribbon

• Incremental bus priority measures: Parramatta, Victoria Road

(assumes unsolicited proposal, no Government contribution)

• Preserve motorways corridors, including Outer Western

• Northern Beaches bus corridor improvement plan, incorporating Spit Bridge augmentation

and other strategic corridors

- Moorebank intermodal terminal: construct supporting transport infrastructure
- Rollout of Managed Motorways program across the Sydney network

- improve freight efficiency
- Coal communities road and rail schemes in the Hunter Valley
- Mainline Rail Acceleration: Wollongong to Sydney pilot program
- Complete duplication of Pacific Highway and Princes Highway (to Jervis Bay turnoff)*
- Mainline Rail Acceleration: Gosford to Sydney and Wollongong to Sydney (target one hour journey times)
- Construct an extension of the F3 to the Pacific Highway at Raymond Terrace
- Upgrade water and waste water in regional towns to meet national standards
- Augment water supply in the Hunter and regional areas
- Hunter Valley Coal Chain improvements: Liverpool Ranges

• Construct the F6 Extension: Sydney Airport to Waterfall

- Construct a transitway from Parramatta to Epping/ Macquarie Park
- Plan Western Sydney Regional Airport

- Mainline Rail Acceleration: Newcastle to Sydney (target two hour journey times)
- Maldon to Dombarton rail freight line
- Augment interstate gas and electricity transmission

Later (10-20 Years)



2022-2032

^{*} Indicates project recommendations that are existing Government commitments. The full list of Infrastructure NSW's recommendations is set out in Section 15 of the Strategy.