

Infrastructure NSW

ASSESSMENT OF PROJECT COST ESTIMATES

November 2014



EVERYTHING INFRASTRUCTURE GROUP

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1. INTRODUCTION

In its advice to Government as part of the updated 2014 *State Infrastructure Strategy*, Infrastructure NSW (INSW) is recommending a number of major infrastructure projects and programs for funding from the intended proceeds from the partial lease of the State's electricity network assets.

INSW has requested EIG to deliver a short Assurance Review Report for a number of nominated projects and programs that provides advice on:

- 1 The integrity and robustness of cost estimates, having regard to generally accepted industry practice and / or comparators.
- 2 General observations on:
 - a. the overall robustness and clarity of problem definition / project justification, strategic alignment to Government objectives and clarity of proposed solution and scope that aligns to the above basis for cost and benefit calculations.
 - b. the robustness of any options analysis undertaken.

This Report constitutes a high level review for advice only to INSW and does not constitute an endorsement of the 2014 SIS Update Recommendations. The Recommendations and dollar amounts referred to within the Assurance Reports are derived from INSW; project costs are derived from respective Government Agencies.

2. BACKGROUND

As part of the updated 2014 *State Infrastructure Strategy*, INSW is recommending a number of major infrastructure projects for funding from the intended proceeds from the partial lease of the State's electricity network assets.

A number of these recommended projects have progressed to a stage of having a high level Cost Benefit Analysis, an economic appraisal or business case.

INSW requested that a number of these recommended projects and programs be independently reviewed as to their robustness in relation to project justification, options analysis, scope and cost estimates.

3. METHODOLOGY

EIG completed an assurance review for a number of projects and programs nominated by INSW. The projects and programs are listed below.

Project / Program
Sydney Rapid Transit
Western Sydney Rail Upgrade Program (Sydney's Rail Future 2)
Bus Rapid Transit and Bus Priority Program
Parramatta CBD Public Transport Improvements Program
Urban Roads Pinch Points Program
Expanded Clearways Program
Smart Motorways
SCATS and Transport Management Centre
Western Harbour Tunnel

Project / Program
Sydney – Illawarra Pinch Points Program
Regional Road Freight Corridor Program (Golden Highway)
Bridges for the Bush Program
Fixing Country Roads Program
Fixing Country Rail Program
Regional Growth Roads Program

The assurance review involved a high level strategic review of the documentation provided by INSW, which reflected the stage of project development. This information was predominantly in the form of business cases (strategic or preliminary), economic appraisals or feasibility studies. This strategic review involved:

- checking the business case or report to ensure they included all appropriate elements, i.e. project need, identified benefits, scope of works, project cost analysis, options analysis, financial and funding analysis, and project implementation analysis.
- strategic assessment of the contents of the document.
- identifying comparable projects to benchmark cost estimates where possible.
- benchmark project cost estimates against these comparable projects to determine if they were reasonable.

4. ASSURANCE REVIEWS

EIG has produced a short Assurance Review Report on each project. In this Report EIG has detailed the estimated capital and Gateway Status. EIG has also provided a description of the project and provided a strategic assessment to the extent possible, based on the information available, commenting on project justification, proposed scope, cost estimate and project implementation.

5. CONCLUSIONS

Conclusions have been prepared with full consideration of Agencies Business Cases and associated documentation where provided, however a comprehensive analysis of Capital Costs and the derivation Funding was not included in the Scope of these Reports.

The majority of the projects / programs assessed are at early stages of development, either at the Project Justification or Strategic Assessment stage. Consequently, further development is required including scoping, improved accuracy of estimates and escalations, site related risks, or other considerations such as staging options, market involvement, overall interfaces with existing infrastructure, networks and existing operations or benefits realisation.

Based on the documents provided by INSW and considering the state of development of each project / program, the cost estimates seem reasonable and recommendations made by INSW to prepare final business cases are considered appropriate.

ATTACHMENT A: PROJECT ASSURANCE REPORTS

Project: Western Sydney Rail Upgrade Program (Sydney's Rail Future 2)

2014 State Infrastructure Strategy Recommendation:	Reservation of up to \$1 billion. Final business case to be prepared.
Capital Cost Estimate	The cost estimate for the scope of work appears reasonable, when benchmarked against projects such as the North West Rail Link Operations, Trains and Systems contract that contains similar elements of scope.
Sponsor agency	Transport for NSW
Business case status	Preliminary Business Cases
Gateway status	Gate 1 - Strategic Assessment

The following assessment is relative to the above stated project stage

Project description	<p>The Program comprises investment in infrastructure, rolling stock and signalling (three separate programs) to provide increased capacity and improved reliability to cater for growth in passenger demand in the next ten years and to replace life expired infrastructure and assets. In realising the full increase in capacity planned in future timetables from completion of new rail lines such as North West Rail Link and South West Rail Link, it would provide improvements in incident recovery management, dwell management, timetabling overhaul and other stated objectives.</p> <p>The Program includes:</p> <ul style="list-style-type: none"> – Corridor Infrastructure Program: a 10 year program of works comprising a series of projects designed to remove constraints on the T1 corridor to release additional network capacity and improve reliability. It would deliver critical civil and electrical infrastructure to enable longer (12 car) trains and to improve separation to increase the train frequency for the T1 Northern and T1 Western lines. – New Intercity Fleet would include the purchase of 65 new 8-car sets that are required to replace life-expired rolling stock and to provide additional services to cater for predicted future passenger growth. – The ATCS, a rail signalling system, is proposed for specific key corridors in Sydney's rail network. An enabler for improved train operations, it would provide for multiple benefits in increased safety, capacity, reliability and energy efficiency. An ATCS, utilising European Train Control System (Level 2) and upgrading to an Automatic Train Operation (ATO) when required, is considered the preferred option for the Sydney Rail network.
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of project development, the Program justification appears reasonable. The investment, Program needs and expected benefits that the sub-programs would generate have been identified in each of the preliminary business cases. The interdependency of the three programs stipulated have also been linked to Project benefits.</p> <p><i>Proposed Scope</i></p> <p>The scope of works for the three separate programs appear to contain the appropriate elements as outlined below:</p> <ul style="list-style-type: none"> – T1 Corridor Infrastructure Program: includes required AC power, traction supply and signalling upgrades to replace life expired assets; also incorporates the required stabling, station upgrades and platform extensions. – New Intercity Fleet: includes 49 trains to replace the life-expired S sets and V sets, 16 ‘growth’ trains, training simulator, maintenance facility and co-located stabling to support the new fleet. – ATCS: includes design, ETCS implementation, rolling stock works, delivery, risk and contingency. <p><i>Cost Estimate</i></p> <p>The cost estimates for the above scopes of work appear reasonable, when benchmarked against projects such as the North West Rail Link Operations, Trains and Systems contract that contains similar elements of scope.</p> <p><i>Project Implementation</i></p> <p>The proposed implementation plans for the separate programs appear to reflect all appropriate and reasonable stages and elements; the proposed delivery program appears realistic when benchmarked against projects that contain similar scope.</p>
<p>Conclusions</p>	<p>At this stage of project development, the Program justification appears reasonable. The needs and benefits of the Program will be further refined as more detailed planning is undertaken to finalise the business case.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of up to \$1 billion from the Rebuilding NSW initiative and a final business case is to be prepared.</p>

Project: Sydney Rapid Transit

2014 State Infrastructure Strategy Recommendation:	Reservation of \$7 billion. Final business case to be prepared.
Capital Cost Estimate	The cost estimate for the scope of works at this draft business case stage appears reasonable, when benchmarked against the North West Rail Link Project, a recent rapid transit project containing some similar elements of scope.
Sponsor agency	Transport for NSW
Business case status	Strategic Business Case
Gateway status	Gate 1 – Strategic Assessment

The following assessment is relative to the above stated project stage

Project description	<p>The Sydney Rapid Transit (SRT) Project would extend rapid transit operations under Sydney Harbour, through the central business district of Sydney and west to Bankstown. The SRT Project comprises:</p> <ul style="list-style-type: none"> – Northern Corridor Works: a 3 kilometre above ground section of new track in the existing rail corridor between Chatswood Station and St Leonards – Sydney Harbour Crossing: 12.5 kilometres of twin tunnels, including beneath Sydney Harbour and new underground stations on the North Shore and in the CBD – Western Extension: upgrading the existing 13.4 kilometre rail line from Sydenham Station to Bankstown Station to support rapid transit operations.
Strategic Merit	Demonstrated strategic merit as the project is identified as a priority in the 2012 State Infrastructure Strategy.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of project development, the Project's justification appears reasonable. The Project's scope and expected benefits have been identified.</p> <p><i>Proposed Scope</i></p> <p>The scope of works includes tunnelling, stations, signalling, rail, systems and power, stabling, preliminaries, insurance, overheads and design works, property acquisition, project delivery costs and risk and contingency.</p> <p><i>Cost Estimate</i></p> <p>The cost estimate for the scope of works at this draft business case stage appears reasonable, when benchmarked against the North West Rail Link Project, a recent rapid transit project containing some similar elements of scope.</p> <p><i>Project Implementation</i></p> <p>The proposed SRT implementation approach at this early stage includes all appropriate elements, and the proposed master program appears to be reasonable when benchmarked against the North West Rail Link Project.</p>
<p>Conclusions</p>	<p>At this stage of project development, the Project's justification appears reasonable.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of \$7 billion from the Rebuilding NSW initiative and a final business case is to be prepared.</p>

Project: Bus Rapid Transit and Bus Priority Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$300 million. Final business case to be prepared.
Capital Cost Estimate	The cost estimate for the identified scope of works at the current Feasibility Study stage appears reasonable when benchmarked against the Northern Busway extension in Brisbane.
Sponsor agency	Transport for NSW
Business case status	Feasibility Study Draft Report
Gateway status	Northern Beaches BRT: Gate 1 - Strategic Assessment

The following assessment is relative to the above stated project stage

Project description	<p>Under the NSW Long Term Transport Master Plan, Bus Rapid Transit (BRT) was identified as a potential option to assist in mitigating congestion and to address growing demand for transport services on the Northern Beaches. BRT typically operates very frequent services on an exclusive bus roadway with high-quality stations and vehicles. A number of BRT options are to be considered of which Northern Beaches is one. Priorities for projects would be determined once final business cases are prepared.</p> <p>The Northern Beaches BRT Project is the preferred bus network and strategic BRT infrastructure program for the Mona Vale to Sydney CBD Rapid bus route; and the Chatswood to Manly Suburban bus route.</p> <p>The proposed rapid bus route between Mona Vale and the Sydney CBD is approximately 28 kilometres via Pittwater Road, Condamine Street, Burnt Bridge Creek Deviation, Manly Road, Spit Road and Military Road. The proposed Suburban bus route between Chatswood and Manly is approximately 24 kilometres and mostly follows the existing Sydney Buses Route 136 between Chatswood and Manly via Frenchs Forest and Dee Why.</p> <p>The proposed infrastructure for the BRT system includes:</p> <ul style="list-style-type: none"> – Nine Rapid Transit bus stop precincts with upgraded customer waiting areas at reconfigured bus stands, with more efficient usage of the precincts to accommodate a reconfigured bus network – Bus priority measures including new sections of kerbside bus lanes and reconfigured intersection treatments to improve traffic flow and bus movements along Military Road and Pittwater Road – Introduction of bus bays and traffic improvement treatments in Military Road, Pittwater Road, Forest Way and Frenchs Forest Road at key bus interchanges.
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program needs and expected benefits that the Program would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The scope of works for the BRT Program appears to be reasonable.</p> <p><i>Cost Estimate</i></p> <p>The cost estimate for the identified scope of works at the current Feasibility Study stage appears reasonable.</p> <p>As a comparison, a recently completed BRT project was the Northern Busway extension in Brisbane. Commissioned in June 2012, the project delivered three kilometres of additional two-way bus-only roadway with two new stations and eight new bus shelters.</p> <p><i>Project Implementation</i></p> <p>The proposed staged delivery plan is reasonable.</p>
<p>Conclusions</p>	<p>At this stage of project development, the Program's justification appears reasonable. In progressing to the next stage of business case, project inclusions, associated costs, project needs and benefits would benefit from further refinement in order to develop the final business case for each of the proposed BRT projects.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of \$300 million from the Rebuilding NSW initiative and prepare a final business case to enable detailed investment decisions to be made.</p>

Project: Parramatta CBD public transport improvements Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$600 million. Prepare a long term transport improvement program for Parramatta.
Capital Cost Estimate	Cost estimates for the scope of works identified at this current assurance stage appear reasonable when benchmarked against similar projects including the recently completed Gold Coast Rapid Transit project in south east Queensland and the Queensland Government's Translink Station Upgrade Program.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>A Program to complete planning and preliminary design work related to potential transport links to and from Parramatta (options include light rail and/or bus infrastructure improvements).</p> <p>The Parramatta Light Rail project would include a number of different stages: Strategic Needs Assessment; Corridor Assessment; Feasibility Design and the development of a Strategic and Final Business Case.</p> <p>The light rail project aims to assess the feasibility and economic benefits of a shortlist of light rail routes serving Parramatta. This will be achieved by building on the earlier work completed by Parramatta City Council and completing a strategic needs assessment, a corridor assessment including consideration of the most effective corridor alignment, an engineering feasibility assessment of the shortlisted corridors, an economic appraisal and development of a Strategic Business Case. Corridor options currently being investigated include Castle Hill to Rydalmere via Parramatta along Windsor Road / Old Northern Road, Macquarie Park to Westmead via Parramatta and Eastwood, Parramatta to Bankstown, and Parramatta to Rhodes via Sydney Olympic Park.</p> <p>The Parramatta Bus Package project would investigate, plan and design bus priority measures along three significant Rapid bus routes from Parramatta to Castle Hill, Macquarie Park and the CBD via Ryde. The project would focus on improved bus service frequency, reliability and speed (target speed of 25-30 km/h), and would include a subregional bus network redesign and removal, relocation and/or upgrade of exiting bus stops on these routes.</p> <p>The Parramatta Bus Package project would develop strategic / concept designs, cost estimates and staging plans for each route, and production of a Strategic Business Case for the next assurance stage.</p>
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of development, the Program’s justification appears reasonable. The investment, Program needs and expected benefits that the projects would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The scope of works for the projects appear reasonable at this stage of the planning cycle for the projects. Interdependencies are adequately identified.</p> <p><i>Cost Estimate</i></p> <p>Cost estimates for the scope of works identified at this current assurance stage appear reasonable; significant assumptions are contained in the projects.</p> <p>A recently completed reference light rail project was the Gold Coast Rapid Transit project in south east Queensland. Commissioned in mid-2014, this project delivered a 13 kilometre light rail route through Southport, Surfers Paradise and Broadbeach with 16 stations.</p> <p>As a generic comparison to the Parramatta Bus Package, the Queensland Government’s Translink Station Upgrade Program delivers new or upgraded infrastructure at key public transport hubs, such as bus stations and bus–train interchanges; park ‘n’ ride, kiss ‘n’ ride and taxi facilities; bus stops along major service corridors; and end-of-trip facilities at bus and train stations within the Translink network.</p> <p><i>Project Implementation</i></p> <p>The proposed project timetables are satisfactory in relation to the early gateway stages of all three projects. Consideration of total benefits realised for the projects arising out of the next assurance stage will add value by also evaluating the interdependencies of each mode and appropriate coordination in implementation.</p>
<p>Conclusions</p>	<p>At this stage of development, the Program’s justification appears reasonable. The Program will benefit from completion of next stages of business case development, examining a range of factors including project needs and benefits, interdependencies with the other projects, connectivity, staging options, a thorough evaluation of all modes, and interface with WestConnex. The total benefits realisation of the projects will be addressed through these processes and testing of assumptions.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of \$600 million from the Rebuilding NSW initiative and prepare a long term transport improvement program for Parramatta.</p>

Project: Urban Roads Pinch Points Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$300 million. Final business case to be prepared.
Capital Cost Estimate	The funding allocation sought for this Program is reasonable for the current stage of planning when benchmarked against the Queensland Government's intersection upgrade project at Mains Road and Kessels Road.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>A Program that targets peak hour traffic hotspots and investigates ways to relieve traffic congestion at intersections. Possible solutions at these pinch points include widening intersections, providing dedicated turn bays, and by lengthening turn bays to prevent queuing into the main stream of traffic.</p> <p>Major pinch points may require road widening and grade separations where the route has high priority, is performing poorly, where minor improvements no longer meet current demands or where no minor improvements are possible.</p>
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program needs and expected benefits that the Program would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program appears appropriate for its stage of project development.</p> <p><i>Cost Estimate</i></p> <p>The funding allocation sought for this Program is reasonable for the current stage of planning, i.e. Gate 0 - Project Justification.</p> <p>A comparison project is the Queensland Government's intersection upgrade project at Mains Road and Kessels Road, one of the most congested intersections in Queensland. Completed in mid-2014, the project included a grade separation of both roads, provision of a short underpass with improved turn and intersection lanes, and new provisions for buses, pedestrians and cyclists.</p> <p><i>Project Implementation</i></p> <p>The proposed program staging appears sound.</p>

<p>Conclusions</p>	<p>At this stage of development, the Program's justification appears reasonable. The completion of the next stage in assurance review will reflect greater accuracy in project needs, benefits and cost estimates.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of \$300 million from the Rebuilding NSW initiative and prepare final business case.</p>

Project: Expanded Clearways Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$100 million. Final business case to be prepared.
Capital Cost Estimate	The funding allocation sought for this Program is reasonable for the current stage of planning.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>A Program aimed at implementing new clearways across a number of strategic arterial routes on the Sydney network that would reduce delays and improve traffic flow. Clearways involve reallocating road space and providing alternate parking solutions to make more road space available during peak hours, day time hours and at weekends.</p> <p>Key corridors have been identified where clearways would be implemented. Clearways can significantly improve customer journey times, reliability and increase the effective capacity of the road network while deferring the need for major capital investment.</p>
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the Long-Term Transport Master Plan.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program needs and expected benefits that the Program would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program appears appropriate for this stage of the Program.</p> <p><i>Cost Estimate</i></p> <p>The funding allocation sought for this Program is reasonable for the current stage of planning, i.e. Gate 0 - Project Justification.</p> <p><i>Project Implementation</i></p> <p>The proposed program staging appears sound.</p>
Conclusions	At this stage of development, the Program's justification appears reasonable.
Infrastructure NSW Recommendation	Reservation of 100 million from the Rebuilding NSW initiative and prepare final business case.

Project: Smart Motorways

2014 State Infrastructure Strategy Recommendation:	Reservation of \$400 million for investments on the M4, the Warringah Freeway and Southern Cross Drive General Holmes Drive. Finalise business cases for each project.
Capital Cost Estimate	The cost estimates for the identified scope of works at this stage appear reasonably robust.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>The Smart Motorways: M4 West project proposes to improve a 36 kilometre section of the M4 Western Motorway between Pitt Street Mays Hill, and Russell Street Emu Plains, at the base of the Blue Mountains.</p> <p>The Smart Motorways: Southern Cross Drive-General Holmes Drive project proposes to improve a 7.5 kilometre section of this corridor between Cooks River, Kyeemagh and Link Road, Zetland.</p> <p>Smart Motorways would be achieved by the use of systems and tools including:</p> <ul style="list-style-type: none"> – Ramp signals on entry ramps – Dynamic speed and lane use management systems along the motorway – Driver information systems (e.g. VMS) on the motorway and adjoining arterial roads – Emergency stopping bays and telephones along the motorway – Continuous network monitoring along the motorway, ramps and interchanges through vehicle detection and closed circuit – Television cameras – Upgrading power and communications networks along the motorway
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of development, the Project's justification appears reasonable. The investment, Project needs and expected benefits that the Project would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the projects are appropriate at this stage of project development.</p> <p><i>Cost Estimate</i></p> <p>The cost estimates for the identified scope of works at this stage appear reasonably robust.</p> <p>As a generic comparison, smart motorways projects currently being delivered or recently completed include:</p> <ul style="list-style-type: none"> – Bruce Highway Managed Motorway Project: the Queensland Government is currently modifying five southbound on-ramps to the Bruce Highway, involving widening and installing ramp signals to control flow onto the highway, underground traffic sensors, closed circuit television cameras, dynamic message signs and necessary electrical and fibre optic cables. – West Gate Freeway managed motorway project: the Victorian Government upgraded the electronic freeway management system along the West Gate Freeway (M1) over approximately 13 kilometres between Williamstown Road and the M80 Ring Road. The project delivered overhead lane use signs to advise drivers of which lanes to use and that allow for speeds to be adjusted to suit conditions, closed circuit television cameras and an upgrade of supporting telecommunications networks. <p>These examples may be a small component of proposed Smart Motorway upgrade projects, and it would be envisaged that subject to the final scope of works, there would be a range of smart motorway initiatives / works which may align with the above examples.</p> <p><i>Project Implementation</i></p> <p>The proposed staged delivery plan appears to be reasonable at this stage.</p>
<p>Conclusions</p>	<p>At this stage of development, the Project's justification appears reasonable. Next stages will confirm project needs, benefits and estimates, refined scope, contingencies and risk assessment and mitigations for identified risks including site specific conditions and market conditions.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of \$400 million from the Rebuilding NSW initiative and preparation of final business cases for each project.</p>

Project: SCATS and Transport Management Centre

2014 State Infrastructure Strategy Recommendation:	Reservation of \$200 million. Final business cases to be prepared.
Capital Cost Estimate	The funding allocation sought reflect the projects' current stage of planning.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>The Sydney Coordinated Adaptive Traffic System (SCATS) is a traffic management system that provides the coordination of traffic signals to optimise traffic flow across the Sydney road network. The SCATS traffic control system requires modernisation to enhance interaction with new smart technology and to increase the capacity of the existing Sydney road network. Proposed investments include:</p> <ul style="list-style-type: none"> – capability for SCATS to optimise interfaces between different road users at intersections – technologies to allow SCATS to increase intersection throughput – installation of upstream vehicle detection technology – use of SCATS to improve the efficiency and safety of pedestrian movements at intersections – improved vehicle priority functionality at controlled intersections. <p>The NSW Transport Management Centre (TMC) monitors and manages the NSW road network 24/7. The TMC also coordinates Sydney's public transport operations during peak commuter travel times, special events, and unplanned transport incidents. This involves detection of transport incidents and planned service disruptions as well as identifying and minimising the multi-modal impacts arising from road, rail, light rail, bus and ferry incidents.</p>
Strategic Merit	Demonstrated strategic merit as the Projects are identified as a priority in the Long-Term Transport Master Plan.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of development the Projects' justification appears reasonable, with the aim of enabling increased efficiency within the existing Sydney road network and adding new network management capabilities. The SCATS project proposes to invest in an upgrade of the existing system rather than the alternative of capital expenditure on road works. The investment, Projects' needs and expected benefits that the Projects would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The preliminary scope of works for the Projects appear appropriate for the early stages of the projects. The projects' scopes will be further developed in the next two assurance stages.</p> <p><i>Cost Estimate</i></p> <p>The cost estimate reflects the projects' current stage of planning.</p> <p><i>Project Implementation</i></p> <p>The proposed program timeframe appears reasonable.</p>
<p>Conclusions</p>	<p>At this stage of development the Projects' justification appears reasonable. These Projects are technology based, consequently the evaluation process would include careful consideration of alternative technology options.</p> <p>Business continuity planning and associated infrastructure needs would also be addressed.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Reservation of \$200 million from the Rebuilding NSW initiative and prepare final business cases.</p>

Project: Western Harbour Tunnel

2014 State Infrastructure Strategy Recommendation:	Toll road. Final business case to be prepared.
Capital Cost Estimate	The cost estimate for the Project at this pre-feasibility stage appears reasonable when benchmarked against Queensland's Airport Link tunnel, a tunnelled, motorway grade toll road including 6.7 kilometres of twin tunnels.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 – Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>The Western Harbour Tunnel Project is a proposed corridor from WestConnex to Warringah Freeway at North Sydney/Cammeray. The Project includes an additional harbour crossing, west of the Harbour Bridge that would provide a north-south bypass of Sydney's CBD and relief to the Sydney Harbour Bridge and Tunnel.</p> <p>The pre-feasibility reference design adopts a bored tunnel configuration in the vicinity of the Rozelle Rail Yards, with twin tunnels extending north from WestConnex. The tunnel would continue north under Balmain and Sydney Harbour towards North Sydney. The total length of the pre-feasibility reference design for the Western Harbour Tunnel is approximately 7.3 kilometres.</p>
Strategic Merit	Demonstrated strategic merit as the Project is identified as a priority in the 2012 State Infrastructure Strategy.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Project justification appears reasonable. The investment, Project needs and expected benefits have been identified.</p> <p><i>Cost Estimate</i></p> <p>The cost estimate for the Project at this pre-feasibility stage appears reasonable when benchmarked against Queensland's Airport Link tunnel, a tunnelled, motorway grade toll road including 6.7 kilometres of twin tunnels.</p> <p><i>Project Implementation</i></p> <p>The proposed delivery plan is reasonable for this stage of project development.</p>

<p>Conclusions</p>	<p>At this stage of development, the Project justification appears reasonable. The Western Harbour Project should proceed to the next stage of Business Case development, including examining staging options and linkages to WestConnex to enable more refined project needs, benefits, cost estimates, traffic modelling and demand analysis and a more comprehensive procurement and delivery strategy to be identified.</p>
<p>Infrastructure NSW Recommendation</p>	<p>Transport for NSW should develop a business case for the Western Harbour Tunnel by the end of 2015 to enable the project's procurement and delivery as a tollway in conjunction with WestConnex Stage 3.</p>

Project: Sydney-Illawarra Pinch Points Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$300 million. Final business cases to be prepared.
Capital Cost Estimate	The cost estimates for the Program at this pre-feasibility stage appears reasonable when benchmarked against the Queensland Government's intersection upgrade project at Mains Road and Kessels Road.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 – Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>A range of projects to provide options to deliver an integrated transport scheme and program that provides road transport, including freight and public transport outcomes to support forecast population and economic growth, as well as inter-urban travel demands. A selection of major and minor intersection upgrades, bus infrastructure improvements, widening works, turning lanes, adjustment of lane markings and medians and parking changes along key roads.</p> <p>The selective intersection upgrades are primarily short term initiatives to provide traffic congestion relief on the most needed intersections.</p> <p>The bus infrastructure improvements includes new bus lanes and optimised bus stop locations, and should improve the level of service in these key strategic bus corridors.</p>
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the Long-Term Transport Master Plan.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program's needs and expected benefits that the Program would generate have been identified. Appropriate build scenarios appear to have been identified at this pre-feasibility stage.</p> <p><i>Cost Estimate</i></p> <p>The cost estimates for the Program at this pre-feasibility stage appears reasonable when benchmarked against the Queensland Government's intersection upgrade project at Mains Road and Kessels Road.</p> <p><i>Project Implementation</i></p> <p>The proposed categorisation of projects into short (1-5 years) and medium (6-10 years) term time frames appears reasonable at the current pre-feasibility stage.</p>

Conclusions	At this stage of development, the Program's justification appears reasonable.
Infrastructure NSW Recommendation	A Reservation of \$300 million from the Rebuilding NSW initiative and to prepare final business cases.

Project: Regional Road Freight Corridor Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$2 billion. Prepare final business cases guided by corridor strategies.
Capital Cost Estimate	The cost estimates for the identified scope of works at this stage appears reasonable when benchmarked against recent regional freight upgrade projects in NSW
Sponsor agency	Transport for NSW
Business case status	Strategic Business Case
Gateway status	Gate 0 – Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>A Program aimed at delivering a selection of upgrades along key regional highways (Golden, Newell, New England and Great Western) with works including a mix of additional overtaking lanes, lane and shoulder widening, road, pavement and bridge strengthening, rest area improvements, flood immunity works, heavy vehicle inspection stations, safety treatments and various bypass and realignment works.</p> <p>The Golden Highway Upgrade proposes a number of safety and efficiency works along its full length, a 313 kilometre long rural State Highway mostly comprised of single carriageway that connects the New England Highway at Belford in the Hunter Valley to the Newell Highway at Dubbo via Denman, Merriwa and Dunedoo. The proposed works include:</p> <ul style="list-style-type: none"> – Pavement rehabilitation and/or shoulder sealing, and clearzone works – Intersection upgrades – Flood immunity works – Level crossing upgrade to include boom gates and advanced warning – Overtaking lanes – Program of improvements to heavy vehicles rest areas – Enhanced delineation of a number narrow bridges. <p>The Newell Highway is part of a major interstate freight corridor between Melbourne and Brisbane, with a 1,060 kilometre section running through NSW. The Newell Highway Upgrade Program proposes the following program of works to resolve existing and anticipated performance issues on the Newell Highway:</p> <ul style="list-style-type: none"> – Overtaking lanes – Heavy vehicle inspection areas – Pavement strengthening – Route realignments – Road widening.
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Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program's needs and expected benefits that the Program would generate have been identified. The Program is aligned with a number of NSW Government Plans and Strategies, and benefits range from reductions in maintenance costs, efficiencies in freight transport, improved access for high productivity vehicles, improved motorist and pedestrian safety, amenity improvements and asset protection.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program would benefit from further refinement in the next stage of assurance / review.</p> <p><i>Cost Estimate</i></p> <p>The cost estimates for the identified scope of works relating to the range of projects within the Program reflect their current stage / status within the Program.</p> <p>As a comparison, recent regional freight upgrade projects in NSW include:</p> <ul style="list-style-type: none"> - Moree town centre bypass – stage 2 project: currently under construction, this project will provide a new 1.8 kilometre, 60km/h route through east Moree, upgrading of a signalised T-intersection to a four way signalised intersection, an additional intersection upgrade, provision for pedestrians and cyclists, and landscaping. - Widening work at Cathundral: In 2013 the NSW Government upgraded 2.7 kilometres of highway 90 kilometres west of Dubbo. The highway was widened to improve safety for motorists with a smoother road surface and wider shoulders. - Safety improvements at Rocks Hill: In 2013 the NSW Government completed improvement works at Rocks Hill on the Mitchell Highway 16 kilometres west of Bathurst. Curves were improved, safety barriers installed and sealed road shoulders provided along this section of the highway. <p><i>Project Implementation</i></p> <p>The proposed staged delivery plan appears reasonable at this stage.</p>
Conclusions	At this stage of development, the Program's justification appears reasonable.
Infrastructure NSW Recommendation	A Reservation of \$2 billion from the Rebuilding NSW initiative and prepare final business cases guided by corridor strategies.

Project: Bridges for the Bush Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$200 million. Final business case to be prepared.
Capital Cost Estimate	The cost estimate for the identified scope of works at this stage appears reasonable, based on similar projects undertaken.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>This Program is proposed to fund the high priority bridge infrastructure upgrades for deficient rural bridges, as they currently present the most critical restrictions to freight access on the rural transport network. Upgrading these high priority bridges would improve road freight productivity and enhance economic growth in rural NSW.</p> <p>Four high priority strategic program investment areas have been identified to help manage ageing assets and provide the largest incremental benefit to freight productivity in the short term (over 5 years).</p>
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program's needs and expected benefits that the Program would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program as outlined appears to be appropriate at this stage.</p> <p><i>Cost Estimate</i></p> <p>The cost estimate for the identified scope of works at this Funding Submission stage appears reasonable, based on generic industry knowledge and practice.</p> <p><i>Project Implementation</i></p> <p>The proposed staged delivery plan appears to be sound at this stage.</p>
Conclusions	At this stage of development, the Program's justification appears reasonable.
Infrastructure NSW Recommendation	Reservation of \$200 million from the Rebuilding NSW initiative and prepare final business case.

Project: Fixing Country Roads Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$500 million. Final business case to be prepared.
Capital Cost Estimate	The funding allocation sought for the Program is reasonable for the Program's current stage of planning.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	A Program aimed at eliminating freight connectivity constraints on local roads and bridges in regional NSW. Fixing Country Roads seeks to remove constraints on regional local roads as well as reducing the number of vehicle movements, by maximising the use of High Productivity Vehicles, eliminating unnecessary diversions, and enhancing efficient linkages to the rail network.
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.
Strategic assessment	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program's needs and expected benefits that the Program would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program as outlined in the Capital Investment Brief appears appropriate for this stage of the Program.</p> <p><i>Cost Estimate</i></p> <p>The funding allocation sought for the Program is reasonable for the Program's current stage of planning.</p> <p><i>Project Implementation</i></p> <p>The proposed program staging appears sound.</p>
Conclusions	At this stage of development, the Program's justification appears reasonable.
Infrastructure NSW Recommendation	Reservation of \$500 million from the Rebuilding NSW initiative and prepare final business case.

Project: Fixing Country Rail Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$400 million. Final business case to be prepared.
Capital Cost Estimate	The cost estimates for the identified scope of works relating to the range of projects within the Program appears reasonable at this planning stage.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 - Project Justification

The following assessment is relative to the above stated project stage

Project description	<p>A Program of rail infrastructure improvements in country areas to eliminate bottlenecks and provide more efficient and reliable rail freight services. Program elements include:</p> <ul style="list-style-type: none"> – Main West Corridor Strategy: priority projects that increase line capacity immediately, and detailed planning for projects that would deliver long term capacity growth (e.g. track duplication, passing loops, new signalling) – Country Regional Network (CRN) Branch/Grain Line: upgrades on high priority routes to remove constraints to freight usage – CRN bridge upgrades: program to replace a number of timber rail underbridges and rail overbridges across the Country Regional Network. Life-expired bridges impose significant constraints on the efficient operation of the regional transport network. Rail underbridge replacement would allow the more efficient running of trains and reduce cycle times. Road overbridge replacement would allow road ratings to be increased, therefore increasing freight efficiency by allowing freight movements to travel more directly – Program funds: program level funding to deliver upgrades to regional rail lines to enhance freight and passenger rail travel times and accessibility.
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the 2012 State Infrastructure Strategy.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program's needs and expected benefits that the Program would generate have been identified.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program appears appropriate at the current stage of the Program's lifecycle.</p> <p><i>Cost Estimate</i></p> <p>The cost estimate for the identified scope of works at this stage appears reasonable.</p> <p>As a comparison, recently completed regional freight upgrade projects in Queensland are:</p> <ul style="list-style-type: none"> – Jondaryan Track Upgrade Project: Completed in 2011, this project delivered approximately 20 kilometres of resleepering, welding joints, track reconditioning, formation stabilisation/repairs, and six timber rail bridge eliminations. One 38 metre, 4 span timber rail bridge was replaced with a concrete rail bridge for a cost of \$1.3 million. – Columboola to Fisherman Islands Project: Completed in 2013, this project involved the construction of a new spur and balloon loop and mainline infrastructure works including a weighbridge, dragging equipment detectors, 3 kilometre of formation stabilisation, passing loop extensions and upgrades, track reconditioning, turnout replacement and upgrading, resleepering, welding rail joints, Train Loading Applications, and telecommunications and signalling. <p><i>Project Implementation</i></p> <p>The proposed staging appears to be sound at this stage.</p>
<p>Conclusions</p>	<p>At this stage of development, the Program's justification appears reasonable. The Program's needs and benefits will be further refined as more detailed planning is undertaken to finalise the business case.</p>
<p>Infrastructure NSW Recommendation</p>	<p>A Reservation of \$400 million from the Rebuilding NSW initiative and prepare final business case.</p>

Project: Regional Growth Roads Program

2014 State Infrastructure Strategy Recommendation:	Reservation of \$1 billion. Final business cases to be prepared.
Capital Cost Estimate	The cost estimates for the identified scope of works relating to the range of projects within the Program appear reasonable.
Sponsor agency	Transport for NSW
Business case status	Project Justification
Gateway status	Gate 0 – Project Justification

The following assessment is relative to the above stated project stage

Project description	<ul style="list-style-type: none"> • A Central Coast package of works to support access to and through the region, including augmenting a number of sections of the Pacific Highway • Lower Hunter works to improve traffic efficiency in the region, including through the delivery of the last stage of the Newcastle Bypass – Rankin Park to Jesmond • Completing duplication of the Pacific Highway as the first order priority on the Far North Coast • Supporting population growth south of Wollongong in the Illawarra, including a realignment of the existing Princes Highway at Albion Park, as well as addressing other local pinch points.
Strategic Merit	Demonstrated strategic merit as the Program is identified as a priority in the Long-Term Transport Master Plan.

<p>Strategic assessment</p>	<p><i>Project Justification</i></p> <p>At this stage of development, the Program's justification appears reasonable. The investment, Program's needs and expected benefits that the Program would generate have been identified. The Program benefits range from efficiencies in freight transport, improved access for high productivity vehicles, improved motorist and pedestrian safety, amenity improvements and asset protection.</p> <p><i>Proposed Scope</i></p> <p>The indicative scope of works for the Program would benefit from further refinement in the next stage of assurance / review.</p> <p><i>Cost Estimate</i></p> <p>The cost estimates for the identified scope of works relating to the range of projects within the Program reflect their current stage / status within the Program.</p> <p>As a comparison, recent upgrade projects in NSW include:</p> <ul style="list-style-type: none"> – Wisemans Ferry Road intersection upgrade, Central Coast Highway: Opened to traffic in mid-2013, the Central Coast Highway and Wisemans Ferry Road intersection was upgraded to improve traffic flow and safety, including lengthening turn lanes, new turn lanes, new continuous lane and provision for cyclists. – Carlton Road to Matcham Road, Central Coast Highway: Opened to traffic in November 2012, the project included widening the highway to two lanes in each direction separated by a median, three major intersection improvements and upgrading facilities for pedestrians and cyclists over a 2.2 kilometre section. – Matcham Road to Ocean View Drive, Central Coast Highway: Opened to traffic in December 2013, the project included widening the highway to two lanes in each direction separated by a median, major intersection improvements and upgrading facilities for pedestrians and cyclists over a 2.2 kilometre section. – Devils Pulpit upgrade, Pacific Highway: Opened to traffic in March 2014, this section of the Pacific Highway between Grafton and Ballina included 7.3 kilometres of four lane divided highway with a wide median to allow for future upgrade to six lanes, improvements to property access, drainage and flood mitigation, and new bridges over floodways. <p><i>Project Implementation</i></p> <p>Optimising staging of discreet projects will be an important factor within strategies for implementation.</p>
<p>Conclusions</p>	<p>At this stage of development, the Program's justification appears reasonable.</p>
<p>Infrastructure NSW Recommendation</p>	<p>A Reservation of \$1 billion from the Rebuilding NSW initiative and final business cases to be prepared.</p>