

IV Options Assessment

The background of the cover is a photograph of a river flowing through a city. The water is a vibrant blue, reflecting the sky and the buildings in the distance. The city skyline is visible in the background, with several tall buildings. The entire image is overlaid with a white rectangular box that contains the title text. The text is in a large, bold, white, sans-serif font. The overall color scheme is dominated by shades of blue and white.

SUPPLEMENT B: COST AND CONTRIBUTION ASSESSMENT

Cost and contribution assessment

This supplement document details additional cost and contribution assessments that were conducted during Assessment 2 (this assessment) and presents the results of these.

As part of Assessment 1 and Shortlisting 1, options were assessed to determine their anticipated contribution to meeting an infrastructure need identified by Infrastructure Victoria in the *Laying the foundations* paper. This involved identifying the degree of evidence (information and analysis) available for each, and estimating the whole of life cost for each option.

This process is described by Infrastructure Victoria as a cost and contribution assessment. The assessment is designed to be an ongoing process and forms part of Infrastructure Victoria's methodology as they are submitted to Infrastructure Victoria for review by Government Departments, organisations and others. Options were assessed for their contribution to meeting Infrastructure Victoria's identified needs, their whole of life cost and the certainty of evidence for the option's proposed contribution. When options were reassigned against new needs, or the metrics for assessing contributions to needs were changed, then the contribution of the option was reassessed.

In mid-February 2016, Infrastructure Victoria released a paper *Laying the foundations* that presented a draft framework for Victoria's first 30-year infrastructure strategy. Its primary purpose was to facilitate discussion on what the strategy should be aiming to achieve (the 'objectives') and what infrastructure challenges needed to be addressed (the 'needs'). Once the feedback was reviewed the framework for the 30-year strategy was confirmed, as detailed in Appendix A. In the process of confirming the framework, some of the original needs were refined and some were deleted. This resulted in the original 25 needs being condensed into 19 which also included two new needs.

Changes to the draft needs had a flow on effect to the options generated in Assessment 1, as some options became less significant to the strategy and others needed to be reassessed for their cost and contribution to the redefined needs. It was also necessary to identify new options to address the new needs created (Need 2 & Need 12).

To accommodate these changes and incorporate new options into Assessment 2, cost and contribution assessments were undertaken by AECOM and PwC. Where needs were re-assigned, the assessment was for the contribution against the need only, while for new options the whole of life cost and the contribution against needs was assessed. The cost and contribution assessment undertaken in Assessment 2 are detailed below.

Table 1 lists the options that were reassessed for their contribution only as needs were re-assigned. Table 2 lists additional options that were identified after Assessment 1, for which a cost and contribution assessment was undertaken by AECOM and PwC.

For the cost and contribution assessment undertaken during Options Assessment 2, if an option rated low for contribution and against cost, then it did not progress onto a triple bottom line assessment and was not included in this report. These options are marked in Table 1 and Table 2.

Options assessed

Table 1 Contribution re-assessments (AECOM and PwC)

Option code	Option title	Assessment type
AAH	Avalon Airport heavy rail line	Contribution re-assessment*
AST	Access to services through technology and ICT	Contribution re-assessment
CPC	Melbourne arts and sports precinct connectivity	Contribution re-assessment
CPI	Coastal protection infrastructure	Contribution re-assessment
CSS1	Community space shared use agreements	Contribution re-assessment
CSS2	Community space statewide event planning	Contribution re-assessment
CSU	Community and public space utilisation deregulation	Contribution re-assessment
ETM	Emergency traffic management	Contribution re-assessment
HCP	Health care patient subsidised travel program extension	Contribution re-assessment
HSR	High speed rail from Sydney to Melbourne	Contribution re-assessment
JCS	Justice and human services colocation	Contribution re-assessment*
MPW	Mobile police and justice workforce	Contribution re-assessment
PTA	Public transport alternative use of taxi or hire car	Contribution re-assessment
UFF	Urban Forest	Contribution re-assessment*

Source: AECOM and PwC analysis. *Denotes options that rated low for contribution and did not progress onto triple bottom line assessment. These options are not presented in this report.

Table 2: Cost and contribution assessment AECOM and PwC

Option code	Option title	Assessment type
BBG	Bendigo-Ballarat-Geelong Rail Revival	Cost and contribution*
BRG	Burnley rail group upgrades	Cost and contribution
CRR2	Central regional rail control centre	Cost and contribution
GAT	Growth area train station upgrade and provision	Cost and contribution
RBU	Regional bus upgrades	Cost and contribution
RHU	Regional highway upgrades	Cost and contribution
TNL	Tram network link extensions	Cost and contribution*
TSC	Train station car parking improvement	Cost and contribution

Source: AECOM and PwC analysis. *Denotes options that rated low for cost contribution and did not progress onto triple bottom line assessment. These options are not presented in this report.

The remaining options included in this report were assessed for cost and contribution by Deloitte and Aurecon as part of Assessment 1 and Shortlisting 1. In some cases the option title may have changed from the Deloitte and Aurecon Assessment 1; however the option code has remained the same and can be used as a reference point.

Individual option assessments: contribution re-assessments

As described above the, following changes to the needs, some options were re-assigned to which needs they contributed to, and thus required a reassessment of their contribution. The options included in this section were reassessed to establish their contribution to Infrastructure Victoria's confirmed 19 new needs as listed Table 1. Whole of life cost assessments from Assessment 1 for these options were retained. These are provided below.

Individual option assessments: cost and contribution assessments

As described above, the options detailed in Table 2 were assessed during Assessment 2 by AECOM and PwC for their contribution to meeting Infrastructure Victoria's needs as well as calculating their whole of life costs. These are provided in Supplement B.

Option	Access to services through technology and ICT	Avalon Airport heavy rail line
Reference	AST	AAH
AECOM Input	Contribution only	Contribution only
Type of strategic intervention	New/expanded assets > Incremental expansion of existing assets	New/expanded assets > New greenfield assets
Description	Identification of options to improve service delivery utilising ICT and technology. The benefit is that this would not require users to travel. This includes providing centralised online information hubs and/or potential new service delivery models. As both public and private services continue to move to online delivery modes there will need to be supporting ICT infrastructure to enable efficient access to these services	Construct a new spur line off the existing Melbourne-Geelong line to enable V/Line services to operate between Southern Cross Station and Avalon (via Regional Rail Link) and between Geelong and Avalon. A preferred alignment was identified by the Avalon Airport Rail Link Planning Study. The Minister for Planning approved the planning scheme amendment on 15 June 2015 to ensure a reservation is in place for the rail link. Construction of the rail link will provide fast and efficient public transport access to Avalon Airport and support future expansion of the terminal.
Certainty of evidence rating	Low	Medium
Type of evidence	Victoria's Technology Plan for the Future. Free Wi-Fi pilot programs (e.g. Bendigo and Ballarat). ICT Strategy.	DEDJTR planning study Airport master plan Newspaper articles
Evidence source(s)	ICT Strategy http://www.enterprisesolutions.vic.gov.au/wp-content/uploads/2014/06/Victorian-Government-ICT-Strategy-2014-to-20151.pdf Victorian Technology Plan http://dsdbi.vic.gov.au/our-department/strategies-and-initiatives/victorias-technology-plan-for-the-future-information-and-communication-technology	DEDJTR Avalon Airport Rail Link: Planning study findings and public exhibition (2014) http://economicdevelopment.vic.gov.au/_data/assets/pdf_file/0009/1092798/Avalon-Planning-study-findings-brochure.pdf PTV Network Development Plan (2012) Avalon Airport Pty Ltd Avalon Airport Master Plan 2015 http://s3-ap-southeast-2.amazonaws.com/cdn.avalonairport.com.au/wp-content/uploads/2015/10/AVALON-AIRPORT-MASTERPLAN-COMPLETE-18-SEPT-2015-no-bleed.pdf Newspaper articles Various
Commentary on certainty	Technology changes will present significant future opportunities.	Preliminary work has been completed. The full planning study has not been provided to Deloitte.
Capital cost	\$100 million - \$500 million	\$100 million - \$500 million
Annual recurrent cost	< \$100 million	< \$100 million
Whole of life cost range	\$100 million - \$500 million	\$100 million - \$500 million
Explanatory text	The cost to implement this option is based on policy changes and the rollout of various initiatives for business by the Victorian Government with some major capital works required. Initiatives and some isolated but major capital works required to ensure growth areas have comparable ICT infrastructure access as inner metropolitan area. Therefore WOL costs are to include consultation, implementation and management for initiatives, but also construction and opex.	Avalon Airport is operated under the Avalon Airport Head Lease by Avalon Airport Pty Ltd, part of the Linfox Group. Estimates for the development of the Avalon rail link vary between \$150 and \$520 million. This assumes the construction of a new spur line off the existing Melbourne-Geelong line such that V/Line trains would operate between Southern Cross Station and Avalon (via Regional Rail Link) and between Geelong and Avalon.
Needs	12	12
Metric 1	Number of jobs regional Victorians can access in 30 mins	Number of jobs regional Victorians can access in 30 mins
Contribution - metric 1	NA	Negative/very low
Metric 2	Improved connectivity through ICT in regional Victoria	Improved connectivity through ICT in regional Victoria
Contribution - metric 2	Moderate	NA
Metric 3	-	Reduction in the supply and demand mismatch (gap) of infrastructure and services
Contribution - metric 3	-	Moderate
Overall contribution ranking	Moderate	Low
Explanatory text	This option may not necessarily increase the number of jobs regional Victorians can access in 30 minutes as the focus is on essential services, however there will be an increase in access to services through ICT resulting in a moderate rating.	Future demand for access to airports will increase and Avalon Airport has been positioned to develop into Victoria's second international airport. Being a low-cost airport, rail links attract both passengers and carriers and therefore the rail link would support the growth of Avalon Airport to address increasing future demand for air travel. At present there are buses that service connections between Geelong, the Surf Coast and Melbourne to the airport; therefore this rail link is rated as low.

Option	Bendigo-Ballarat-Geelong Rail Revival		Burnley rail group upgrades
Reference	BBG		BRG
AECOM Input	Cost and contribution		Cost and contribution
Type of strategic intervention	Better use through refurbishment of existing assets		>New/expanded assets >Incremental expansion of existing asset
Description	Reopen the rail corridor between Bendigo and Geelong via Ballarat for passenger rail services to enhance access between Victoria's three largest regional centres. This option includes the reopening of rail corridors closed to services, the reactivation of a number of closed stations and upgrading sections of track. The returned rail service would replace the existing limited weekday bus services between the three regional centres. Reopening the rail line would support access to jobs and services in regional and rural areas.		Upgrade the Burnley group of lines to support the development of a metro rail system. This includes the rationalisation of Burnley junction, duplication of the line between Mooroolbark and Lilydale to facilitate additional services and improve reliability of the Ringwood corridor, and the quadruplication of the line between Burnley and Camberwell Stations and on to Box Hill. This will enable the full segregation of the Burnley express and Burnley local lines. These works, in coordination with other projects, will enable additional rail services from the Lilydale, Belgrave, Alamein and Glen Waverley lines to support people to access employment and services in the central city.
Certainty of evidence rating	High		Medium
Type of evidence	PTV Feasibility Study		Planning document Industry position paper
Evidence source(s)	PTV Rail Revival: Geelong-Ballarat-Bendigo Project Feasibility Summary Report (2013)		PTV Network Development Plan 2012 BZE 2013 Network Development Plan Cost Estimates
Commentary on certainty	This is a full feasibility study done by PTV on this project. The cost estimates are now four years old, however the scope and level of works is assumed to remain the same.		Certainty level of high given the amount of project definition in the PTV Network Development Plan. Rationalisation of the Burnley Junction is scheduled in Stage 2 of the NDP (before 2022) and the quadruplication is scheduled in Stage 4 (before 2032).
Capital cost	\$500 million - \$1 billion		\$500 million - \$1 billion
Annual recurrent cost	< \$100 million		< \$100 million
Whole of life cost range	\$1 billion - \$5 billion		\$500 million - \$1 billion
Explanatory text	From the report, the estimated capital expense was \$760 mil to \$935 mil with \$11 mil to \$17 mil annual operating expense. Using 2% inflation, this translates to \$820 mil to \$1 bil capital and \$12 mil to \$18 mil operating.		BZE 2013 Report Burnley Junction rationalisation costed at \$52.6 million Mooroolbark - Lilydale duplication costed at \$198 million Burnley - Camberwell quadruplication costed at \$337.9 million
Needs	12	13	10
Metric 1	Number of jobs regional Victorians can access in 30 mins	Reduction in the cost of the total freight task (origin to destination)	Reduction in the supply and demand mismatch (gap) of the transport system to accommodate journeys into the central city.
Contribution - metric 1	Negative/very low	Low	Moderate
Metric 2	Improved connectivity through ICT in regional Victoria	-	-
Contribution - metric 2	NA	-	-
Metric 3	Reduction in the supply and demand mismatch (gap) of infrastructure and services	-	-
Contribution - metric 3	Moderate	-	-
Overall contribution ranking	Low	Low	Moderate
Explanatory text	This option will increase peoples access to jobs between cities as 2,000 people per day are projected to use the service, and will address the demand for travel between these regional centres and towns in between, and therefore is rated low.		This project removes potential conflicts with the Lilydale/Belgrave Line, Glen Waverley Line and the Alamein Line. Although patronage growth is fairly low on this group, the goal of the project is to streamline operations and improve service reliability, with services initially increasing from 21 to 24 trains per hour, with the potential to increase to 27 per hour. By segregating the Alamein and Glen Waverley lines from the Belgrave/Lilydale Line, it facilitates the planned connection of the Glen Waverley and Alamein lines to the Werribee and Williamstown lines which are routed through significant growth areas. The benefits of this project will be realised through overall network improvements, not specifically in the Belgrave/Lilydale corridor resulting in a moderate rating.

Option	Melbourne arts and sports precinct connectivity	Coastal protection infrastructure
Reference	CPC	CPI
AECOM Input	Contribution only	Contribution only
Type of strategic intervention	New/expanded assets > Incremental expansion of existing assets	New/expanded assets > Incremental expansion of existing assets
Description	This option proposes to build a pedestrian and cycling walkway to integrate Melbourne's sporting and cultural precincts between Domain Gardens, South Melbourne, the Yarra River, Federation Square and Birrarung Marr. This option would increase access between the two key precincts and would also maximise opportunities to activate the public spaces throughout the entire precinct during events and between event peak periods when the precincts may otherwise be dormant.	This option focuses on a program to maintain and provide new coastal protection infrastructure. This investment would be to prevent beach erosion and asset damage in critical locations to deal with rising sea levels and extreme weather and tidal events. Studies indicate that the medium and longer term impacts of climate change will see increasing pressure to protect coastal infrastructure and in particular residential buildings. There is currently not a consistent funding model to achieve this. Coastal defences range from natural beach and dune defences and structural flood defence walls to limit tidal overtopping, to measures to reduce sediment transport and reduce wave heights.
Certainty of evidence rating	Low	Low
Type of evidence	Melbourne Arts Blueprint	Case Studies. Government research.
Evidence source(s)	Creative Victoria	City of Port Phillip, Planning for Climate Change – A Case Study of Victoria, 2007 http://www.portphillip.vic.gov.au/default/Planning_For_Climate_Change_-_A_Case_Study.pdf The State of Victoria Department of Environment and Primary Industries, Victorian Coastal strategy 2014 http://www.vcc.vic.gov.au/assets/media/menu_files/VCS_2014.pdf
Commentary on certainty	Certainty level low, as a supporting business case or feasibility study has either not been drafted or reviewed.	At this stage research has been undertaken on the potential risks associated with rising sea levels, however limited work has been identified on the infrastructure response to the risks. State-wide, the Department of Environment, Water, Land and Planning manages \$600 million in coastal protection assets. The medium- and longer-term impacts of a changing climate will see increasing pressure on the managers to protect coastal infrastructure. Presently the cost of maintaining facilities on the coast rests with a range of state authorities and other entities. Under these arrangements, there is limited funding for works that will be required to renew, replace and build new infrastructure and into the future the cost will increasingly be beyond the capacity of appointed coastal managers. Annual, ad hoc allocations from State and local government budgets that face a range of other immediate pressures are unlikely to be sustainable into the future. A broader, and long-term, approach to setting priorities for and financing new and existing coastal protection, infrastructure and user facilities is warranted.
Capital cost	\$100 million - \$500 million	\$5 billion - \$10 billion
Annual recurrent cost	< \$100 million	< \$100 million
Whole of life cost range	\$100 million - \$500 million	\$5 billion - \$10 billion
Explanatory text	In 2008, the State Government put forward a proposal to develop the Arts Precinct that would link the cultural centres south of the Yarra River through walkways, cafes and bars stretching from the Arts Centre, along Sturt Street to the Malthouse Theatre.	The UK Department of Environment, Food and Rural Affairs did a study on the cost of a range of all forms of coastal defences. It is difficult to relate those costs to Australian conditions however. The report provides case studies as well as per sqm costs in pounds. According to the Australian Government - Department of Climate Change, providing dykes or sea wall protection around low-lying areas of Port Phillip Bay in Melbourne is estimated to cost up to \$5 billion. To prevent flooding along river catchments, flood/tide gates would be required on every river system feeding into the Bay, which would be likely to double the cost.
Needs	5	19
Metric 1	Increase in the proportion of a LGA classified as an open, civic or public space, % of total area of LGA.	• Improvement in the risk rating (including level of a system's resilience) of key economic infrastructure.
Contribution - metric 1	Low	Moderate
Metric 2	Increase in the use of open, civic or public space.	Improvement in the ability of major infrastructure in the agriculture, water, energy, ICT and transport sectors to adapt to increased temperatures, decreased rainfall, and rising sea-levels.
Contribution - metric 2	Moderate	Moderate
Metric 3	-	-
Contribution - metric 3	-	-
Overall contribution ranking	Moderate	Moderate
Explanatory text	This option is rated moderate in meeting the contribution metric as it is assumed this infrastructure upgrade project will attract more people to the precinct due to greater accessibility and number of attractors. There are already 82,000 visitors in the area every day and improving connectivity as well as enabling a greater level of activity will increase this number.	It is assumed this option will not have significant effects in reducing the states greenhouse gas emissions resulting in a negative/very low rating.

Option	Central regional rail control centre	Community space shared use agreements	
Reference	CRR2	CSS1	
AECOM Input	Cost and contribution	Contribution only	
Type of strategic intervention	>Better use >Coordination processes	Better use > Coordination processes	
Description	Establish an integrated regional rail control centre to manage movements of both passenger and freight trains. The project will have the ability to reduce disruptions and support the faster resolution of issues across the regional rail network. It will also support rail operations on the metropolitan network where tracks are shared with the regional lines. The integration of passenger and freight rail control will create efficiencies in communications and systems. This has the ability to increase the reliability of regional commuter services and the overall supply of transport to the central city.	This option is about improving the resources and governance processes to enable the establishment of standardised shared-use agreements between different agencies and associations across Victoria. This would lead to the sharing of community spaces and facilities such as school facilities, recreation, sporting, community cultural and community infrastructure, etc. While these agreements have previously been prepared predominantly for shared use of school facilities, it is envisaged that there use could be extended to different councils, service providers, not-for-profits and associations. Shared use agreements are most successful when the governance for new or refurbished facilities is established early to jointly plan and design for integrated shared use. The establishment of governance can be supported by experienced infrastructure brokers who can facilitate these agreements.	
Certainty of evidence rating	Low	Low	
Type of evidence	News articles and press releases	Council documented shared use arrangements, Council meeting minutes	
Evidence source(s)	International Railway Journal: http://www.railjournal.com/index.php/signalling/nsw-approves-centralised-train-control-centre-for-sydney.html Queensland Government: http://statements.qld.gov.au/Statement/2016/2/10/new-40-million-rail-control-centre-unveiled Newspaper Article http://www.theage.com.au/victoria/rail-network-hit-metro-trains-halted-across-melbourne-20150617-ghqts0.html	79 Victorian Local Councils Report by the Ministerial Advisory Committee - http://www.mpa.vic.gov.au/wp-content/uploads/2014/07/FBAC-Report-Number-1-October-2015.pdf Schools as community spaces - http://www.education.vic.gov.au/Documents/school/principals/infrastructure/sacpolfworkg.pdf .	
Commentary on certainty	The evidence on cost is high but the contribution of these are fairly qualitative. No business cases for these projects are publically available. Overall, a certainty rating of low was assigned.	Certainty level of low given limited aggregated Council information providing evidence of need and solution. A supporting business case or feasibility study has either not been drafted or reviewed.	
Capital cost	\$100 million - \$500 million	< \$100 million	
Annual recurrent cost	< \$100 million	< \$100 million	
Whole of life cost range	\$100 million - \$500 million	< \$100 million	
Explanatory text	The Sydney control centre is costed at \$275 million and the Brisbane centre was delivered for \$40 million (costed at \$49 million). The Melbourne backup centre located in Fitzroy cost \$80 million in 2010. Based on these costings it can be assumed a centralised regional rail control centre would cost around \$100 million.	This option is a policy/regulation change only with no capital works required. Whole of life cost estimations include consultation, implementation and management.	
Needs	1	2	
Metric 1	Reduction in the supply and demand mismatch (gap) of infrastructure and services. Fast growing municipalities only.	Number of jobs regional Victorians can access in 30 mins	Reduction in the supply and demand mismatch (gap) of infrastructure and services
Contribution - metric 1	Low	Moderate	Low
Metric 2	Reduction in the average distance to core infrastructure (health, transport, education, justice). Fast growing municipalities only.	Improved connectivity through ICT in regional Victoria	-
Contribution - metric 2	Negative/very low	Negative/very low	-
Metric 3	-	Reduction in the supply and demand mismatch (gap) of infrastructure and services	-
Contribution - metric 3	-	Low	-
Overall contribution ranking	Low	Moderate	Low
Explanatory text	There may not be an appreciable improvement with day-to-day operations, however with comparable projects it is the reduction in disruption and speed in which disruptions can be resolved which may justify the cost. Presently, regional train trips are generally longer than 30 minutes so it does not specifically address the metric unless this option was paired with a regional centre metro-style system resulting in a low rating.	There may not be an appreciable improvement with day-to-day operations, however with comparable projects it is the reduction in disruption and speed in which disruptions can be resolved which may justify the cost. Increasing the reliability of regional commuter services will increase the supply of transport in to the central city and therefore this option is rated moderate.	This option is an enabler for greater utilisation of existing assets meaning it will not necessarily vastly increase the amount of community activities available to the public. Setting up a governance framework may not necessarily mean facility owners want to share their facilities meaning this option will cause no change. Since no new facilities are to be built as part of this option, it will not improve service to areas which currently do not have adequate access to community spaces resulting in a low rating.

Option	Community space statewide event planning		Community and public space utilisation deregulation
Reference	CSS2		CSU
AECOM Input	Contribution only		Contribution only
Type of strategic intervention	Changing behaviour > Influencing behaviour through information		Better use > Land use planning and controls / Better use through refurbishment of existing assets
Description	<p>There are many community and public spaces across Victoria which could be better utilised. This option proposes the development of a local annual community activities calendar for public spaces. While it is acknowledged that many local councils do this already as part of their ongoing operations, this option is about making this approach systematic across all Victorian councils. This option would not mandate co-ordination but would seek to promote the benefits of such. Existing online events platforms could be expanded, for example, to all councils and event organisers.</p>		<p>This option seeks to improve the utilisation of community or public spaces through both financial and planning regulations. The option would target the barriers to accessing underutilised public spaces and seek to increase their use through reducing 'red-tape' to allow for</p> <ul style="list-style-type: none"> • installation of community infrastructure in • hosting/programming of activities and events • use by not-for profits and micro-industries. <p>This option would include the identification of underutilised spaces, which could be used for community use or informal active recreation. For example, land underneath freeways could be refurbished as skate parks or vacant upper level floor spaces for delivery of community services or spaces for artists. Better use of public and community spaces has an added benefit of activating underutilised spaces and reducing opportunities for antisocial behaviour.</p>
Certainty of evidence rating	Low		Low
Type of evidence	Annual local government community satisfaction survey, Council annual reports		Council event/public space permit approvals process, public space/outdoor activities policies Plan Melbourne 2015 Review
Evidence source(s)	<p>79 Victorian Local Councils http://www.dtpli.vic.gov.au/local-government/publications-and-research/council-community-satisfaction-survey</p>		<p>79 Victorian Local Councils Report by the Ministerial Advisory Committee - http://www.mpa.vic.gov.au/wp-content/uploads/2014/07/FBAC-Report-Number-1-October-2015.pdf Schools as community spaces - http://www.education.vic.gov.au/Documents/school/principals/infrastructure/sacpolfworkg.pdf.</p>
Commentary on certainty	<p>Certainty level of low given limited aggregated Council information providing evidence of need and solution. A supporting business case or feasibility study has either not been drafted or reviewed.</p>		<p>A certainty level of low given limited aggregated Council information providing evidence of need and solution. A supporting business case or feasibility study has either not been drafted or reviewed.</p>
Capital cost	< \$100 million		< \$100 million
Annual recurrent cost	< \$100 million		< \$100 million
Whole of life cost range	< \$100 million		< \$100 million
Explanatory text	<p>This option is a policy/regulation change only with no capital works required. Whole of life cost estimations include consultation, implementation and management.</p>		<p>This option is a policy/regulation change only with no capital works required. Whole of life cost estimations include consultation, implementation and management.</p>
Needs	2	12	2
Metric 1	Reduction in the supply and demand mismatch (gap) of infrastructure and services	Number of jobs regional Victorians can access in 30 mins	Reduction in the supply and demand mismatch (gap) of infrastructure and services
Contribution - metric 1	Low	NA	Moderate
Metric 2	-	Improved connectivity through ICT in regional Victoria	-
Contribution - metric 2	-	NA	-
Metric 3	-	Reduction in the supply and demand mismatch (gap) of infrastructure and services	-
Contribution - metric 3	-	Low	-
Overall contribution ranking	Low		Moderate
Explanatory text	<p>This option is an enabler for greater utilisation of existing assets meaning it will not necessarily vastly increase the amount of community activities available to the public. Since no new facilities are to be built as part of this option, it will not improve service to areas which currently do not have adequate access to community spaces resulting in a low rating. There may be some higher attendance at some events from the improved advertising.</p>		<p>Without any further investment, there will be some community spaces which will be created (such as vacant upper floor spaces). Some of the other projects (such as skate parks) will require some capital investment. It is unknown if this option will contribute significantly to areas with a current deficit of community spaces, although overall there is assumed to be an increase in the amount of facilities available meaning this option is rated as moderate.</p>

Option	Emergency traffic management	Growth area train station upgrade and provision	
Reference	ETM	GAT	
AECOM Input	Contribution only	Cost and contribution	
Type of strategic intervention	Better Use Solutions - Technological innovations	>New/expanded assets >Incremental expansion of existing assets	
Description	Emergency vehicle priority (EVP) is a technology aimed at improving emergency response times and the safety of frontline officers by enabling emergency vehicles (such as ambulances, fire services and police) to automatically trigger traffic light sequences to change along the most direct route when responding to an emergency call. This will also help to reduce the risk of emergency vehicles colliding with other vehicles at intersections.	Provision of new stations in growth areas such as Truganina, Black Forest, Sayers, Davis and Dohertys Roads and upgrades to existing under capacity stations. This option includes upgrades to safety, station amenity and car parking of existing stations in growth areas. This would enable greater accessibility to central city employment opportunities and services for the growing population along existing rail corridors.	
Certainty of evidence rating	Low	Medium	
Type of evidence	Case Study - Queensland	Peak body discussion papers	
Evidence source(s)	Academic paper Han, C., Eady, P., & Blogg, M., Performance Evaluation of Gold Coast Emergency Vehicle Priority System (EVPS), 2015 Department of Transport and Main Roads (Queensland) Emergency Vehicle Priority, http://www.tmr.qld.gov.au/Safety/Road-safety/Emergency-Vehicle-Priority.aspx , 2015, accessed February 2016 Media Statements Minister for Main Roads, Road Safety and Ports and Minister for Energy and Water Supply: The Honourable Mark Bailey, <i>Emergency vehicles get priority at traffic lights across the state</i> , Sunday, November 22, 2015 http://statements.qld.gov.au/Statement/2015/11/22/emergency-vehicles-get-priority-at-traffic-lights-across-the-state	PTV Network Development Plan 2012 BZE 2013 Network Development Plan Cost Estimates Australasian Transport Research Forum: http://atrf.info/papers/2013/index.aspx Employing best practice in station access to bridge the door-to-door divide, Charles, Galiza (2013) Australasian Transport Research Forum: http://atrf.info/papers/2011/index.aspx	
Commentary on certainty	A business case for this initiative in the Victorian context has either not been drafted or provided. Significant analysis should be undertaken to determine the benefits associated with introducing a similar initiative to Victoria, as this initiative will be highly contextualised to local conditions.	Certainty level of medium, as the costings from the BZE network development plan cost are broadly consistent with other station cost estimates	
Capital cost	< \$100 million	\$100 million - \$500 million	
Annual recurrent cost	< \$100 million	< \$100 million	
Whole of life cost range	< \$100 million	\$100 million - \$500 million	
Explanatory text	The above cost estimate is based on the Queensland Government's investment of \$13.5 million in this technology. The Emergency Vehicle Priority project will be rolled out across major centres in Queensland and will fit out approximately 1000 additional emergency services vehicles with the technology. The cost associated with rolling this initiative out across Victoria will vary based on where it is rolled out and the traffic conditions and intersection configurations of each of the chosen locations. Costings provided by the Queensland Government do not specify whether this includes whole of life costs associated with the technology. However, it is assumed that ongoing operating costs will be relatively low i.e. system upgrades and replacement of a limited number of units as required. Sufficient provision exists within the current estimate to cater for this.	BZE 2013 Report has five new stations at \$387 million or ~\$80 million per station. The most recent costings for Southland station range from \$20 million to \$45 million. The whole of life cost range appropriately reflects the number of stations from the description as some will be upgrades, re-builds, and new builds.	
Needs	3	10	11
Metric 1	Reduction in total real annual health expenditure per capita in Victoria.	Reduction in the supply and demand mismatch (gap) of the transport system to accommodate journeys into the central city.	Increase in the percentage of Melbourne residents that can access non-central city employment centres within 30 minutes.
Contribution - metric 1	Low	Significant	Moderate
Metric 2	Improvements in: (a) the average time to clear waiting lists – that is, the number of patients on the waiting list divided by the number of patients removed from the waiting list, expressed in months; (b) the percentage of people treated within a clinically appropriate time; (c) the average waiting time from referral to first consultation in outpatient clinics.	-	Increase in the percentage of journeys to/from the airport that can access Melbourne airport within an hour by public transport and/or road.
Contribution - metric 2	Moderate	-	Negative/very low
Metric 3	-	-	Reduction in the travel time (and increase in the reliability) of trips between Melbourne Airport and the central city.
Contribution - metric 3	-	-	Negative/very low
Overall contribution ranking	Moderate	Significant	Moderate
Explanatory text	The moderate rating is given based on the possibility for emergency patients to receive care in a clinically appropriate time. Based on the positive feedback of the Queensland trial it is assumed the benefits will be similar in Victoria. Queensland Trial The Queensland Government has implemented the Emergency Vehicle Priority (EVP) solution, a dynamic ITS solution that automatically interrupts normal traffic signal operations, providing a green traffic signal to emergency vehicles in advance of their arrival at an intersection to reduce emergency vehicle travel times. Ambulance and fire engines are fitted with technology to trigger the traffic light sequences. The system uses computer-aided dispatch, GPS and traffic management information to determine the location of the emergency vehicle and the time taken to reach the next set of traffic lights. Once the emergency vehicle has passed, the traffic lights will return to normal sequence. At the time of the program's evaluation, there were 51 signalised intersections that were emergency vehicle priority (EVP)-enabled within the Gold Coast area. There were also 61 GPS-equipped ambulances and 10 of them were further equipped with EVPS units. The evaluation identified that when compared with the without-EVPS cases, the average normalised travel time for EVPS-equipped vehicles in the study area was reduced by 16.9%. When comparing the travel time data between without-EVPS and with-EVPS and a validated intervention cases, a further travel time reduction, 26.08%, was identified. As a result, the technology is now being rolled out across the rest of Queensland. There are almost 300 emergency vehicles and 800 locations throughout Townsville,	Adding new suburban stations to growth areas will provide necessary infrastructure for greenfield developments providing modal choice and reducing reliance on private vehicles. This will have a significant impact on providing PT for high growth areas. Upgrading stations can also have the potential to define key activity areas within the growth precinct. There will be no reduction in distance and this option is dependent on existing rail lines.	Adding new suburban stations to growth areas will provide necessary infrastructure for greenfield developments providing modal choice and reducing reliance on private vehicles. This will have a significant impact on providing PT for high growth areas. Upgrading stations can also have the potential to define key activity areas within the growth precinct. The suburban stations in these growth areas will increase the catchment for the rail line, meaning more people can access the central city, however the radial nature of the network is conducive of travel in to the central city (unless the activity centre is on the individuals local train line) only resulting in a moderate rating. To solve this problem requires orbital services.

Option	Health care patient subsidised travel program extension	High speed rail from Sydney to Melbourne
Reference	HCP	HSR
AECOM Input	Contribution only	Contribution only
Type of strategic intervention	Changing behaviour > Economic charging	New/expanded assets > New greenfield assets
Description	This option would extend the existing Victorian Patient Transport Assistance Scheme (VPTAS) to provide more services to people in regional communities to enable them to access health services that cannot be efficiently be provided in their local community. The existing system is based on travel of more than 100 kilometres to see a specialist. The cost of this option allows for the provision of transport utilising existing transport systems, including taxis and public transport services	Construct a high speed rail line between Melbourne and Sydney to provide an alternative to air travel. It is predicted that High Speed Rail would attract a high share of the existing travel demand, thus decreasing the volume of traffic accessing Melbourne Airport via the Tullamarine Freeway. This would reduce travel times and increase reliability between the airport and the city centre. In addition, the new high speed link could provide improved access from regional areas to jobs and services in the city centre. The High Speed Rail Study Phase 2 Report put the cost of the Melbourne - Sydney section at \$50 billion. The Commonwealth Government has received two reports (The High Speed Rail Study Phase 1 and The High Speed Rail Study Phase 2) from the strategic study on the implementation of a HSR network on the east coast of Australia. Recently the Commonwealth Government have announced plans to revisit the project with the assistance of 'value capture' financing.
Certainty of evidence rating	Medium	Medium
Type of evidence	Victorian Patient Transport Assistance Scheme	DIRD website and strategic study
Evidence source(s)	This option has been implemented in various stages throughout Victoria with the rationalisation of different health services.	Commonwealth Government https://infrastructure.gov.au/rail/trains/high_speed/
Commentary on certainty	The current system of subsidised transport has proven to save costs in regional/remote areas. There is still mixed consensus/reports on the time it takes for patients to receive care through this method when services aren't available locally. Although a workable model, as is common in areas where services have once existed previously communities generally prefer to have access to local care options without the need to travel to centralised care providers. In cases where the services haven't existed previously they are more receptive to acceptance of the need to travel for to access these services.	Detailed studies undertaken by the Commonwealth The Australian Government has received two reports (The High Speed Rail Study Phase 1 and The High Speed Rail Study Phase 2) from the strategic study on the implementation of a HSR network on the east coast of Australia. The reports provide analysis on the feasibility of HSR and advice on the next steps for HSR in Australia: The High Speed Rail Study Phase 1 report identified corridors and station locations, potential patronage and provided an indicative cost to build the HSR network. The High Speed Rail Study Phase 2 report built on the work of the Phase 1 report and refined many of the estimates, particularly around demand and costs, and refined the preferred HSR route identified in the Phase 1 report. This report also identified important next steps in staging a future HSR network in Australia.
Capital cost	< \$100 million	> \$10 billion
Annual recurrent cost	< \$100 million	< \$100 million
Whole of life cost range	\$100 million - \$500 million	> \$10 billion
Explanatory text	Based on the current VPTAS which is supported by the Victorian Government at a cost of approximately \$4 million per annum it is estimated a 30 year WOL costing for an expanded service will be in the region of \$100-\$500 million.	The cost estimation for the implementation of this option is based on the second phase of the High Speed Rail study which was released on 11 April 2013, which found that the project would cost A\$114 billion and could be fully operational by 2065. The total cost amounts to \$79 billion in present value terms (\$2012).
Needs	12	10
Metric 1	Number of jobs regional Victorians can access in 30 mins	Reduction in the supply and demand mismatch (gap) of the transport system to accommodate journeys into the central city.
Contribution - metric 1	NA	Significant
Metric 2	Improved connectivity through ICT in regional Victoria	-
Contribution - metric 2	Negative/very low	-
Metric 3	Reduction in the supply and demand mismatch (gap) of infrastructure and services	-
Contribution - metric 3	Moderate	-
Overall contribution ranking	Moderate	Significant
Explanatory text	This option would moderately address the mismatch between supply and demand in health infrastructure and services. This is particularly relevant in regional and rural areas with low population levels or negative growth. By providing alternative access, this option may maintain a certain level of quality of service, however the distance to reach services means that this option rates as moderate.	From a Victorian perspective, the most recent alignment only has stops in Shepparton and Wodonga meaning these two regional centres will have greatly improved access to Melbourne through reduced travel times. It is assumed this service would increase demand for this journey by allowing more people to live in these regional areas resulting in a significant rating.

Option	Justice and human services colocation	Mobile police and justice workforce	
Reference	JCS	MPW	
AECOM Input	Contribution only	Contribution only	
Type of strategic intervention	Better use through incremental expansion of existing assets Better use through coordination processes New greenfield assets Better use through incremental expansion of existing assets	Better Use Solutions - Technological innovations	
Description	There has been a longstanding approach of co-locating courts and police facilities. This option would seek to extend this approach to co-locate complementary services delivered by the justice sector and the human services sector. This would support a coordinated and coherent client service model and an improved use of capital assets such as courts, police stations and child protection facilities. This option would increase access to a similar client base and, where possible, reduce demand on the justice and human services sectors, through increasing access to response and prevention services. In some areas this is happening already, and is likely to be strengthened following the Family Violence Royal Commission implementation. The successful Neighbourhood Justice Centre (NJC) model offers an example of integrated provision of justice and human services and has the advantage of being evaluated.	This option proposes to deliver a mobile police workforce through rolling out ICT and other related infrastructure. This would result in less dependence on police stations allowing more police members to be out in the community promoting greater effectiveness and efficiency. This includes progressing from Mobile Data Terminals in police vehicles to mobile devices in police hands, providing single point access and logon to advanced, integrated information systems. This should be done along with reform of Victoria Police's core ICT systems (JSD). This option could then be rolled out more broadly to the justice sector workforce, such as the Sheriff's office and community corrections.	
Certainty of evidence rating	Medium	Low	
Type of evidence	Anecdotal evidence from interviews Case Study - Neighbourhood Justice Centre Program evaluation - Neighbourhood Justice Centre	Anecdotal evidence from interviews Victoria Police Corporate Plan Victoria Police Vision Statement	
Evidence source(s)	Stakeholder interviews Various Evaluating the Neighbourhood Justice Centre in Yarra 2007-2009 http://library.bsl.org.au/jspui/bitstream/1/3713/1/njc_evaluation_main_document.pdf , 2010, accessed February 2016 Ministry of Justice (New Zealand) Statement of Intent 2014-2018 http://www.justice.govt.nz/publications/global-publications/s/statement-of-intent-2014-2018/who-we-are/who-we-work-with#social , accessed February 2016	Stakeholder interviews Various Victoria Police Victoria Police Corporate Plan 2015-18 - YEAR 1, (2015) Victoria Police Blue Paper: A Vision for Victoria Police in 2025 (2014)	
Commentary on certainty	Whilst a business case outlining the benefits of co-locating justice and social services on a broad scale has either not been developed or reviewed, Victoria has successfully trialled the co-location of justice and social services to improve collaboration and to drive improved client outcomes. The Neighbourhood Justice Centre (NJC) is Australia's first and only community justice centre and is located in the City of South Yarra on a purpose built site. It brings together a multi-jurisdictional court with a wide array of support services and community initiatives including case management, Koori justice, employment and training support, housing assistance, assistance for newly arrived refugees and migrants etc. to leverage a community-based approach to overcoming the root causes of crime. These agencies provide integrated and coordinated services. The NJC began as a pilot project in 2007 and has since been provided with an ongoing budget allocation as an independent evaluation in 2010 found there were real and practical benefits that were derived from the NJC.	Victoria Police's corporate plan recognises the need for Victoria Police to modernise its systems, including the introduction of mobile technology for operational police that is integrated with its central information management systems. Increasing the mobility of police officers enables them to increase the time they spent in the community. Victoria Police's Bluepaper also emphasises the importance of using technology to enable intelligence-shaped, mobile service delivery, as well as real-time, practical engagement with the community. This supports a service delivery model and geographical footprint that is focused on accessibility through mobility. Victoria Police are likely to have developed business cases estimating the cost of developing a more mobile workforce. However, these have not been provided or reviewed.	
Capital cost	< \$100 million	< \$100 million	
Annual recurrent cost	< \$100 million	< \$100 million	
Whole of life cost range	\$100 million - \$500 million	< \$100 million	
Explanatory text	Whole-of life-costs have been estimated based on the level of funding awarded to the Neighbourhood Justice Centre through the State Budget. This has been extended over a 30 year period and only represents the costs associated with one centre. In addition, funding has been added to support the development of a masterplan. Sufficient provision exists in the cost estimate to include some capital expenditure costs if required.	There is not strong evidence on which to base the cost figure and a professional estimate has been made based on information available.	
Needs	2	2	12
Metric 1	Reduction in the supply and demand mismatch (gap) of infrastructure and services	Reduction in the supply and demand mismatch (gap) of infrastructure and services	Number of jobs regional Victorians can access in 30 mins
Contribution - metric 1	Moderate	Moderate	NA
Metric 2	-	-	Improved connectivity through ICT in regional Victoria
Contribution - metric 2	-	-	NA
Metric 3	-	-	Reduction in the supply and demand mismatch (gap) of infrastructure and services
Contribution - metric 3	-	-	Moderate
Overall contribution ranking	Moderate	Moderate	Moderate
Explanatory text	There is expected to be a moderate increase in access to the justice system through the provision of this option, particularly as it aims to co-locate justice services in the same vicinity as community services.	This option has been rated as moderate due to its ability to allow a more efficient provision of law enforcement and potentially giving officers greater geographic reach.	This option is rated moderate. A mobile police and justice force may expand the geographic coverage of these services and therefore address the mismatch in supply and demand in regional and rural areas where populations may not warrant standalone police and justice services.

Option	Port of Melbourne container terminal expansion	Public transport alternative use of taxi or hire car	
Reference	PMC	PTA	
AECOM Input	Contribution only	Contribution only	
Type of strategic intervention	Better use > Incremental expansion of existing assets	Better use > Coordination processes, contractual processes	
Description	Expanding the capacity of the Port of Melbourne (POM) through a range of measures, including the extension of berths, the use of Webb Dock exclusively for containers, relocating the car import/export trade, landside investment and technology improvements at both Webb and Swanson Docks. This is in addition to the current port expansion project	Change bus and taxi/hire car regulations to encourage alternative transport services, particularly in rural and regional areas. This option will realise initiatives to integrate local community transport and taxis with route bus services to expand access opportunities. Two recent examples include the FlexiRide service operating in Yarrawonga that utilises taxis in place of bus services and a trial of community transport (ConnectU) that was held in Warrambool. These initiatives incorporate both more accessible and more flexible delivery of transport services. Elements of this option have been trialled in regional centres, however, it can be applied in outer suburbs and rural areas. Through changes in regulation and delegation of local governance this option will open up the ability for the private sector to provide innovative, flexible transport solutions to Victorians facing isolation due to disability, location or income. This will help foster greater social inclusion in areas with poor transport services.	
Certainty of evidence rating	Medium	Low	
Type of evidence	DEDJTR strategy document DEDJTR discussion paper PoMC strategic document	MPTP Review, taxi as buses pilot program, Inquiry into Social Inclusion and Victorians with a Disability (2014). Has been referred to DEDJTR as part of MPTP review and taxi reform policy.	
Evidence source(s)	DEDJTR Victorian Freight and Logistics Plan (2013) Relocating motor vehicle importing and exporting to the Port of Geelong (2011) http://www.g21.com.au/sites/default/files/dmdocuments/PortofGeelong-FeasibilityDiscussionPaper.pdf Port of Melbourne Corporation Port Development Strategy 2035 (2009)	Taxi Services Commission http://taxi.vic.gov.au/passengers/mptp Parliament of Victoria: Family and Community Development Committee http://www.parliament.vic.gov.au/fcdc http://www.parliament.vic.gov.au/file_uploads/_FDCDC__Report_into_Social_Inclusion_and_Disability_TP_WLFF1q.pdf DEDJTR http://economicdevelopment.vic.gov.au/transport/rail-and-roads/taxis/multi-purpose-taxi-program-review	
Commentary on certainty	Some proposals for expansion have been investigated at a feasibility level. Aside from the documents mentioned above, these have not been provided to Deloitte. The proposed long-term lease of the Port of Melbourne has added uncertainty surrounding potential opportunities to expand capacity.		
Capital cost	< \$100 million	< \$100 million	
Annual recurrent cost	\$1 billion - \$5 billion	< \$100 million	
Whole of life cost range	\$1 billion - \$5 billion	< \$100 million	
Explanatory text	<p>The cost estimation of this option is based on the requirement for increased container trade at the Port of Melbourne needing to be accommodated within a limited area. It does not include land transport links such as the Western Distributor.</p> <p>The Port of Melbourne Corporation (PoMC) is currently undertaking the \$1.6 billion Port Capacity Project which includes the redevelopment of Webb Dock, together with infrastructure upgrades at Swanson Dock, to meet forecast container trade growth. This is expected to be sufficient to meet demand until the mid-2020s.</p> <p>PoMC's Port Development Strategy 2035 indicates that the Port is expecting to spend around \$3 billion between 2009 and 2039. The private sector is expected to invest an even greater amount in ongoing terminal development and equipment improvements. Thus the WOL 30 year cost range is expected to be at the higher end of the \$1-5 billion range.</p> <p>The cost of further expansion will vary significantly depending on the scale of the intervention. Technological improvements may cost several hundred million dollars, whilst building a floating container terminal ("Project Phillip") in Port Phillip Bay could potentially cost \$10 billion+.</p>	<p>This option is a policy/regulatory change only with no capital works required. Whole of life cost estimations include consultation, implementation and management.</p> <p>The cost estimation assumes that a review of the current policy and regulatory environment is undertaken and amendments made where required to encourage alternate forms of transport, particularly in regional and rural areas.</p>	
Needs	13	2	12
Metric 1	Reduction in the cost of the total freight task (origin to destination)	Reduction in the supply and demand mismatch (gap) of infrastructure and services	Number of jobs regional Victorians can access in 30 mins
Contribution - metric 1	Significant	Moderate	Moderate
Metric 2	-	-	Improved connectivity through ICT in regional Victoria
Contribution - metric 2	-	-	Negative/very low
Metric 3	-	-	Reduction in the supply and demand mismatch (gap) of infrastructure and services
Contribution - metric 3	-	-	Moderate
Overall contribution ranking	Significant	Moderate	Moderate
Explanatory text	This option may have a significant contribution to reducing the cost of total freight task, by freeing up space and enhancing efficiency of freight handling through the port.	Using existing assets to increase public transport provision in low growth, regional and rural areas is assumed to increase peoples mobility. The demand in some of these areas may not justify new bus services, however shared community vans (and other modes) may be more appropriate for the areas, resulting in a moderate rating.	Using existing assets to increase public transport provision in low growth, regional and rural areas is assumed to increase peoples mobility. The demand in some of these areas may not justify new bus services, however shared community vans (and other modes) may be more appropriate for the areas. This will allow individuals who live in these areas and don't have access to a private car to be able to get to jobs within the regional or rural towns resulting in a moderate rating.

Option	Regional bus upgrades	Regional highway upgrades	
Reference	RBU	RHU	
AECOM Input	Cost and contribution	Cost and contribution	
Type of strategic intervention	>Better use >Coordination processes	>New/expanded assets >Refurbishment of existing assets, Incremental expansion of existing asset, new greenfield asset	
Description	Deliver new and expanded bus networks throughout regional Victorian cities and towns including Geelong-Bellarine, Bendigo, La Trobe Valley, Grampians, Ballarat and Shepparton, with a focus on the provision of adequate capacity and connections in growth areas. Improving regional city bus services will increase personal mobility resulting in improved access to jobs and services in regional areas and Melbourne. It will also assist to increase social inclusion through the delivery of improved transport services.	The option combines a number of upgrades and bypasses on regional highways to improve the level of service for commercial traffic in the region, improve safety and accessibility for both local and through traffic, provide relief for congested intersections in regional centres, and reduce accidents, e.g. Goulburn Valley Highway Strathmerton Deviation, Western freeway duplication, Ararat to Stawell, Shepparton bypass, and future Western Highway bypass of Ararat and Beaufort. There are a range of upgrades already committed and therefore treated in the base case – this option goes beyond these.	
Certainty of evidence rating	Low	Medium	
Type of evidence	State Government discussion papers, strategic plans	Peak body discussion papers, Government press releases	
Evidence source(s)	State Government Plan Melbourne Refresh Discussion Paper (2015) Ministerial Advisory Committee Plan Melbourne 2015 Review https://s3-ap-southeast-2.amazonaws.com/ehq-production-australia/45189c582e1cf1f4e6b12125a1ebef13d682729f/documents/attachments/000/028/064/original/MAC_2015_Final_Report.pdf?1445230381 Committee for Melbourne Submission to the Victorian Competition and Efficiency Commission's Inquiry into Transport Congestion (2005) Busvic http://www.busvic.asn.au/images/uploads/links/SW_Mobility_report_13_June_v2.pdf	Australasian Transport Research Forum: Wang,—Estimating economic impacts of transport investments using TREDIS: a case study on a National Highway Upgrade Program http://atrf.info/papers/2015/ Victorian regional highway upgrades (for range) http://infrastructureaustralia.gov.au/projects/project-assessments.aspx RACV: http://www.racv.com.au/wps/wcm/connect/royalauto/home/motoring/information-advice/general-information/the+federal+budget+delivers+on+many+key+victorian+transport+priorities+but+racv+demand+a+better+deal+for+road+users	
Commentary on certainty	Certainty level of low, given that evidence sources indicate that the project is at a low level of definition. The Busvic study focussed on the benefits of improved regional bus services. It found there were some economic benefits with higher social benefits.	Certainty level of low, given that the evidence sources indicate that the project is at a low level of definition. The funding of previous duplications and bypasses are certain, but the investment in to the future is based on historical spending.	
Capital cost	\$100 million - \$500 million	\$1 billion - \$5 billion	
Annual recurrent cost	< \$100 million	< \$100 million	
Whole of life cost range	\$100 million - \$500 million	\$1 billion - \$5 billion	
Explanatory text	Regional Development Victoria figures for investment in regional busses. Annual state spend on bus services = \$1 billion Regional bus fleet = ~600 Metro bus fleet = ~1800 High estimate of annual regional bus spend = ~\$250 million (service intensity is significantly lower than metro meaning lower capital spend). If there is a 10% service improvement across five major regional centres this would be an extra \$100 million per year, not including procurement and other start up costs (such as new/upgraded workshops, stops, etc.)	From RACV funding list, upgrades of Victorian regional highways were funded at around \$100 million per year Federally. Assuming consistent funding between \$30 and \$160 million per year it falls comfortably in the \$1 billion - \$5 billion cost range.	
Needs	12	12	13
Metric 1	Number of jobs regional Victorians can access in 30 mins	Number of jobs regional Victorians can access in 30 mins	Reduction in the cost of the total freight task (origin to destination).
Contribution - metric 1	Moderate	Low	Moderate
Metric 2	Improved connectivity through ICT in regional Victoria	Improved connectivity through ICT in regional Victoria	
Contribution - metric 2	N/A	N/A	
Metric 3	Reduction in the supply and demand mismatch (gap) of infrastructure and services	Reduction in the supply and demand mismatch (gap) of infrastructure and services	
Contribution - metric 3	Low	Low	
Overall contribution ranking	Moderate	Low	Moderate
Explanatory text	From the Busvic study, it found that 24% of people indicated that there were activities they could not do because of transport problems, compared to 15% in regional areas. Improving regional bus services is assumed to increase this mobility in order to access local jobs for people without access to private cars, however the service frequency may be a constraint to its success resulting in only a moderate rating. The same study found that regional towns have a greater sense of community compared with metropolitan Melbourne and their personal mobility within the community was extremely important.	Marginal decreases in travel times can be expected from regional highway duplication projects although there will be safety and congestion benefits. Improved travel times in multiple cities due to Western Highway upgrades where upto 30,000 vehicles will be affected each day in Ballarat alone. The Drysdale bypass will also reduce travel time for those vehicles that originally travelled through Drysdale to Geelong CBD. The option is not expected to greatly increase the number of jobs regional Victorians can access in 30 mins (outside of the construction phase) resulting in a low rating, however there will be cumulative network wide efficiencies gained.	This option is rated moderate as upgrades and bypasses will speed up efficiency of intra- and inter-state freight movements, reducing time and freight cost. Lane duplications often result in increased consistency of average speed, which is important for freight movements. Less stops and starts associated can also result in fuel savings.

Option	Subregional infrastructure planning			Train station car parking improvement	
Reference	SIP			TSC	
AECOM Input	Cost and contribution			Cost and contribution	
Type of strategic intervention	New/expanded assets > Incremental expansion of existing assets			>New/expanded assets >Incremental expansion of existing assets	
Description	<p>This option would formalise and simplify a whole of government sub-regional infrastructure planning and investment processes. Metropolitan sub-regions are defined in Plan Melbourne and include five regions across the metropolitan areas. This is a governance reform option that requires an authorised, resourced and accountable lead agency to coordinate three levels of government to jointly plan for infrastructure. This option could enable joint planning for:</p> <ul style="list-style-type: none"> • A sector need (e.g. for subregional health or subregional transport planning etc) • Coordinated planning for growth (e.g. planning for rapid growth in greenfield or established areas) • Planning for areas experiencing population decline. 			<p>Construction of new or expanded rail station car parks to increase capacity of park-and-ride facilities across the regional and metropolitan networks. Recent car park expansion projects recently completed include Syndal, South Morang and Donnybrook stations. The benefits include potential reductions to road congestion through mode shift to train services and improved access to the central city for employment and services</p>	
Certainty of evidence rating	Medium			Low	
Type of evidence	NSW examples MPA subregional planning groups			Academic study, peak body discussion papers, Government press releases	
Evidence source(s)	<p>NSW ROC's NSW example of what this option could be</p> <p>MPA subregional planning groups Groups already in place for implementing Plan Melbourne including land use planning, infrastructure delivery, research and community priorities</p>			<p>Australasian Transport Research Forum: Wallis, Ballantyne, Lawrence, Lupton, Weir—Economic benefits of park and ride http://atrf.info/papers/2015/files/ATRF2015_Resubmission_148.pdf</p> <p>PTV: http://ptv.vic.gov.au/projects/railway-stations/station-car-park-upgrades/</p> <p>Park and Ride Study: http://link.springer.com/article/10.1007%2FBF00150557?LI=true#page-1</p>	
Commentary on certainty	NSW examples have been productive in their output			The evidence found on these projects are mixed, with the costing more solid but contribution varying. Overall, a certainty rating of low was assigned.	
Capital cost	< \$100 million			\$500 million - \$1 billion	
Annual recurrent cost	< \$100 million			< \$100 million	
Whole of life cost range	< \$100 million			\$500 million - \$1 billion	
Explanatory text	<p>This option is a policy/regulation change only with no capital works required. Whole of life cost estimations include consultation, implementation and management.</p>			<p>From ARTF paper - Total capital cost of \$15,000 per space with operating and yearly maintenance of \$450 per space.</p> <p>222 stations in the network, ~100 premium stations with existing car parks, ~50 outside of the active transport catchment of Melbourne</p> <p>Assumption made for 50 upgraded station car parks: 50 car parks @ \$5-10 million each + >\$200 million yearly operating This fits within the \$500 million - \$1 billion price range</p>	
Needs	1	2	12	10	11
Metric 1	Reduction in the supply and demand mismatch (gap) of infrastructure and services. Fast growing municipalities only.	Reduction in the supply and demand mismatch (gap) of infrastructure and services	Number of jobs regional Victorians can access in 30 mins	Reduction in the supply and demand mismatch (gap) of the transport system to accommodate journeys into the central city.	Increase in the percentage of Melbourne residents that can access non-central city employment centres within 30 minutes.
Contribution - metric 1	Moderate	Moderate	Negative/very low	Significant	Moderate
Metric 2	Reduction in the average distance to core infrastructure (health, transport, education, justice). Fast growing municipalities only.	-	Improved connectivity through ICT in regional Victoria	-	Increase in the percentage of journeys to/from the airport that can access Melbourne airport within an hour by public transport and/or road.
Contribution - metric 2	Low	-	Negative/very low	-	Negative/very low
Metric 3	-	-	Reduction in the supply and demand mismatch (gap) of infrastructure and services	-	Reduction in the travel time (and increase in the reliability) of trips between Melbourne Airport and the central city.
Contribution - metric 3	-	-	Moderate	-	Negative/very low
Overall contribution ranking	Moderate	Moderate	Moderate	Moderate	Moderate
Explanatory text	<p>The option is rated as moderate as the ability to pool together resources to deliver larger projects and long term planning on a subregional level may be beneficial for these high growth areas. A large amount of state funding is generally available to high growth areas so for local government to be able to plan more strategically could optimise existing and future infrastructure.</p>	<p>This option is rated moderate as the ability to pool together resources and deliver larger projects and long term planning on a subregional level may help low or negative population growth areas. The ability to do this could increase the provision of infrastructure to areas which may not receive as much State funding since they are not a high growth area.</p>	<p>This option is rated moderate as it may benefit some projects delivered which wouldn't have been otherwise as a result of this policy change.</p>	<p>This option is rated moderate as building bigger carparks will enable more people to access the train network and assist to satisfy demand for parking at train stations</p>	<p>This option is rated moderate as expanding car parks at train stations, will enable more people to access the train network. This in turn will enable more people to access jobs within 30 minutes, as an alternative to peak hour traffic.</p>

Option	Tram network link extensions	Urban forest
Reference	TNL	UFF
AECOM Input	Cost and contribution	Contribution only
Type of strategic intervention	>New/expanded assets >Incremental expansion of existing assets	New/expanded assets > Incremental expansion of existing assets
Description	Extensions to the existing metropolitan tram network to include additional suburban residents in the tram catchment areas and integrate with land use and other transport modes. Example extensions that could be considered under this option include: <ul style="list-style-type: none"> Vermont South 75 tram line to Knox City Route 3 East Malvern to the railway station, and on to Chadstone Shopping Centre Route 5 Malvern to Darling railway station Route 6 Glen Iris to Ashburton railway station Tram extensions have the ability to link train stations that promotes multimodal travel and mode shift. This increases people's ability to access employment, services and activities in their local areas.	This option would establish a standard and supportive regulatory change to require local councils in specified areas to develop stronger street tree canopies. This will reduce the heat island effect and encourage walking in high density areas by providing weather protection and other related benefits.
Certainty of evidence rating	Medium	Low
Type of evidence	Advocacy by user and community group Political party policy objective	Government Strategy
Evidence source(s)	Public Transport Users Association: http://www.ptua.org.au/policy/network/ http://www.ptua.org.au/files/2013/victorian_budget_submission_2013-14.pdf VAGO Report http://www.audit.vic.gov.au/publications/20140806-Public-Transport/20140806-Public-Transport.pdf	https://www.melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest-strategy.pdf https://www.treenet.org/wp-content/uploads/2009-the-value-of-urban-trees-environmental-factors-and-economic-efficiency-mark-brindal-prof-randy-stringer.pdf
Commentary on certainty	Certainty level of medium, as the evidence comes from the Department of Finance and Auditor General, supported by policy form dedicated public transport groups and political groups that support public transport as a policy platform.	Urban forestry has yet to be well researched, implemented and evaluated in an Australian context. There is a reliance on research from the US, Europe, Scandinavia and Asia to supplement our thinking and programs.
Capital cost	\$1 billion - \$5 billion	< \$100 million
Annual recurrent cost	< \$100 million	< \$100 million
Whole of life cost range	\$1 billion - \$5 billion	< \$100 million
Explanatory text	Costed at \$840 million in the Greens' policy proposal, using a \$15 million per kilometre estimate. Vermont South extension (2005) - ~\$8 million per km (along existing reservation) - MOST RECENT MELBOURNE EXTENSION Box Hill extension (2003) - ~\$12 million per km DTF policy costing (2014) - ~\$24 million per km Other state networks are costed much higher but that is because they include rolling stock procurement, stabling and maintenance facilities. It is assumed since these are generally shorter extensions these costs will not need to be incurred. The state is currently purchasing new rolling stock, increasing the size of the overall fleet. Other state network costs based off recent news articles: - Canberra \$73 million/km - Perth \$85 million/km - Sydney \$133 million/km - Gold Coast \$123million/km DTF Policy costing response: • \$15 million per kilometre of tram track extension, inclusive of overhead works (\$2012/13); • \$1.7 million per DDA compliant tram stop (\$2014/15); • \$5 million per tram terminus (\$2012/13); • \$5 million per substation, required for any route extensions over five kilometres (\$2012/13); and • \$2.8 million per intersection to accommodate new tram infrastructure at major intersections (\$2014/15). Other assumptions included a stop every 500m and works every two intersections equaling a total of \$1.36 billion or \$24 million per km	The option is to implement a new standard through regulation
Needs	11	18
Metric 1	Increase in the percentage of Melbourne residents that can access non-central city employment centres within 30 minutes.	Reduction in Victoria's greenhouse gas emissions
Contribution - metric 1	Moderate	Low
Metric 2	Increase in the percentage of journeys to/from the airport that can access Melbourne airport within an hour by public transport and/or road.	-
Contribution - metric 2	Negative/very low	-
Metric 3	Reduction in the travel time (and increase in the reliability) of trips between Melbourne Airport and the central city.	-
Contribution - metric 3	Negative/very low	-
Overall contribution ranking	Low	Low
Explanatory text	This option is rated low as some extensions identified will attract more patronage (and mode shift) than others. Detailed business cases should be completed for each option to prioritise the most effective.	This option is rated low as it may have minor impacts on GHG emissions. This includes through encouraging active transport through more attractive street design. It has also been calculated that carbon dioxide sequestration is worth \$1.40 per tree per year. There will also be some benefit from reduced energy consumption (from shadier streets) which has been calculated at \$1 per year per tree in an Adelaide study which compared to direct action would be somewhat appreciable resulting in a low rating.